Sydney Grammar School
c/-Jattca Property Solutions

Detailed Site Investigation

Proposed SGS Weigall Sports Complex
Neild Avenue, Paddington NSW

11 August 2020

58554/128603 (Rev 0)

JBS&G Australia Pty Ltd

www.jbsg.com.au

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Australia Pty Ltd

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Abbreviations

Term	Definition
°C	Degrees Celsius
ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ASS	Acid Sulfate Soils
AST	Aboveground Storage Tank
B(a)P	Benzo(a)Pyrene
bgs	Below Ground Surface
COC	Chain of Custody
COPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DCP	Development Control Plan
DEC	Department of Environment and Conservation
DSI	Detailed Site Investigation
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
ESL	Ecological Screening Level
GIL	Groundwater Investigation Level
HIL	Health Investigation Level
HSL	Health Screening Level
JBS&G	JBS&G Australia Pty Ltd
LOR	Limit of Reporting
LPI	Land and Property Information
NAPL	Non Aqueous Phase Liquids
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticide
OEH	Office of the Environment and Heritage
OPP	Organophosphorus Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PARCC	Precision, Accuracy, Representativeness, Comparability, Completeness and Sensitivity
PCB	Polychlorinated Biphenyl
QA/QC	Quality Assurance / Quality Control
RAP	Remedial Action Plan
RPD	Relative Percent Difference
SAQP	Sampling Analytical Quality Plan
SEPP	State Environmental Planning Policy
SGS	Sydney Grammar School
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxic Equivalence Quotient
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
UFP	Unexpected Find Protocol
VENM	Virgin Excavated Natural Material

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by Jattca Property Solutions on behalf of Sydney Grammar School (SGS, the client) to provide environmental consultancy services for the proposed SGS Weigall Sports Complex development at Neild Avenue, Paddington NSW (the site). The site is legally identified as Part Lot 2 in Deposited Plan (DP) 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259 and encompasses an approximate area of 1.0775 hectare (ha). The site location and layout are provided in **Figures 1** and **2**.

The site is currently utilised by SGS for recreational purposes and comprises multipurpose/tennis courts, pavilion, car park, cricket nets and playing field. It is understood that the proposed redevelopment of the site will comprise demolition of existing structures and buildings and construction of a sporting facility comprising of a multi-purpose hall with basement and associated aboveground car park. Proposed development plans provided by the client are included in **Appendix I**.

As part of the proposed redevelopment, the site has been subject to a preliminary site investigation (PSI) with limited intrusive sampling undertaken by Douglas Partners (DP 2020[1]). The PSI (DP 2020) identified potential human health and ecological impacts associated with heavy metals, polycyclic aromatic hydrocarbons (PAHs) and total recoverable hydrocarbons (TRHs) in soil.

The client has requested that JBS&G undertake a Detailed Site Investigation (DSI) and hazardous material survey (HMS) to support the future development application (DA) documentation and cost planning exercises. The concurrent HMS was undertaken by JBS&G with a standalone report issued (JBS&G 2020a[2]). Based on the preliminary findings of the DSI, a Human Health Risk Assessment (HHRA) was undertaken by JBS&G (JBS&G 2020b[3]) to determine the extent of the required remediation/management and inform preparation of a remedial action plan. The HHRA is provided as **Appendix K**.

The DSI documented herein has been prepared in accordance with guidelines made or approved by the NSW Environmental Protection Authority (EPA) including the *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1* (NEPC 2013) and relevant Australian Standards.

The objective of this DSI was to assess potential contamination at the site and to draw conclusions regarding the suitability of the site for the proposed use, or make recommendations to enable such conclusions.

The objective of the accompanying HHRA (JBS&G 2020b) was to determine whether environmental impact reported in soils poses an unacceptable risk to the range of potential future human exposures that may occur with the proposed redevelopment of the site.

The scope of the investigation included the following:

- Review of existing site investigation information;
- Development and documentation of a conceptual site model (CSM) based on the available information;

[1] *Report on Preliminary Site (Contamination) Investigation, Grammar Edgecliff Sports Area 11 Alma Street, Paddington, Project 99538.01*, Douglas Partners, 4 March 2020 (DP 2020)

[2] *Hazardous Materials Survey, Proposed SGS Weigall Sports Complex, Neild Avenue, Paddington NSW*, reference: 58554/128597 (Rev 0) JBS&G Australia Pty Ltd, 11 August 2020 (JBS&G 2020a)

[3] Human Health Risk Assessment, Proposed SGS Weigall Sports Complex Neild Avenue, Paddington NSW, reference: 58554-130429 (Revision 0) JBS&G Australia Pty Ltd, 11 August 2020 (JBS&G 2020b)

- Preparation of a Sampling and Analysis Quality Plan (SAQP) for the works, developed using the Data Quality Objectives (DQO) project planning process;
- Implementation of the DSI program including the following:
    - Advancement of 18 boreholes within the site (BH101-BH118) and collection of soil samples;
    - Conversion of three boreholes into groundwater monitoring wells (MW1-MW3) and subsequent groundwater sampling;
- Laboratory analysis of selected samples for a range of COPCs;
- Comparison of collected soil and groundwater data against relevant endorsed criteria in relation to assessment, from a contamination perspective, of land use suitability;
- Assessment of soil data to enable in-situ waste classification and acid sulfate soils (ASS) assessment to inform disposal requirements;
- Completion of a HHRA in accordance with EPA guidelines; and
- Preparation of a DSI report in accordance with EPA guidelines including conclusions regarding the potential contamination status of the site.

Based on the scope of works completed for this assessment and subject to the limitations stated in **Section 11**, the following conclusions have been drawn with regard to the site conditions:

- A previous intrusive investigation conducted as part of the PSI (DP 2020) identified the presence of fill material variously impacted with heavy metals, PAH and TRH.
- The current DSI identified lead impacted fill at BH109 in exceedance of the adopted human health and ecological criteria. Further, the fill material across the site was identified as impacted with B(a)P TEQ in exceedance of the adopted health based investigation criteria. The elevated B(a)P TEQ concentrations were interpreted to be associated with ash/slag/charcoal inclusions observed in the fill material.
- Lead and B(a)P TEQ were identified as constituents of potential concern and subject to a HHRA as provided in **Appendix K**. The HHRA provided the following conclusions and recommendations:
    - A sensitivity analysis of the risk assessment process found that the risk estimates are suitably conservative to be used as the basis for decision making on the site.
    - It was assumed that potential construction worker exposures would be managed by existing New South Wales health and safety legislation as appropriate to construction activities and were not considered further.
    - In accordance with the limitations of the HHRA, the levels of B(a)P TEQ in soils have not been found to pose a potential health risk as per the proposed redevelopment / use of the site. A potential health risk was identified for an uncontrolled exposure to the highest levels of lead impact on the site.
    - It is recommended that remediation and/or management works are undertaken to address lead impacted soils as present at the JBS&G sample location BH109 at a depth of 2.6 to 2.7 m to control / eliminate potential direct exposure to the impacted soils.
- B(a)P and TRH>C16-C34 fractions were reported in various samples in exceedance of the adopted ecological criteria for the proposed landuse. However, given the presence of healthy vegetation at the site, and given that B(a)P is not readily taken up by plants, the reported concentrations are not considered to constitute a risk to future plant growth or

inhibit the future development of the site. Thus, JBS&G consider that the ecological impacts identified (where not concurrent with health-based impacts) do not warrant further assessment and/or management.

- Concentrations of arsenic reported in groundwater is considered indicative of the urban environment within the geological setting of the site. Arsenic was detected at concentrations exceeding conservative drinking water criteria, however as beneficial reuse of groundwater at the site is unlikely given that the proposed development will include a reticulated water supply, the reported COPC concentrations in groundwater are not considered to represent an unacceptable risk to future on-site receptors. There are no identified off-site migration issues relating to groundwater at the site.
- Fill material in numerous areas of the site has been identified as dark brown/black with anthropogenic inclusions of ash, slag and charcoal observed at BH104, BH105, BH108-BH110 and BH112-BH118. Odours were reported in the fill material encountered at boreholes BH105 and BH108 associated with observation of ash/slag/charcoal made in these locations. Aesthetic impacts will require management during redevelopment of the site.
- Based on the recently completed assessment activities and the previous soil analytical data presented in the PSI (DP 2020), fill material across the site is provisionally classified General Solid Waste (Non-putrescible).
- Sampling undertaken as part of the PSI (DP 2020) and current DSI, identified the presence of potential ASS material in fill and underlying alluvial soils at the site that requires management during future redevelopment activities.

The lead impact identified within the fill profile at BH109 and aesthetic impacts identified in fill requires remediation/management in order to make the site suitable for the proposed land use.

It is recommended that an acid sulfate soil management plan be prepared prior to future redevelopment activities to manage potential disturbance of these soils.

It is further recommended that a RAP be prepared and implemented to guide remediation and validation actions including validation sampling, analysis and quality planning to enable the site to be considered suitable for proposed land use. The RAP should include an appropriate Unexpected Finds Protocol (UFP) with provisions for the management of unexpected finds that may be encountered during site remediation/ development activities.

Following completion of remediation activities in accordance with the RAP, a validation report should be prepared to demonstrate the successful validation of the site and suitability of the site for the intended use.

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by Jattca Property Solutions on behalf of Sydney Grammar School (SGS, the client) to provide environmental consultancy services for the proposed SGS Weigall Sports Complex development at Neild Avenue, Paddington NSW (the site). The site is legally identified as Part Lot 2 in Deposited Plan (DP) 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259 and encompasses an approximate area of 1.0775 hectare (ha). The site location and layout are provided in **Figures 1** and **2**.

The site is currently utilised by SGS for recreational purposes and comprises multipurpose/tennis courts, pavilion, car park, cricket nets and playing field. It is understood that the proposed redevelopment of the site will comprise demolition of existing structures and buildings and construction of a sporting facility comprising of a multi-purpose hall with basement and associated aboveground car park. Proposed development plans provided by the client are included in **Appendix I**.

As part of the proposed redevelopment, the site has been subject to a preliminary site investigation (PSI) with limited intrusive sampling undertaken by Douglas Partners (DP 2020[4]). The PSI (DP 2020) identified potential human health and ecological impacts associated with heavy metals, polycyclic aromatic hydrocarbons (PAHs) and total recoverable hydrocarbons (TRHs) in soil.

The client has requested that JBS&G undertake a Detailed Site Investigation (DSI) and hazardous material survey (HMS) to support the future development application (DA) documentation and cost planning exercises. The concurrent HMS was undertaken by JBS&G with a standalone report issued (JBS&G 2020a[5]). Based on the preliminary findings of the DSI, a Human Health Risk Assessment (HHRA) was undertaken by JBS&G (JBS&G 2020b[6]) to determine the extent of the required remediation/management and inform preparation of a remedial action plan. The HHRA is provided as **Appendix K**.

The DSI documented herein has been prepared in accordance with guidelines made or approved by the NSW Environmental Protection Authority (EPA) including the *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1* (NEPC 2013) and relevant Australian Standards.

1.2 Objective

The objective of this DSI was to assess potential contamination at the site and to draw conclusions regarding the suitability of the site for the proposed use, or make recommendations to enable such conclusions.

The objective of the accompanying HHRA (JBS&G 2020b) was to determine whether environmental impact reported in soils poses an unacceptable risk to the range of potential future human exposures that may occur with the proposed redevelopment of the site.

1.3 Scope of Works

The following outlines the scope of work undertaken to achieve the objectives of the investigation:

- Review of existing site investigation information;

[4] *Report on Preliminary Site (Contamination) Investigation, Grammar Edgecliff Sports Area 11 Alma Street, Paddington, Project 99538.01*, Douglas Partners, 4 March 2020 (DP 2020)

[5] *Hazardous Materials Survey, Proposed SGS Weigall Sports Complex, Neild Avenue, Paddington NSW*, reference: 58554/128597 (Rev B) JBS&G Australia Pty Ltd, June 2020 (JBS&G 2020a)

[6] *Human Health Risk Assessment, Proposed SGS Weigall Sports Complex Neild Avenue, Paddington NSW*, reference: 58554-130429 (Revision A) JBS&G Australia Pty Ltd, 15 June 2020 (JBS&G 2020b)

- Development and documentation of a conceptual site model (CSM) based on the available information;
- Preparation of a Sampling and Analysis Quality Plan (SAQP) for the works, developed using the Data Quality Objectives (DQO) project planning process;
- Implementation of the DSI program including the following:
    - Advancement of 18 boreholes within the site (BH101-BH118) and collection of soil samples;
    - Conversion of three boreholes into groundwater monitoring wells (MW1-MW3) and subsequent groundwater sampling;
- Laboratory analysis of selected samples for a range of COPCs;
- Comparison of collected soil and groundwater data against relevant endorsed criteria in relation to assessment, from a contamination perspective, of land use suitability;
- Assessment of soil data to enable in-situ waste classification and acid sulfate soils (ASS) assessment to inform disposal requirements;
- Completion of a HHRA in accordance with the methodology outlined in *Environmental Health Risk Assessment Guidelines for assessing human health risks from environmental hazards*, 2012, Department of Health and Ageing and enHealth Council (enHealth 2012a) and NEPC (2013); and
- Preparation of a DSI report in accordance with EPA guidelines including conclusions regarding the potential contamination status of the site.

2. Site Condition and Surrounding Environment

2.1 Site Identification

The site location is shown on **Figure 1**. The extent of the site and associated cadastral boundaries are shown on **Figure 2**. The site details are summarised in **Table 2.1** and described in detail in the following sections.

Table 2.1 Summary Site Details

Address	Neild Avenue, Paddington NSW
Lot/DP	Part Lot 2 in DP 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259
Local Government Authority	Woollahra Municipal Council
Approximate MGA Coordinates of Centre (MGA 56)	Easting: 336155.965 Northing: 6249863.042
Site Zoning	RE2 Private Recreation and R3 Medium Density Residential under the *Woollahra Local Environmental Plan (LEP) 2014*
Previous Use	Sports/recreation area
Current Use	Sports/recreation area
Proposed Use	Sporting complex and car park
Site Area	1.0775 ha

2.2 Site Description

A detailed site inspection was undertaken by one of JBS&G's trained and experienced environmental consultants on 25 March and 27 May 2020. Site observations are discussed below, and a photographic log is included in **Appendix A**. The site layout is shown in **Figure 2**.

The site comprised an irregular shaped parcel of land located within the broader SGS property, bound to the west by Neild Avenue, east by Alma Street, south by residential properties and north by SGS Weigall playing fields.

Six multipurpose/tennis hard courts and associated fencing were located in the southwestern portion of the site. A bitumen sealed car park was located off Neild Avenue in the northwestern portion of the site. The area to the north of the multipurpose/tennis hard courts was grassed and formed an embankment to the playing field to the north, located approximately 2m below the remainder of the site. Hardstand with cricket nets were located in the eastern extent of the site. A two-storey timber/brick pavilion (Barry pavilion) was located on the embankment with a grandstand on the upper level with toilets and storage room located on the lower level. At the time of the inspection, the storage room was observed to contain sports training equipment and a secured chemical storage area containing paint, insecticides and herbicides. There was no evidence of surface staining associated with chemical spills in this area.

The southern portion of the site comprising the multipurpose/tennis hard courts was generally flat and level with its surrounds. The northern portion including playing filed and cricket nets were at a lower level beyond the embankment. Mature trees were located along the western site boundary, in the south central portion of the site and adjacent to the pavilion. The vegetation was observed to be in good condition.

No evidence of storage of waste or storage tanks were observed at the site. No asbestos containing materials were observed on the ground surfaces. In addition, there were no signs of distressed vegetation or other potential indicators of significant contamination issues at the site.

2.3 Surrounding Land Use

The surrounding land uses have been identified as follows:

- North – the site was bound by SGS Weigall playing fields followed by Rushcutters Creek and New South Head Road further north;

- East – the site was bound by Alma Street followed by Sydney Grammar Preparatory School (southeast) and White City Tennis Club further east;
- South – the site was bound by low/medium density residential buildings followed by Lawson Street; and
- West – the site was bound by Neild Avenue and medium-high density residential buildings beyond.

2.4 Topography

Review of the regional topographic maps available on SIX maps[7] indicated that the site is situated at an elevation of approximately 8-10 m Australian Height Datum (AHD). The southern portion of the site is predominantly flat with an elevation of 10m AHD whilst the playing field and cricket nets at the base of the embankment was located approximately at 8 m AHD.

2.5 Geology and Soils

A review of the Sydney 1:100 000 Geological Map[8] indicated that the site is located in an area comprising man made fill including dredged estuarine sand and mud, demolition rubble, industrial and household waste, underlain by silty to peaty quartz sand, silt and clay with ferruginous and humic cementation in places and common shell layers. The surrounding areas were underlain by Hawkesbury Sandstone comprising medium to coarse grained quartz sandstone, very minor shale and laminate lenses.

Review of eSDPADE 2.0 tool hosted by the NSW Office of Environment and Heritage (OEH 2017[9]) indicated the site is predominantly underlain by disturbed terrain. The landscape is described as level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance by removal or burial of soil. Landfill includes soil, rock, building and waste materials with original vegetation completely cleared, replaced with turf or grassland. The soil is turfed, and fill areas are commonly capped with up to 40 cm of sandy loam or up to 60 cm of compacted clay over fill or waste materials. Soil limitations are dependent on the nature of fill material and includes mass movement hazard, unconsolidated low wet strength materials, impermeable soil, poor drainage and localised very low fertility and toxic materials.

The southeastern extent of the site is underlain by Gymea Erosional Soil. The landscape is characterised by undulating to rolling rises and low hills on Hawkesbury Sandstone with local relief 20-80 m, slopes 10-25%, rock outcrop <25%, broad convex crests, moderately inclined side slopes with wide benches, localised rock outcrop on low broken scarps, extensively cleared open-forest (dry sclerophyll forest) and eucalypt woodland. The soils are characterised as shallow to moderately deep (30-100 cm) Yellow Earths and Earthy Sands on crests and inside of benches; shallow (<20 cm) Siliceous Sands on leading edges of benches; localised Gleyed Podzolic Soils and Yellow Podzolic Soils on shale lenses; shallow to moderately deep (<100 cm) Siliceous Sands and Leached Sands along drainage lines. Soil limitations include localised steep slopes, high soil erosion hazard, rock outcrop, shallow highly permeable soil, very low soil fertility.

Previous intrusive investigations undertaken by DP (2020) encountered fill material across the site to a maximum depth of approximately 6.0 m below ground surface (bgs) overlying natural sand and sandstone.

[7] SIX Maps http://maps.six.nsw.gov.au/ accessed 02 April 2020
[8] Sydney 1:100 000 Geological Series Sheet 9130 Edition 1 (1983)
[9] *ESPADE 2.0*, NSW Office of Environment and Heritage, Accessed 15 May 2019, OEH (2017)

2.6 Hydrology

The site footprint is a combination of flat and sloped grassed surfaces, asphaltic/concrete hardstands and building footprints. As such, surface water generated during periods of rainfall is anticipated to migrate from the site via surface water flow entering local stormwater catchment system with subsurface infiltration and seepage.

The nearest surface water receptor is Rushcutters Creek located approximately 200 m to the north east of the site. Rushcutters Creek has been converted to a concrete lined stormwater channel which flows into Rushcutters Bay approximately 580 m to the north east of the site.

2.7 Hydrogeology

Registered groundwater monitoring well data was obtained from the NSW Department of Primary Industries groundwater mapping tools, NSW DPI (2016[10]) and is included in **Appendix B**. A review of the registered bore information indicated that there were 14 registered bores within an approximate 1.0 km radius of the site. Relevant details of registered bores have been summarised in **Table 2.2** below.

Table 2.2: Registered Groundwater Bore Search

Bore ID	Use	Property	Standing Water Level (m bgs)	Well Depth (m)	Distance from Site
GW106911	Recreation	-	10.5	42.6	on-site
GW103059	Monitoring	-	-	5.5	43 m northwest
GW103063	Monitoring	-	-	5.0	43 m northwest
GW103064	Monitoring	-	-	5.0	43 m northwest
GW103058	Monitoring	-	-	6.2	43 m northwest
GW103066	Monitoring	-	-	4.7	43 m northwest
GW103067	Monitoring	-	-	5.0	43 m northwest
GW103068	Monitoring	-	-	5.0	43 m northwest
GW109375	Irrigation	Local Government	-	13.5	375 m southeast
GW107358	Domestic	Private	41.8	180.5	775 m southeast
GW026439	Irrigation	Local Government	-	7.90	400 m northeast
GW100467	Recreation	Private	2.35	14.5	340 m northeast
GW107418	Domestic	Private	3.5	11.5	460 m northwest
GW105473	Monitoring	-	-	2.4	530 m southwest

Groundwater bore GW106911 listed for recreational use is located in the northeastern extent of the site. The PSI (DP 2020) reported that bore water is used to top up underground irrigation tanks in the Weigall 4 car park. Review of the borehole log identified that GW106911 was installed targeting the underlying sandstone bedrock.

2.8 Acid Sulfate Soils

Review of the Acid Sulfate Soil Risk Mapping[11] indicates that the southern portion of the site is located within an area of 'no known occurrence of Acid Sulfate Soils'. Acid sulfate soils (ASS) are not known or expected to occur in areas having this classification. However, the northern portion of the site is identified to be located in an area identified as disturbed terrain which may include filled areas which often occur during reclamation of low lying swamps for urban development. Other disturbed terrain includes areas which have been mined or dredged or have undergone heavy ground disturbance through general urban development or construction of dams and levees. Soil investigations are required to assess these areas for acid sulfate soil potential.

[10] Office of Water's Groundwater Monitoring Overview Map http://allwaterdata.water.nsw.gov.au/water.stm (accessed 02 April 2020)
[11] http://data.environment.nsw.gov.au/dataset/acid-sulfate-soils-risk0196c (accessed 02 April 2020). NSW Office of Environment and Heritage

Further to testing undertaken during the PSI, DP (2020) concluded that northern portion of the investigation area is potentially underlain by ASS, in particular the wet, dark grey clayey sand fill containing organic matter encountered in the vicinity of BH01, BH02 and BH03 (**Figure 3**) from depths of 2.5 m bgs. Given the limited testing, DP (2020) reported that soils beneath this layer should be considered to present an elevated risk of ASS. DP (2020) further stated that, based on the preliminary field-testing results there is the potential for ASS to be present in the southern portion of the site and also noted that given the site lies in an area of disturbed terrain there exists the additional possibility for ASS to have been used as backfill at the site.

2.9 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Sydney Observatory Hill [12]) indicates the site is located within the following meteorological setting:

- Average minimum temperatures vary from 8.1 ^{o}C in July to 18.9 ^{o}C in February;
- Average maximum temperatures vary from 16.4 ^{o}C in July to 26 ^{o}C in January;
- The average annual rainfall is approximately 1213.4 mm, with rainfall greater than 1 mm occurring on an average of 99.7 days per year; and
- Monthly rainfall varies from 68.1 mm in September to 133.5 mm in June with the wettest periods occurring on average in January to June.

[12] http://www.bom.gov.au/climate/averages/tables/cw_067026.shtml, Commonwealth of Australia, 2020 Bureau of Meteorology, Product IDCJCM0028 Prepared at Thu 05 Mar 2020 and accessed by JBS&G on 06 March 2020

3. Previous Environmental Investigations

3.1 Preliminary Site Investigation (DP 2020)

DP was engaged by Sydney Grammar School to conduct a Preliminary Site Investigation (PSI) at the southern portion of the subject site containing tennis courts, car park and pavilion. The objective of the PSI was to provide an indication of the risk and nature of potential contamination at the investigation area, identify any significant data gaps, and to provide recommendations for further works. The report also included a preliminary assessment of potential ASS and a preliminary waste classification assessment.

The scope of works included a review of readily available site information, a site walkover and limited intrusive investigation comprising advancement of seven boreholes and subsequent sampling and analysis.

A comprehensive review of site history was undertaken as part of DP (2020) which is summarised as follows. The investigation area was historically used for market gardening purposes prior to its purchase by SGS in 1907 for private recreational purposes as part of the school. The investigation area remained an open grassed area until 1955 and was subsequently developed with the construction of existing tennis courts, car park and pavilion/grandstand with several small structures present for periods of time.

DP (2020) noted that a former gasworks site was identified at White City, Paddington NSW, located approximately 80 m to the east of the investigation area, however, based on review of available historical information, DP (2020) noted that the gasworks comprised only a gasometer associated with the storage and regulation of local gas supply located further to the north near New South Head Road, with the gasometer decommissioned in 1943. Given the relative distance and position downgradient relative to the investigation area the former gasometer was not considered to pose a significant historical contamination risk by DP (2020). Five sites notified to the EPA under Section 60 of the CLM Act were identified within 1 km radius with three sites including a former landfill at 18-28 Neild Avenue listed by the EPA as no longer requiring regulation under the CLM Act. The remaining two sites including the service station located 800 m to the south west and a marina located 750 m to the north east, were currently regulated by the EPA under the CLM Act. Given the relative distance, these sites were not considered to pose a significant contamination risk to the investigation area.

Intrusive site investigations undertaken by DP (2020) identified fill material comprising sandy fill to a depth of 2.0-3.5m bgs, with inclusions of brick, concrete and sandstone gravel and minor charcoal, ash, clinker and organic matter. Clayey sand fill material with trace ash, charcoal and clinker was encountered from 2.5-6.0m bgs. Fill material was reported to be underlain by sand and sandstone bedrock.

Analysis of selected soil samples for a broad range of COPCs including heavy metals, polycyclic aromatic hydrocarbons (PAHs), total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs), phenols and asbestos was undertaken. In addition, analysis of selected soil samples was undertaken for potential ASS assessment.

A number of soil sampling locations were identified exceeding the adopted health-based criterion for benzo(a)pyrene Toxic Equivalence Quotient (TEQ). Four locations were reported to exceed 2.5 times the adopted health-based criterion for benzo(a)pyrene TEQ and lead indicative of potential contamination hot spots.

Additionally, elevated concentrations of PAH, metals and TRH were identified at a number of locations in exceedance of adopted ecological criteria. In consideration of the higher reliability CRC CARE (2017) Ecological Screening Level (ESL) for benzo(a)pyrene, DP (2020) reported the detected

benzo(a)pyrene concentrations does not constitute a significant ecological risk, however, noted two locations were identified to exceed 2.5 times the ecological criteria for copper and five locations for copper, lead, chromium and TRH.

DP (2020) reported a weak to distinct hydrocarbon odour was reported in the fill material in borehole BH5 advanced off-site, indicating a potentially localised contamination source. The building materials (e.g., brick and concrete) observed during intrusive investigations was considered a potential indicator for the presence of hazardous building materials including asbestos. The ash and charcoal observed during intrusive investigations was considered to be the likely source of elevated PAH concentrations identified during the assessment.

Based on limited ASS testing, DP (2020) reported the northern portion of the site was potentially underlain by ASS, in particular the wet, dark grey clayey sand fill containing organic matter from depths of 2.5m bgs.

Based on preliminary waste classification assessment, DP (2020) reported the soils beneath the site contain elevated levels of both lead and benzo(a)pyrene. However, TCLP testing indicates that the contaminants are relatively immobile and may potentially be classified as General Solid Waste (GSW) non-putrescible with some soils also considered ASS and the potential for pockets of Restricted Solid Waste (RSW).

Previous samples locations are provided in **Figure 3**. Soil human health and ecological criteria exceedances are presented in **Figures 4A** and **4B**. Soil analytical results presented in DP (2020) are included in **Appendix H**.

Based on the findings of the investigation, DP (2020) concluded that remediation of contamination issues was required to render the investigation area suitable for the proposed use. A number of additional works were recommended to address data gaps and inform the remedial strategy including additional intrusive testing in order to meet the recommended EPA (1995) sampling densities and to further characterise the nature and extent of contamination across the site, additional ASS testing and waste classification and assessment of groundwater quality and potential off-site migration issues.

4. Conceptual Site Model

4.1 Potential Areas of Environmental Concern

Based on the objectives of the assessment and review of previous environmental investigations, areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs) were identified at the site, as noted in **Table 4.1**.

Table 4.1: Areas of Environmental Concern and Contaminants of Potential Concern

Area of Environmental Concern (AEC)	Contaminants of Potential Concern (COPC)
Fill materials of unknown origin used to generate current site levels.	Heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Total Recoverable Hydrocarbons (TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), Organochlorine Pesticides (OCPs), Polychlorinated Biphenyls (PCBs), Asbestos
Natural material impacted as a result of migration of COPCs in overlying fill material.	Heavy Metals, PAHs, TRHs, BTEX, OCPs and PCBs
Former market garden use, current site maintenance and associated application of pesticides	Heavy metals and OCPs
Inappropriate demolition of former site structures	Lead, PCB and asbestos
Potential off-site hydrogeologically upgradient sources of contamination	Heavy metals, TRHs and volatile organic compounds (VOCs)

4.2 Potentially Impacted Media

Based on the review of previous environmental investigations, as discussed in **Section 3**, fill material in the southern extent of the site is known to be impacted, to varying degrees, by heavy metals, PAHs and TRHs.

Where fill materials impacted with chemical based contaminants are identified, there is a potential the impact may have migrated laterally and vertically below the fill material into the natural soil profile and/or bedrock. However, based on current understanding of the site history and the low leachability of contaminants as identified during the PSI, the potential for impacts at depth is low.

4.3 Potential for Migration from Site

Contaminants generally migrate from sites via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants of concern identified as part of the site history review are in solid (e.g. metals and PAHs) and/or liquid (e.g. TRH) form.

As discussed in **Section 2**, ground surfaces at the site are a combination of sealed asphaltic pavements/building footprints and grassed/landscaped areas. Therefore, there is potential for windblown contaminants to migrate from the site.

Surface water is expected to primarily leave the site via local stormwater catchment system, however, infiltration of water into underlying soils is possible within the grassed/landscaped areas. Therefore, infiltration of water-soluble contaminants into the groundwater, if present, is considered be a potential offsite migration pathway.

4.4 Potential Human and Ecological Receptors and Exposure Pathways

Potential human receptors of environmental impact include future site users and construction/maintenance contractors engaged to work at the site, who may potentially be exposed to COPCs through inhalation or direct contact with impacted soils or groundwater present within the site.

During redevelopment of the site, complete source-pathway-receptor linkages are summarised as follows:

- Potential dermal contact with and/or ingestion of impacted soils as present at shallow depths and/or accessible by future excavations by site workers and/or users; and/or
- Potential oral and dermal contact to groundwater as accessible by future service excavations; and/or
- Potential inhalation of impacted dust generated from site soil by future site workers and/or users; and/or Potential Inhalation of vapours migrating upwards and laterally from fill and/or natural soil by future site users; and/or
- Potential contaminant uptake via vegetation (flora) or bioaccumulation within fauna.

4.5 Preferential Pathways

For this assessment, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPC as either solids, soil vapour, or liquids (surface water/groundwater).

Man-made preferential pathways may be present at the site, associated with areas of disturbed natural/fill material, service infrastructure and stormwater easements on site.

Natural preferential pathways are likely limited to natural lithological boundaries, such as between porous soils and weathered/residual bedrock, where infiltrating groundwater is vertically confined and begins to migrate laterally, and surface water drainage features.

5. Sampling and Analysis Plan

5.1 Data Quality Objectives

Data quality objectives (DQOs) were developed for the contamination assessment, as discussed in the following sections.

5.1.1 State the Problem

The site is proposed to be redeveloped as a multi-purpose hall with basement and associated aboveground car park. As such, an assessment is required to characterise potential contamination at the site, and to assess whether potential contamination from historical activities at the site may pose an unacceptable risk to future receptors for the proposed uses, or, to make recommendations to enable such conclusions to be made.

5.1.2 Identify the Decision

The following specific decisions are required to be made as part of these investigations:

- Are there any unacceptable risks to future onsite receptors?
- Are there any issues relating to background soil concentrations that exceed appropriate site soil criteria?
- Are there any impacts of chemical mixtures?
- Are there any aesthetic issues at the site?
- Is there any evidence of, or potential for, migration of contaminants from the site?
- Is a site management strategy required?
- Do acid sulfate soil conditions occur within the site that require management during future proposed site excavation/construction works?
- Has material been appropriately classified for off-site disposal?

5.1.3 Identify Inputs into the Decision

Inputs to the decisions are:

- Review of previous site investigations;
- Observations of the current site conditions made during the current investigation;
- Physical observations and interpretation of potentially contaminated media through the collection of soil and groundwater samples;
- Development of appropriate assessment criteria for evaluation of soil and groundwater impacts based on the proposed use of the site as a sports complex;
- Field parameters as measured utilising calibrated equipment during the investigation, including assessment of soil sample headspace and physicochemical parameters of groundwater;
- Laboratory analysis of soil and groundwater samples of potentially contaminated media for COPC; and
- Confirmation that data generated by sample analysis are of an acceptable quality to allow reliable comparison to assessment criteria by assessment of quality assurance / quality control as per the data quality indicators established in **Section 5.1.6**.

5.1.4 Define the Study Boundaries

The study boundaries are limited to the cadastral boundaries of the site, as shown on **Figure 2**.

The vertical extent of the soil investigation was up to 5.4 m bgs, the final depth of the deepest borehole (BH108/MW1). Groundwater wells were installed to depths between 4.5-5.4 m bgs.

Due to the project objectives, seasonality was not assessed as part of this investigation. Data is therefore representative of the timing and duration of the current investigation.

5.1.5 Develop a Decision Rule

The decision rules adopted to answer the decisions identified in **Section 5.1.2** are summarised in **Table 5.1**.

Table 5.1 Summary of Decision Rules

Decision Required to be Made	Decision Rule
1. Are there any unacceptable risks to future onsite receptors?	a) The nature and extent of soil impacts was assessed, and analytical data was compared against current EPA endorsed criteria established in **Section 7**. Statistical analyses of the data in accordance with relevant guidance documents was undertaken, where necessary, to facilitate the decisions. The following statistical criteria was adopted with respect to soils: Either: the reported concentrations were all below the site criteria; Or: the average site concentration for each analyte was below the adopted site criterion; no single analyte concentration exceeded 250 % of the adopted site criterion; and the standard deviation of the results was less than 50 % of the site criteria. And: the 95 % upper confidence limit (UCL) of the average concentration for each analyte was below the adopted site criterion. If the statistical criteria stated above were satisfied, and an assessment of risk indicates no unacceptable risks, the decision was No. Otherwise, the answer to the decision was Yes.
	b) Groundwater analytical data was compared against EPA endorsed criteria established in **Section 7**. If the reported concentrations were all below the Site Criteria, the answer to the decision was No; If analytical concentrations were in excess of the Site criteria, further consideration of potential risks would be required to establish whether the results are indicative of background conditions. If this is not the case, then the answer to the decision is Yes.
2. Are there any issues relating to background soil concentrations that exceed appropriate site soil criteria?	If the 95% UCL of surface soils exceeds published background concentrations Olszowy et al. (1995), the decision was Yes. Otherwise, the answer to the decision was No.
3. Are there any impacts of chemical mixtures?	Were there more than one group of contaminants present which increase the risk of harm? If Yes, the answer to the decision was Yes. Otherwise, the answer to the decision was No.
4. Are there any aesthetic issues at the site?	Were there any ACM fragments on the ground surface or within the soil profile, any unacceptable odours or soil discolouration associated with site contamination? If Yes, the answer to the decision was Yes. Otherwise, the answer to the decision was No.
5. Is there any evidence of, or potential for, migration of contaminants from the site?	Based on assessment results, a determination was made with consideration to the total mass of contaminants, and migration via preferential pathways, regarding whether there is an unacceptable potential for contamination to migrate from the Site? If yes, the answer to the decisions is Yes. Otherwise, the answer to the decision is No.

Decision Required to be Made	Decision Rule
6. Is a site management strategy required?	Is the answer to any of the above decisions Yes? If yes, a site management strategy is required to address unacceptable contamination concerns at the site so as to make the site suitable for the proposed site use. If no, a site management strategy is not required and the site is considered suitable, from a contamination view point for the proposed use.
7. Do acid sulfate soil conditions occur within the site that require management during future proposed site excavation/construction works?	Laboratory analysis results obtained during site investigation works within the site will be compared against site acid sulfate soil action criteria published in the Acid Sulfate Soil Manual (ASSMAC 1998). Consideration will be given to the depth of disturbance necessary in this area of the site to complete the proposed excavation and future construction works. If the laboratory results exceed the adopted site assessment criteria and the likely construction works have the potential to result in disturbance of the identified acid sulfate soils, then the answer to the decision is Yes and an Acid Sulfate Soil Management Plan will be required where appropriate, specific to the development details of the respective Stage. Otherwise, the answer to the decision will be No.
8 Has material been appropriately classified for off-site disposal?	Laboratory assessment data was compared to threshold concentrations provided in EPA (2014). If a waste classification can be provided to material at the site in accordance with EPA (2014), the answer to the decision is Yes. Otherwise, the answer to the decision is No.

5.1.6 Specify the Limits on the Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which were used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC (2013), appropriate indicators of data quality (DQIs used to assess QA/QC) and standard JBS&G's procedures for field sampling and handling.

To assess the usability of the data prior to making decisions, the data was assessed against pre-determined Data Quality Indicators (DQIs) for completeness, comparability, representativeness, precision and accuracy. The acceptable limit on decision error is 95% compliance with DQIs.

The pre-determined Data Quality Indicators (DQIs) established for the project are discussed below in relation to precision, accuracy, representativeness, comparability and completeness (PARCC parameters), and are shown in **Table 5.2**.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to

collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.

- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.

If any of the DQIs are not met, further assessment will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of the data.

Table 5.2 Summary of Quality Assurance / Quality Control Program

Data Quality Objective	Frequency	Data Quality Indicator
Precision		
Blind duplicates (intra laboratory)	1 / 20 samples	<50% RPD[1]
Split duplicates (inter laboratory)	1 / 20 samples	<50% RPD[1<]
Laboratory Duplicates	1 per lab batch	<50% RPD[1]
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes	All samples	-[2]
Samples extracted and analysed within holding times.	-	organics (14 days), inorganics (6 months)
Trip spike (for volatiles)	1/sampling event	70-130% recovery
Trip blank	1/sampling event	<LOR
Rinsate	1 per event for non-disposable equipment	<LOR
Comparability		
Standard operating procedures for sample collection & handling	All samples	All samples
Standard analytical methods used for all analyses	All samples	National Association of Testing Authorities (NATA) accreditation
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples[2]
Limits of reporting appropriate and consistent	All samples	All samples[2]
Completeness		
Sample description and COCs completed and appropriate	All samples	All samples[2]
Appropriate documentation	All samples	All samples[2]
Satisfactory frequency and result for QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted Site assessment criteria	All samples	LOR<= Site assessment criteria

1. If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment was made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.
2. A qualitative assessment of compliance with standard procedures and appropriate sample collection methods was completed during the DQI compliance assessment.

5.1.7 Optimize the Design for Obtaining Data

Various strategies for developing a statistically based sampling plan are identified in EPA (1995[13]), including judgemental, random, systematic and stratified sampling patterns.

[13] Contaminated Sites: Sampling Design Guidelines. NSW EPA 1995 (EPA 1995)

As development plans for the site evolved during the project the design of the sampling has been modified. At the commencement of the current DSI program, the southern portion of the subject site containing tennis courts, car park and pavilion encompassing approximately 0.56 ha, was proposed for development as a sporting facility comprising of a multi-purpose hall with two-level basement carpark. For a site of 0.56 ha, NSW EPA (1995) sampling guidelines recommends a minimum sampling density between 13 and 15 sampling locations. It is noted that seven intrusive sampling locations (BH01-BH07) were completed as part of the PSI (DP 2020). Therefore, a total of eight boreholes (BH101-BH108) were advanced in this portion of the site targeting accessible soils outside the proposed basement footprint to complement the PSI (DP 2020) dataset. Sampling was not undertaken within the central portion of existing multipurpose/tennis courts due to access limitations, however, given the site history, the subsurface profile is expected to be broadly consistent with other parts of the site.

Sampling for ASS investigation was also undertaken at boreholes BH105, BH106 and BH108 with laboratory analysis of samples for sPOCAS.

To assess the potential contaminant migration associated with the upgradient service station site and former land use of properties to the west of Neild Avenue, one groundwater monitoring well was installed along the western site boundary, at a location interpreted to be hydrologically upgradient of the site. Two monitoring wells were installed along the northern site boundary in locations interpreted to be hydrologically downgradient of the site.

Subsequent to the above investigation works, the proposed development was modified to include an aboveground carpark in the vicinity of the cricket nets located off Alma Street. Current development plans are provided in **Appendix I.** Based on the updated development boundary the site comprises an area of 1.0775 ha. NSW EPA (1995) recommends a minimum sampling density between 21 and 25 sampling locations for a site of 1.0775 ha. Therefore, 10 additional boreholes (BH109-BH118) were advanced in this portion of the site placed on a generally systematic (grid) basis. Boreholes BH109-BH114 were placed strategically within the proposed footprint to address combined environmental and geotechnical requirements.

5.2 Investigation Methodology

5.2.1 Soil Sampling Methodology

Soil sampling was completed using a drill rig via push tube and solid/hollow flight auger or using hand auger. Soil samples were collected from boreholes BH101, BH102, BH103, BH104 and BH107 at surface (0-0.15 m), 0.3 m, 0.5 m and then at 0.5 m intervals to a maximum depth of 1m (or prior refusal), whichever was the shallower. Soil samples were collected from boreholes BH105, BH106 and BH108 from the soil surface, and then approximately 0.3 m bgs, 0.5 m bgs, 1.0 m bgs and every metre thereafter to a maximum depth of 5.4 m bgs. Soil samples were collected from boreholes BH109-BH118 via hand auger and push tube. with soil samples collected at surface (0-0.15 m), 0.3 m, 0.5 m and then at 0.5 m intervals to a maximum depth of 4 m or 0.5 m into natural materials (or prior refusal), whichever was the shallower.

Where significantly differing soil stratigraphy was encountered, the soil sampling density was increased to ensure that each material type was sampled for potential analysis. Soil samples were collected from the surface to natural materials at every investigation location.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indicators of contamination were noted on investigation logs presented in **Appendix C**. A calibrated PID was utilised to screen for volatile organic compounds (VOCs) within the sampled material. Calibration records are presented in **Appendix D**.

Soil samples for the contamination assessment were collected using a fresh, dedicated pair of nitrile gloves and immediately transferred to laboratory supplied sample jars and bags. The sample

containers were then transferred to a chilled esky for sample preservation prior to and during shipment to the testing laboratory. Samples destined for sPOCAS analysis were placed in sealable plastic bags, all excess air removed and the samples then placed directly on ice.

A chain-of-custody form was completed and forwarded with the samples to the testing laboratory.

Based upon field observations, samples were analysed in accordance with the analytical schedule detailed in **Table 5.3**.

5.2.2 Groundwater Monitoring Well Installation

The wells were installed between 4.5 and 5.4 m bgs with MW3 installed targeting the perched shallow groundwater occurring in the fill/natural sand interface. The wells were constructed from 50 mm unplasticised polyvinyl chloride (uPVC) screen and casing, combined with a lockable cap and completed as standpipes. The screen was installed such that the encountered water level was within the screened interval, allowing for the detection of Light Non-Aqueous Phase Liquids (LNAPLs), if present.

Surrounding the uPVC screen a graded (2mm) sand was utilised to construct a 'filter pack' which limited clogging of the screen with excess soils. Additionally, above the screened interval, a bentonite seal was installed to reduce the potential for surface water, perched water and/or liquid phase contaminants to enter the well from outside the screened interval.

After installation, the monitoring wells were developed to remove excess silt and sediment resultant from the installation process. The wells were then allowed to settle for a week prior to sampling.

5.2.3 Groundwater Sampling

Each groundwater monitoring well was gauged with an Interface Probe (IP) which can detect Non-Aqueous Phase Liquids (NAPLs).

The wells were purged with a low flow peristaltic pump, using fresh disposable High Density Polyethylene (HDPE) tubing and silicon, to remove the standing water. During removal, physicochemical parameters (pH, electrical conductivity (EC), dissolved oxygen (DO), reduction-oxidation potential (Eh) and temperature) were monitored until stabilisation. Groundwater samples were taken after parameter stabilisation has occurred.

Collected groundwater samples were immediately filtered (as necessary) and transferred to laboratory supplied sample bottles. The sample containers were then transferred to a chilled iced box for sample preservation prior to and during shipment to the testing laboratory. A chain of custody form was completed and forwarded with the samples. Samples were analysed in accordance with the laboratory schedule (**Table 5.3**).

5.2.4 Decontamination

Prior to the commencement of soil sampling activities, non-disposable sampling equipment including the sampling auger was cleaned with deionised water/detergent spray, rinsed with tap water and then air dried. The equipment was inspected to ensure that no soil, oil, debris or other contaminants were apparent on the equipment prior to the commencement of works. Sampling equipment was subsequently decontaminated using the above process between each sampling location. Fresh liners were used at each location advanced via push tube. Push tube sleeves were removed from the advancement casing and laid on the ground for inspection, soil samples were collected directly from the push tube sleeve. A new pair of disposable nitrile gloves were used to collect each sample.

Groundwater samples were collected using dedicated disposable sampling equipment which was disposed of after use.

5.2.5 Duplicate and Triplicate Sample Preparation

At selected sample locations, sufficient soil and groundwater was collected to provide a primary, blind (intra-laboratory) duplicate and split (inter-laboratory) duplicate (triplicate) sample using the sampling methodology outlined above.

The collected soil samples were stored with minimal disturbance to reduce the potential for loss of volatiles and placed in clean glass jars and sample bags as appropriate. Soil samples were not homogenised to minimise the potential loss of volatiles.

The collected groundwater samples were extracted from the groundwater wells after purging and the primary, blind duplicate and split duplicate sample containers were filled consecutively, one quarter at a time. Groundwater samples were not homogenised in order to minimise the loss of volatiles.

Each sample was labelled with primary, duplicate or triplicate sample identification before being placed in the same chilled esky for transport to the laboratory.

5.2.6 Laboratory Analysis

JBS&G contracted Eurofins MGT (Eurofins) as the primary laboratory for the required chemical analyses. The secondary laboratory was Envirolab Services Pty Ltd (Envirolab). Both laboratories were NATA accredited for the required analyses. In addition, the laboratories were required to meet JBS&G's internal quality assurance/quality control (QA/QC) requirements. The completed analysis schedule is summarised in **Table 5.3.**

Table 5.3 Analytical Schedule

Sample Type	No. of Sampling Locations	Laboratory Analyses (exc. QA/QC)
Soil	18 locations	Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) – 27 samples TRHs – 27 samples PAHs – 27 samples OCP/PCB – 27 samples Asbestos – 18 samples (500 ml per NEPC 2013 TCLP PAH– 4 samples TCLP lead – 1 sample Soil Characterisation (pH, CEC, % Clay, TOC) – 2 samples sPOCAS – 8 samples
Groundwater	3 locations	Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) – 3 samples TRH/VOCs –3 samples PAH – 3 samples pH, electrical conductivity, total dissolved solids – 3 samples Total suspended solids – 3 samples

In addition to the above primary analyses, to address the DQIs, field duplicate and triplicate soil and groundwater samples were analysed at a rate of one per 20 primary samples. A single trip spike and single trip blank accompanied each sample batch.

6. Assessment Criteria

6.1 Regulatory Guidelines

Development of site assessment criteria and the associated scope of investigation was undertaken with consideration to aspects of the following guidelines, as relevant:

- *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)*, National Environment Protection Council (NEPC 2013);
- *Contaminated Sites: Sampling Design Guidelines*, NSW EPA, 1995 (EPA 1995);
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines (ANZG 2018);
- *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme, 3rd Edition*, NSW EPA, 2017 (EPA 2017);
- *Acid Sulfate Soil Manual*, New South Wales Acid Sulfate Management Advisory Committee, August 1998 (ASSMAC 1998)
- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*, NSW DEC, March 2007 (DEC 2007);
- National Water Quality Management Strategy – Australian Drinking Water Guidelines 6 2011, National Health and Medical Research Council, Updated August 2018, (NHMRC 2018);
- *Guidelines for Managing Risks in Recreational Water*, NHMRC, 2008 (NHMRC 2008);
- *Contaminated Sites: Guidelines on Duty to Report Contamination under the Contaminated Land Management Act 1997*, NSW EPA, September 2015 (EPA 2015); and
- *Consultants Reporting on Contaminated Land,* NSW EPA, April 2020 (EPA 2020).

6.2 Soil Assessment Criteria Selection

As per the decision process for assessment of urban development site (EPA 2017), a set of health and ecological assessment thresholds derived from NEPC (2013) was used for evaluation of site contamination data collected for this assessment. The site requires assessment for future use as a sporting facility comprising of a sporting facility comprising of a multi-purpose hall with basement and associated aboveground car park. Based on consideration of typical uses, and NEPC (2013), the data has been conservatively assessed against criteria for residential with minimal access to soils land use and public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths land use scenarios to assess potential contamination risks for development and use as a sports complex. The site assessment criteria are presented on **Table A** and summarised as follows:

- Health based investigation levels (HILs) for recreational land use (HIL C);
- Health screening levels (HSLs) for vapour intrusion for low-high density residential land use, for sand soil types (HSL A& B);
- Management limits for TRH fractions for residential, parkland and public open space land use, for coarse soil types;
- HSLs for asbestos in soil for recreational land use (HSL C);
- Ecological investigation levels (EILs) for urban residential/public open space land use, site specific; and

- Ecological screening levels (ESLs) for urban residential/public open space land use, coarse soil.

Site-specific EILs for some metals were calculated consistent with NEPC (2013), using average site specific data (pH = 7.1 pH units, total organic carbon (TOC) = 2.65 %, clay percentage = 8.15% and cation exchange capacity (CEC) = 13 meq/100g), as presented in **Table A**.

In addition to the above, aesthetic considerations as per NEPC (2013) were taken into account during the current investigation.

6.3 Groundwater Investigation Levels

DEC (2007) instructs that groundwater investigation levels (GILs) be based on a consideration of groundwater's environmental values. Environmental values are defined in ANZG (2018) as *"...particular values or uses of the environment that are important for a healthy ecosystem or for public benefit, health, safety or welfare which require protection from the effects of stressors".*

NEPC (2013) presents six environmental values which are required to be considered in the assessment of contaminated groundwater including:

- Aquatic ecosystems;
- Aquaculture and human consumers of food;
- Agricultural water;
- Recreation and aesthetics;
- Drinking water; and
- Industrial water.

Current and projected contaminant concentrations in groundwater are required to be compared to the GILs at the points of existing and realistic future use for each relevant environmental value.

Beneficial reuse of groundwater is considered unlikely, however, as a conservative guideline, the health and aesthetics based Australian Drinking Water Guidelines (NHMRC 2018) for drinking water were adopted for the purposes of the assessment. In addition, conservative screening criteria, for the assessment of risk to construction/maintenance workers as a result of short term work involving interaction with groundwater at the site, has been adopted as 10 times the health values for Drinking Water published in (NHMRC 2018).

To assess the potential risk of contaminated groundwater migrating from the site to Rushcutters Bay, reference has been made to the ANZG (2018) default trigger values. Given the urbanised nature of the receiving water body, a 95 % protection of species value has been adopted. Where no high reliability values have been specified, low reliability and/or screening level values have been utilised for the purpose of site assessment and screening.

Groundwater analytical data for this assessment has also been compared against NEPC (2013) groundwater HSLs for vapour intrusion for low-high density residential land use in sand soils.

The adopted groundwater assessment criteria are presented on **Table B**.

6.4 Material Classification for Off-site Disposal

Waste classification was carried out in accordance with the Waste Classification Guidelines (EPA 2014). Initially, the soils were assessed against the special waste criteria, primarily for the presence of asbestos then, where soils were not pre-classified, comparison of initial total soil chemical analytical data was undertaken to classify waste by chemical assessment without the TCLP testing.

The following initial screening criteria was adopted. Maximum values of specific contaminant concentrations (SCC) for classification without TCLP:

- Below Contaminant Threshold 1 (CT1) – General Solid Waste (GSW);
- Above CT1 and below Contaminant Threshold 2 (CT2) – Restricted Solid Waste (RSW); and
- Above CT2 – Hazardous Solid Waste.

Where soil sample analytical results indicated that contaminants were present at concentrations above either CT1 or CT2 thresholds, representative TCLP analysis was undertaken to facilitate comparison of SCC together with leachable concentrations. Maximum values for leachable concentration and SCC when used together:

- Below SCC1 and TCLP1 – General Solid Waste (GSW);
- Above SCC1 and/or TCLP1 and below SCC2 and TCLP2 – Restricted Solid Waste (RSW); and
- Above either SCC2 and/or TCLP2 – Hazardous Solid Waste.

Contaminant specific waste classification criteria are presented as part of **Table C**.

6.5 Acid Sulfate Soil (ASS) Assessment Criteria

In NSW development of land subject to ASS occurrence is managed in accordance with guidance provided in the ASSMAC *Acid Sulfate Soil Manual* (1998). **Table 7.4** presents Site Action Criteria (SAC) based on ASS material laboratory analysis results for three broad texture categories. The SAC are based on the percentage of oxidisable sulfur or equivalent acid trail (i.e. titratable actual acidity-TAA or titratable potential acidity-TPA) results. There are two categories based on the scale of the proposed disturbance with the SAC for small scale (i.e. less than 1000 tonnes) works based upon the texture of the soil material and the SAC for large scale works (greater than 1000 tonnes) adopting the most sensitive SAC, being the SAC for, coarse textured soils in small scale works.

Exceedances of the 'Site Action Criteria' (SAC) attributable to ASS material generally triggers the need to prepare a management plan and is based on the percentage of oxidisable sulfur (or equivalent TPA, TAA) for broad categories of soil. However, it is noted that other soil properties and constituents may cause acidic conditions in soils that are not related to acid sulfate soil conditions. This may include sources of organic acidity where the soils have a pH of less than 5 and positive titratable actual acidity (TAA) or titratable potential acidity (TPA) but have no detectable sulfur source (i.e. no Spos%). In this case, exceedance of the Acid Trail SAC is considered not to be a trigger for treatment of these soils.

Table 7.4 ASSMAC Site Action Criteria Based on General Soil Texture Soil Categories

Type of Material		Action Criteria 1-1000 Tonnes Disturbed		Action Criteria >1000 Tonnes Disturbed	
Texture Range (McDonald et al, 1990	Approx Clay Content	**Sulfur Trail** % S oxidisable	**Acid Trail** (mol H^+/tonne)	**Sulfur Trail** % S oxidisable	**Acid Trail** (mol H^+/tonne)
Coarse Texture Sand to loamy sand	<5 %	0.03	18	0.03	18
Medium Texture Sandy loam to light clay	5-40 %	0.06	36	0.03	18
Fine Texture Medium to heavy clay and silty clay	>40 %	0.1	52	0.03	18

7. Quality Assurance / Quality Control

7.1 QA/QC Results

The QA/QC result for soil and groundwater samples collected at the site during the current assessment are summarised in **Table 7.1** and discussed in **Section 7.2**. Detailed QA/QC results are included in the laboratory reports in **Appendix E**, and in the Esdat output included in **Appendix F.**

Table 7.1 QA/QC Results Summary

Data Quality Indicator	Results	DQI met?
Precision		
Soil blind duplicates (intra laboratory)	0-145 % RPD Intra laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Soil split duplicates (inter laboratory)	0-149 % RPD Inter laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Groundwater blind duplicates (intra laboratory)	0-84 % RPD Intra laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Groundwater split duplicates (inter laboratory)	0-120 % RPD Inter laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Laboratory duplicates	0-71% % RPD soil 0-42% RPD groundwater laboratory duplicates were analysed at a rate of 1 in 20 samples.	Partial[1]
Accuracy		
Surrogate spikes	53-127% Recovery - Soil 54-134 % Recovery - Groundwater Surrogate spikes were completed for all organic samples	Partial[1]
Laboratory Control Samples	88-127% Recovery - Soil 77-126 % Recovery - Groundwater Laboratory control samples were completed for all organic and metal analytes	Yes
Matrix spikes	72-165 % Recovery - Soil 72-124 % Recovery Groundwater Matrix spikes were completed for all organic and metals samples	Partial[1]
Representativeness		
Sampling appropriate for media and analytes	All sampling conducted in accordance with JBS&G procedures	Yes
Laboratory blanks	<LOR	Yes
Samples extracted and analysed within holding times.	Samples were extracted and analysed within holding times.	Yes
Trip spikes	93-120 %	Yes
Trip blanks	<LOR	Yes
Rinsate blank	<LOR	Yes
Comparability		
Standard operating procedures used for sample collection & handling	Field staff used same standard operating procedures throughout works	Yes
Standard analytical methods used	Standard analytical methods used.	Yes
Consistent field conditions, sampling staff and laboratory analysis	Sampling was conducted by consistent staff members using standard operating procedures in the same conditions throughout the works. The laboratories utilised were consistent throughout the investigation.	Yes
Limits of reporting appropriate and consistent	Limits of reporting were consistent and appropriate.	Yes
Completeness		
Soil description & Chains of Command (COCs) completed	All logs and COCs were completed appropriately.	Yes

Data Quality Indicator	Results	DQI met?
Appropriate documentation	All appropriate field documentation is included in the appendices.	Yes
Satisfactory frequency/result for QC samples	The QC results are considered adequate for the purposes of the investigation.	Yes
Data from critical samples is considered valid	Data from critical samples is considered valid.	Yes

[1] See discussion of DQI exceedances in **Section 7.2**.

7.2 QA/QC Discussion

7.2.1 Precision

Soil Duplicates

The RPDs between primary soil sample MW3_1.0-1.1 and intra-laboratory duplicate (QC01) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: arsenic (94%), chromium (73%), lead (83%), mercury (67%), benz(a)anthracene (75%), fluoranthene (117%), phenanthrene (129%), total PAHs (145%) and pyrene (110%).

The RPDs between primary soil sample BH109 0-0.1 and intra-laboratory duplicate (QC01) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: TRH>C34-C40 (62%), TRH>C10-C40 (109%) and total PAH (89%). The RPDs between primary soil sample MW3_1.0-1.1 and inter-laboratory duplicate (QA01) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: lead (70%), fluoranthene (67%) and phenanthrene (82%).

The RPDs between primary soil sample BH109 0-0.1 and inter-laboratory duplicate (QA01) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: arsenic (116%), lead (64%), nickel (133%), TRH>C34-C40 (62%) and TRH>C10-C40 (149%).The RPDs for the intra-laboratory and inter-laboratory duplicates are presented in **Appendix F.** The elevated RPDs are considered to be the result of heterogeneity in the soil samples collected and low reported concentrations close to the laboratory LOR. The elevated RPD results are not considered to influence the outcome of the investigation.

Groundwater Duplicates

The RPDs between primary groundwater sample (MW3) and intra-laboratory duplicate (QC) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: arsenic (84%), naphthalene (55%), acenaphthene (60%), acenaphthylene (70%), anthracene (67%), fluorene (73%), phenanthrene (64%), total PAHs (64%) and pyrene (67%).

The RPDs between primary groundwater sample (MW3) and inter-laboratory duplicate (QA) analytical results were within the acceptable limits of deviation from the DQI with the exception of the following: arsenic (62%), naphthalene (61%), acenaphthene (84%), acenaphthylene (103%) fluoranthene (120%), fluorene (86%), phenanthrene (103%) and pyrene (86%).

The RPDs for the intra-laboratory and inter-laboratory duplicates are presented in **Appendix F** and are considered to be the result of generally low total analyte concentrations, being within one order of magnitude of the laboratory's LOR. The elevated RPD results are not considered to influence the outcome of the investigation

Laboratory Duplicates

Laboratory duplicate soil and groundwater samples were analysed by the testing laboratory at a rate greater than 1 per 20 primary samples. The results of analysis for the laboratory duplicates were generally within the DQI targets with the exception of mercury (71%) in duplicate S20-My43461 and indeno(1.2.3-cd)pyrene (51%) in duplicate S20-My43464. However, the laboratory reported stated that these elevated RPDs were within the NATA accredited laboratory acceptance criteria.

The laboratory report indicates that copper (48%) in duplicate S20-My43450 and zinc (48%) in duplicate S20-My43461 were reported outside the recommended acceptance criteria with further analysis indicating sample heterogeneity as the cause.

On this basis the DQIs for precision are considered to have been achieved for this investigation.

7.2.2 Accuracy

Surrogate Spikes

Soil and groundwater surrogate spikes were conducted on all samples submitted for organic constituent analysis and generally most recoveries were reported within the JBS&G acceptable range (70-130 %). A small number of surrogate recoveries in each media were reported outside the JBS&G acceptable range but within the laboratory's acceptable range (50-150%) under NATA accreditation.

The laboratory reported that surrogate dibutylchlorendate (OCP surrogate) recovery in samples BH102_0.7-0.8, BH103_0-0.1 and BH107_0.9-1.0 was not determined due to chromatographic interference. The laboratory further reported that limits of reporting (LORs) were raised in these samples due to matrix interference. It is noted that OCP concentrations in samples selected for analysis were reported below the laboratory LOR or at low concentrations close to the laboratory LOR.

Laboratory Control Samples

A sufficient number of laboratory control samples (LCS) were analysed for all media types in which all recoveries were generally within the preferred range (70-130%).

Matrix Spikes

A sufficient number of matrix spikes was analysed for both soil and groundwater analysis. The reported matrix spike recoveries were within the JBS&G acceptable range (70-130 %) with the exception of dieldrin reported in S20-Ma44070 (144%) and toxaphene reported in sample S20-Ma44070 (165%). The laboratory reported that matrix spike recovery was outside of the recommended acceptance criteria for these samples, however, an acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

7.2.3 Representativeness

All soil and groundwater sampling works completed during the investigation were conducted in accordance with JBS&G standard operating procedures. Soil sampling was conducted with the advancement of boreholes and groundwater sampling was completed using a low flow peristaltic pump.

Where applicable, disposable sampling equipment were used during the field program for sampling of media with disposable gloves used for collection of each soil sample.

All field equipment was decontaminated where required and calibrated appropriately as per the standard procedures**.** A record of field decontamination/calibration records are included as **Appendix D.**

There were no reported concentrations of contaminant compounds above the laboratory LOR in the laboratory method blanks for soil and groundwater analysis.

All sample extractions were prepared within the recommended holding times.

A trip spike was submitted with each sampling event during the soil and groundwater investigation. Trip spike recoveries was within the acceptable limits of 70-130%, indicating suitable preservation methods were achieved during sampling and transport of the samples.

A trip blank was submitted with each sampling event during the soil and groundwater investigation. There were no reported concentrations of BTEX compounds above the laboratory LOR, thus

demonstrating the absence of significant contaminant cross contamination issues during the temporary storage and transportation of samples analysed during this investigation.

One rinsate blanks were collected for the groundwater sampling event and one rinsate was collected for each soil sampling event which is appropriately representative of the extent of sampling and analysis completed. Analyte levels were all below detection limits.

7.2.4 Comparability

Primary samples were submitted to Eurofins|mgt, and QA/QC triplicate samples were submitted to Envirolab Services. Both laboratories are NATA accredited for all analytical methods used. Laboratory analysis methods for all contaminants adopted during the investigation used limits of reporting less than the site assessment criteria to ensure that contaminant concentrations could be confidently identified as being less than the adopted site assessment criteria.

Experienced JBS&G personnel undertook all sampling in accordance with standard JBS&G sampling methods.

Field staff were consistent during the soil and groundwater investigation.

7.2.5 Completeness

All laboratory and field documentation is complete and correct. Chain of custody documentation is provided with laboratory reports in **Appendix E**.

The frequency of analysis of all QC samples was considered appropriate and valid.

7.3 QA/QC Conclusions

The field sampling and handling procedures across the site produced QA/QC results which indicate that the investigation data collected is of an acceptable quality.

The NATA certified laboratory reports indicate that the project laboratories were achieving levels of performance within its recommended control limits during the period when the samples from this program were analysed.

Based on the results of the field and laboratory QA/QC program, the soil and groundwater data is of an acceptable quality upon which to draw conclusions regarding the environmental condition of the site.

8. Investigation Results

8.1 Soil Observations

Soil sampling was conducted on 27-30 March and 27-28 May 2020 at the sampling locations shown on **Figure 3**. Borehole logs are included in **Appendix C**. A summary of soil conditions present at the site is provided as follows.

A total of eight boreholes (BH101-BH108) were advanced via hand tools and mechanical drill rig for the purpose of soil sampling in the southern portion of the site. Fill material was encountered to depths ranging from 2.6 to 3.5 m bgs at deeper boreholes BH105, BH106 and BH108. The remaining boreholes were terminated in the fill upon achieving targeted depth of 1 m bgs or prior refusal. Fill contained low proportions of gravels, with anthropogenic inclusions of terra cotta and glass. Observations of ash/slag/charcoal were made in the fill material encountered at BH104, BH105 and BH108. Where natural soils were encountered at sampling locations, two distinct soil types were noted underlying the fill material which comprised grey/brown homogeneous sand and grey clayey sand. Charcoal/organic odours were reported in the fill material encountered at boreholes BH105 and BH108.

A total of 10 boreholes (BH109-BH118) were advanced via hand tools and mechanical drill rig for the purpose of soil sampling in the northern portion of the site. Fill material was encountered to depths ranging from 0.6 to 3.0 m bgs. Fill contained low proportions of gravels, with anthropogenic inclusions of glass and brick. Observations of ash/slag/charcoal were made in the fill material encountered at boreholes BH109, BH110 and BH112-BH118. Underlying natural material comprised grey sand and sandstone. Organic odours were reported in the natural material encountered at boreholes BH110, BH116, BH117 and BH118.

No staining or ACM was observed throughout the soil profile at any of the investigation locations. PID results ranged from 0.2 to 5.1 ppm. Groundwater seepage was observed during drilling of boreholes BH105, BH106 and BH108 for monitoring well installation at 2.2-3.5 m bgs. Groundwater seepage was observed between 2-3 m bgs during drilling of boreholes BH109-BH118.

8.2 Soil Contamination Analytical Results

Detailed laboratory reports and chain of custody documentation are provided in **Appendix E**. Summarised soil analytical data for COPCs are presented in **Table A.** Analyses of the data set are discussed in **Section 8.2.1** to **Section 8.2.5**. Soil human health and ecological criteria exceedances are presented in **Figures 4A** and **4B**. Statistical Analyses for the data sets (DP 2020 and JBS&G 2020), are provided in **Appendix G**.

8.2.1 Metals

Individual heavy metals concentrations in samples selected for analysis were reported at levels below the adopted health and ecological based assessment criteria with the exception of lead at BH109 2.6-2.7 (2600 mg/kg) exceeding the adopted HIL-C of 600 mg/kg and EIL of 1100 mg/kg. The elevated lead concentration reported at BH109 2.6-2.7 is greater than 250% of HIL-C and as such, when assessed statistically is considered to represent a hotspot that requires remediation/management.

8.2.2 PAH

Individual PAH compounds in samples selected for analysis were reported at levels less than the laboratory limit of reporting (LOR) and/or the adopted health and ecological based assessment criteria, with the exception of the following:

- Carcinogenic PAHs as B(a)P TEQ were reported exceeding the adopted HIL-C of 3 mg/kg in the following samples: BH101_0.2-0.3 (3.174 mg/kg), BH102_0.2-0.3 (6.591 mg/kg),

BH102_0.7-0.8 (4.706 mg/kg), BH107_0.9-1.0 (9.298 mg/kg), MW1_0.5-0.6 (11.31 mg/kg), MW3_1.4-1.5 (9.439 mg/kg), BH109 2.6-2.7 (9.357 mg/kg), BH112 0.3-0.4 (5.748 mg/kg) and BH118 0.3-0.4 (6.445 mg/kg). B(a)P TEQ concentrations reported at BH107_0.9-1.0, MW1_0.5-0.6, MW3_1.4-1.5 and BH109 2.6-2.7 were greater than 250% of HIL-C criterion and are therefore hotspots that requires remediation/ management.

Statistical analysis was undertaken for B(a)P TEQ data set available for fill materials across the site (DP 2020 and JBS&G 2020) excluding the identified hotspots, which identified standard deviation greater than half of the HIL-C criterion and 95% upper confidence limit (UCL) calculation in exceedance of HIL-C criterion. As such, the above nominated results are considered to exceed the assessed HIL-C criterion.

- B(a)P concentrations were reported exceeding the adopted ESL criterion (0.7 mg/kg) in the following samples: BH101_0.2-0.3 (2.2 mg/kg), BH102_0.2-0.3 (4.5 mg/kg), BH102_0.7-0.8 (3.3 mg/kg), BH107_0.9-1.0 (6.3 mg/kg), MW1_0.5-0.6 (7 mg/kg), duplicate QC01 collected at MW3_1.0-1.1 (0.8 mg/kg), MW2_0.2-0.3 (2 mg/kg),MW3_1.4-1.5 (6 mg/kg), BH109 2.6-2.7 (6.5 mg/kg), BH112 0.3-0.4 (4.2 mg/kg), BH114 0.2-0.3 (1.7 mg/kg), BH115 0.9-1.0 (0.9 mg/kg) and BH118 0.3-0.4 (4.8 mg/kg).

  As identified in CCME (2010[14]) referenced by NEPC (2013), plants grown on PAH contaminated soil have only limited ability to take in and incorporate anthropogenic PAHs through their root system into their overall biomass, especially PAHs with higher molecular weights including B(a)P. CCME (2020) provides B(a)P soil quality guideline for environmental health as 20 mg/kg for residential/parkland land use. As such the minor concentrations of B(a)P reported are not considered to pose an unacceptable ecological risk at the site. Ecological exceedances (where not concurrent with health-based impacts) are not considered to affect the future site use and do not warrant further assessment and/ or management.

8.2.3 TRH and BTEX

TRH in samples selected for analysis were reported at levels less than the laboratory LOR and/or the adopted health and ecological based assessment criteria, with the exception of TRH>C16-C34 concentrations reported exceeding the adopted ESL criterion (300 mg/kg) in the following samples: BH107_0.9-1 (570 mg/kg), MW1_0.5-0.6 (410 mg/kg) and MW3_1.4-1.5 (400 mg/kg).

Concentrations of BTEX compounds in samples selected for analysis were reported less than the laboratory LOR and/or the adopted health and ecological based assessment criteria.

8.2.4 OCP and PCB

Concentrations of individual OCP and PCB compounds in samples selected for analysis were reported below the laboratory LOR and/or the adopted health and ecological based assessment criteria.

8.2.5 Asbestos

Asbestos containing material was not observed during the current investigation. Asbestos in soil analysis results identified no concentrations above the adopted assessment criteria in soil samples submitted to the laboratory for analysis.

8.3 In-situ Soil Waste Classification

In-situ waste classification was undertaken for fill material across the site. Detailed laboratory reports and chain of custody documentation are provided in **Appendix E**. Summarised soil analytical data are presented in **Table C.**

[14] Canadian Soil Quality Guidelines for Carcinogenic and Other Polycyclic Aromatic Hydrocarbons (PAHs): Environmental and Human Health Effects – Scientific Criteria Document, Canadian Council of Ministers of the Environment (CCME), 2010.

8.3.1 Heavy Metals

Heavy metals were reported below CT1 criteria, consistent with General Solid Waste with the exception of the following:

- Lead concentrations reported in BH101_0.2-0.3 (160 mg/kg), BH102_0.2-0.3 (270 mg/kg), BH102_0.7-0.8 (290 mg/kg), BH107_0.9-1.0 (140 mg/kg), MW1_0.5-0.6 (180 mg/kg), MW2_0.2-0.3 (110 mg/kg),MW3_1.4-1.5 (100 mg/kg), BH109 2.6-2.7 (2600 mg/kg), BH112 0.3-0.4 (150 mg/kg), BH113 0.4-0.5 (410 mg/kg) and BH118 0.3-0.4 (130 mg/kg). However, in accordance with the Waste Classification Guidelines: Classifying Waste (NSW EPA 2014), waste contaminated with lead (including lead paint waste) from residential premises or educational or childcare institutions are pre-classified as General Solid Waste (non-putrescible).
- Nickel concentration reported in sample BH103_0-0.1 (85 mg/kg). Statistical analysis was undertaken for the nickel data set available for the site (DP 2020 and JBS&G 2020), which identified maximum concentrations less than 250% of CT1, standard deviation less than half of CT1 and 95% UCL less than CT1.

8.3.2 PAH

B(a)P concentrations were reported in exceedance of CT1 criterion in samples BH101_0.2-0.3 (2.2 mg/kg), BH102_0.2-0.3 (4.5 mg/kg), BH102_0.7-0.8 (3.3 mg/kg), BH107_0.9-1.0 (6.3 mg/kg), MW1_0.5-0.6 (7 mg/kg), MW2_0.2-0.3 (2 mg/kg), MW3_1.4-1.5 (6 mg/kg), BH109 2.6-2.7 (6.5 mg/kg), BH112 0.3-0.4 (4.2 mg/kg), BH114 0.2-0.3 (1.7 mg/kg), BH115 0.9-1.0 (0.9 mg/kg) and BH118 0.3-0.4 (4.8 mg/kg). TCLP analysis of representative samples MW1_0.5-0.6 and MW3_1.4-1.5 were reported <0.001 mg/L. All samples were reported below SCC1 and TCLP1, consistent with General Solid Waste.

8.3.3 TRH and BTEX

All analysed samples reported concentrations less than the CT1 threshold.

8.3.4 OCP and PCB

All analysed samples reported concentrations less than the CT1 threshold.

8.3.5 Asbestos

Asbestos containing material was not observed during the current investigation. Laboratory analysis of selected soil samples indicated that asbestos fines, friable asbestos and ACM were not detected in any of the samples analysed.

8.4 sPOCAS

The soil sampling locations are shown on **Figure 3** and summarised laboratory results are presented in **Table 8.1**. Detailed laboratory reports and chain of custody documentation are provided in **Appendix E**.

Review of results of analysis against adopted criteria (**Table 8.1**) indicates two of eight samples exceed action criteria for 1-1000 tonnes of disturbed soils and action criteria for >1000 tonnes of disturbed soils. Review of materials indicates that PASS occurs at the site and will require management if disturbed.

Table 8.1: Results of sPOCAS Analysis

Sample	Sample description	Texture	Action Criteria (1-1000 tonnes disturbed)		Action Criteria (>1000 tonnes disturbed)	
			Sulfur Trail (S_{pos}%) - S %	Acid Trail (TPA/TSA) mol H^+/tonne	Sulfur Trail (S_{pos}%) - S %	Acid Trail (TPA/TSA) mol H^+/tonne
		Coarse	0.03	18	0.03	18
		Medium	0.06	36	0.03	18
		Fine	0.1	62	0.03	18
MW1_3.5-3.6	Clayey sand, grey	Coarse	**0.07**	9	**0.07**	9
MW1_4.5-4.6	Clayey sand, grey	Coarse	**0.09**	5	**0.09**	5
MW1_5.3-5.4	Clayey sand, grey	Coarse	**0.05**	**36**	**0.05**	**36**
MW2_0.9-1.0	Fill, sandy clay, black	Medium	<0.02	7	<0.02	7
MW2_2.0-2.1	Fill, sandy clay, brown/yellow	Medium	**0.07**	<2	**0.07**	<2
MW2_4.0-4.1	Sand, beige, wet	Coarse	**0.03**	**45**	**0.03**	**45**
MW3_3.0-3.1	Sand, grey	Coarse	**0.09**	**57**	**0.09**	**57**
MW3_4.0-4.1	Sand, grey/brown	Coarse	**0.06**	8	**0.06**	8

8.5 Groundwater Field Observations

A groundwater monitoring event (GME) sampling three new wells (MW1, MW2 and MW3) was conducted on 3 April 2020. A summary of groundwater conditions encountered during the GME is presented in **Table 8.3** and **Table 8.4**below. Groundwater monitoring well locations are provided on **Figure 3**.

Details of depths to groundwater and other geospatial characteristics are summarised in **Table 8.2** below.

Table 8.2 Groundwater Geospatial Details

Well Reference	Easting (MGA 56)	Northing (MGA 56)	Well Height (m AHD top of casing)	Depth to Groundwater (m below top of casing)	Groundwater Level (mAHD)
MW1	336140.0	6249859.4	5.895	3.567	2.328
MW2	336214.2	6249865.6	4.045	1.940	2.105
MW3	336169.8	6249884.3	4.270	2.210	2.060

MGA coordinate and AHD values were provided by a registered surveyor, with the surveyor's report is provided as part of **Appendix J**.

Table 8.3 Groundwater Field Physicochemical Parameters

Well Reference	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH (units)	Oxidation Reduction Potential (mV)	Temperature (°C)
MW1	0.13	688	6.90	-112.9	21.8
MW2	0.12	586	6.26	-194.1	22.5
MW3	0.17	901	6.83	-101.4	22.3

Review of the field parameters as presented above indicates that the groundwater is near neutral and mildly acidic, prevalent under oxidising conditions and characterised as fresh.

Table 8.4 Groundwater Observations

Well Reference	Odour	Sheen	Turbidity	Light non-aqueous phase liquid (LNAPL)
MW1	No odour	No sheen	Non turbid	None observed
MW2	Organic odour	No sheen	Non turbid	None observed
MW3	No odour	No sheen	Non turbid	None observed

8.6 Groundwater Analytical Results

Detailed laboratory reports and chain of custody documentation are provided in **Appendix E.** Summarised groundwater analytical data for COPCs are presented in **Table B**. The results are

discussed in **Section 8.6.1** to **Section 8.6.4**. Groundwater criteria exceedances are presented in **Figure 5**.

8.6.1 Metals

Heavy metal concentrations within the analysed samples were all reported to be below the adopted site assessment criteria with the exception of arsenic which was detected at concentrations exceeding the adopted drinking water criterion (0.01 mg/L) in duplicate samples collected at MW3 (0.017-0.022 mg/L). It is noted that the primary sample collected at MW3 reported arsenic concentration of 0.009 mg/L.

8.6.2 Total Recoverable Hydrocarbons and Volatile Organic Compounds

VOC concentrations were reported below the laboratory LOR and/or less than site assessment criteria.

8.6.3 Polycyclic Aromatic Hydrocarbons

PAH compound concentrations were all reported to be below the laboratory LORs and/or less than the adopted site criteria within the analysed samples.

9. Discussion

Based on the decision-making process for assessing urban redevelopment sites (EPA 2017), the decisions required to be made are discussed below.

9.1 Are there any unacceptable risks to future onsite receptors?

In reference to the decision rules developed in **Section 5.1.2**, the following sections discuss potential risks posed to future on-site receptors from impacted media present at the site.

9.1.1 Soil Contamination

Representative samples of soil analysed for identified contaminants of concern were reviewed against established site assessment criteria.

Concentrations of COPCs in all analysed soil samples were reported to be below the adopted human health criteria with the exception of the following:

- An elevated lead concentration was reported in fill material at BH109 2.6-2.7 in exceedance of human health and ecological criteria.
- B(a)P TEQ reported in fill material at BH101_0.2-0.3, BH102_0.2-0.3, BH102_0.7-0.8, BH107_0.9-1.0, MW1_0.5-0.6, MW3_1.4-1.5, BH109 2.6-2.7, BH112 0.3-0.4 and BH118 0.3-0.4 in exceedance of human health criteria. Statistical analysis of the results for B(a)P TEQ as discussed in **Section 8.2.2** indicates that the full data set for fill material across the site exceed the health based assessment criteria. The elevated B(a)P TEQ concentrations are interpreted to be associated with ash/slag/charcoal inclusions observed in the fill material.

Given the above exceedances lead and benzo(a)pyrene (assessed as a toxicity equivalent) were selected as constituents of potential concern requiring risk assessment. Based on the HHRA as documented in **Appendix K**, levels of B(a)P TEQ in soils have not been found to pose a potential health risk as per the proposed redevelopment / use of the site. A potential health risk was identified for an uncontrolled exposure to the highest levels of lead impact on the site.

Concentration of B(a)P reported in fill material at BH101_0.2-0.3, BH102_0.2-0.3, BH102_0.7-0.8, BH107_0.9-1.0, MW1_0.5-0.6, duplicate QC01 collected at MW3_1.0-1.1, MW2_0.2-0.3 and MW3_1.4-1.5, BH109 2.6-2.7, BH112 0.3-0.4, BH114 0.2-0.3, BH115 0.9-1.0 and BH118 0.3-0.4 exceeded the adopted ecological criteria. Additionally, concentration of TRH>C16-C34 in samples BH107_0.9-1, MW1_0.5-0.6 and MW3_1.4-1.5 also exceeded the adopted ecological criteria. As discussed in **Section 8.2** B(a)P is not readily taken up by plants. Further, given that no adverse ecological effects were observed at the time of the site inspection, the reported B(a)P and TRH>C16-C34 concentrations are considered not to constitute a risk to future plant growth or inhibit the future development of the site.

9.1.2 Potential Risk from Groundwater

Comparison of analytical results with the adopted site assessment criteria has not identified the occurrence of groundwater impacts presenting a significant risk to future site users. Arsenic was identified marginally exceeding the drinking water criterion. The presence of arsenic is considered typical of a built up urban environment within the geological setting of the site. Further, it is noted that drinking water criteria were adopted as a conservative guideline during the current investigation and beneficial reuse of groundwater at the site is unlikely given that the proposed development will include reticulated water supply.

Therefore, the reported COPC concentrations in groundwater is not considered to represent an unacceptable risk to future on-site receptors.

9.2 Are there any issues relating to background soil concentrations that exceed appropriate site soil criteria?

In-situ natural soils were sampled and analysed for heavy metals, PAHs, TRH, BTEX, OCPs and PCBs. Heavy metals concentrations were reported to be within background concentrations provided in Olszowy et. al. (1995) and were below the adopted site criteria. Other organic contaminants were detected below the laboratory LOR and/or the adopted site criteria.

9.3 Are there any impacts of chemical mixtures?

There were no potential chemical mixtures identified during the investigation that may pose an unacceptable contamination risk at the site with respect to future site users.

9.4 Are there any aesthetic issues at the site?

Fill material in numerous areas of the site has been identified as dark brown/black with anthropogenic inclusions of ash/slag/charcoal observed at BH104, BH105, BH108, BH109, BH110 and BH112-BH118. Odours were reported in the fill material encountered at boreholes BH105 and BH108 associated with observation of ash/slag/charcoal made in these locations. No staining was observed, and no ACM was observed on the site, or detected during laboratory analysis.

Aesthetic impacts will require management during redevelopment of the site.

9.5 Is there any evidence of, or potential for, migration of contaminants from the site?

Contaminants of concern as outlined in **Sections 9.1** comprise B(a)P and lead within the fill soils.

Based on the reported TCLP results and nature of the observed ash/slag/charcoal at some locations, the reported B(a)P is considered to be present in a vitrified solid mass or immobilised within a vitrified carbonaceous and siliceous matrix. Therefore, it is considered that the reported concentrations of B(a)P will likely not leach to groundwater.

An elevated lead concentration was reported at BH109 2.6-2.7. Based on the available leachate results and analytical results available for natural material at depth, it is considered that the reported concentration of lead will likely not leach into groundwater.

Assessment of site groundwater conditions identified low concentrations of arsenic in groundwater monitoring well MW3. Based on the conditions encountered during the soil investigation and the lack of significant arsenic concentrations in soil samples, the reported concentration is considered to be typical of an urban environment within the geological setting of the site.

As such, there are no issues at the site relating to off-site migration of contamination via groundwater

9.6 Is a site management strategy required?

It is understood that the site is to be redeveloped for as a sporting facility comprising of a multi-purpose hall with basement and associated above ground carpark.

Based on the proposed land use, the scope of work completed for this assessment and the limitations presented in **Section 11**, the DSI and accompanying HHRA have identified that lead impacted fill material and aesthetic impacts will require management and/or remediation such that the site may be considered suitable for the proposed future site use.

A remedial action plan (RAP) should be developed, inclusive of further consideration to interim and final site use designs such that an appropriate and efficient management/remediation strategy may be developed to address the lead and aesthetic issues at the site.

9.7 Do acid sulfate soil conditions occur within the site that require management during future proposed site excavation/construction works?

It is understood that the proposed multi-purpose hall will comprise construction of a basement to an approximate depth of 6 m bgs.

As discussed in **Section 2.8**, DP (2020) concluded that northern portion of the investigation area is potentially underlain by ASS, in particular the wet, dark grey clayey sand fill containing organic matter encountered in the vicinity of BH01, BH02 and BH03 (**Figure 3**) from depths of 2.5 m bgs. Given the limited testing, DP (2020) reported that soils beneath this layer should be considered to present an elevated risk of ASS. DP (2020) further stated that, based on the preliminary field-testing results there is the potential for ASS to be present in the southern portion of the site and also noted that given the site lies in an area of disturbed terrain there exists the additional possibility for ASS to have been used as backfill at the site.

As such, bulk excavation associated with the proposed development will likely result in disturbance of fill and underlying alluvial soils that may comprise potential ASS. An acid sulfate soil management plan should be prepared prior to future redevelopment activities to manage the identified potential environmental risks.

9.8 Has material that may as part of future development works require off-site disposal been appropriately classified?

To assist with planning for remediation/management requirements an insitu waste classification has been provided in **Section 8.3**. Based on the available data set (DP 2020 and JBS&G 2020) and observations made during the current investigation, fill material at the site is classified General Solid Waste (Non-putrescible).

10. Conclusions and Recommendations

10.1 Conclusions

Based on the scope of works completed for this assessment and subject to the limitations stated in **Section 11**, the following conclusions have been drawn with regard to the site conditions:

- A previous intrusive investigation conducted as part of the PSI (DP 2020) identified the presence of fill material variously impacted with heavy metals, PAH and TRH.
- The current DSI identified lead impacted fill at BH109 in exceedance of the adopted human health and ecological criteria. Further, the fill material across the site was identified as impacted with B(a)P TEQ in exceedance of the adopted health based investigation criteria. The elevated B(a)P TEQ concentrations were interpreted to be associated with ash/slag/charcoal inclusions observed in the fill material.
- Lead and B(a)P TEQ were identified as constituents of potential concern and subject to a HHRA as provided in **Appendix K**. The HHRA provided the following conclusions and recommendations:
    - A sensitivity analysis of the risk assessment process found that the risk estimates are suitably conservative to be used as the basis for decision making on the site.
    - It was assumed that potential construction worker exposures would be managed by existing New South Wales health and safety legislation as appropriate to construction activities and were not considered further.
    - In accordance with the limitations of the HHRA, the levels of B(a)P TEQ in soils have not been found to pose a potential health risk as per the proposed redevelopment / use of the site. A potential health risk was identified for an uncontrolled exposure to the highest levels of lead impact on the site.
    - It is recommended that remediation and/or management works are undertaken to address lead impacted soils as present at sample location BH109 at a depth of 2.6 to 2.7 m to control / eliminate potential direct exposure to the impacted soils.
- B(a)P and TRH>C16-C34 fractions were reported in various samples in exceedance of the adopted ecological criteria for the proposed landuse. However, given the presence of healthy vegetation at the site, and given that B(a)P is not readily taken up by plants, the reported concentrations are not considered to constitute a risk to future plant growth or inhibit the future development of the site. Thus, JBS&G consider that the ecological impacts identified (where not concurrent with health-based impacts) do not warrant further assessment and/or management.
- Concentration of arsenic reported in groundwater is considered indicative of the built up urban environment within the geological setting of the site. Arsenic was detected at concentrations exceeding conservative drinking water criteria, however as beneficial reuse of groundwater at the site is unlikely given that the proposed development will include reticulated water supply, the reported COPC concentrations in groundwater are not considered to represent an unacceptable risk to future on-site receptors. There are no identified off-site migration issues relating to groundwater at the site.
- Fill material in numerous areas of the site has been identified as dark brown/black with anthropogenic inclusions of ash, slag and charcoal observed at BH104, BH105, BH108-BH110 and BH112-BH118. Odours were reported in the fill material encountered at boreholes

BH105 and BH108 associated with observation of ash/slag/charcoal made in these locations. Aesthetic impacts will require management during redevelopment of the site.

- Based on the recently completed assessment activities and the previous soil analytical data presented in the PSI (DP 2020), fill material across the site is provisionally classified General Solid Waste (Non-putrescible).
- Sampling undertaken as part of the PSI (DP 2020) and current DSI, identified the presence of potential ASS material in fill and underlying alluvial soils at the site that requires management during future redevelopment activities.

10.2 Recommendations

The lead impact identified within the fill profile at BH109 and aesthetic impacts identified in fill requires remediation/management in order to make the site suitable for the proposed land use.

It is recommended that an acid sulfate soil management plan be prepared prior to future redevelopment activities to manage potential disturbance of these soils.

It is further recommended that a RAP be prepared and implemented to guide remediation and validation actions including validation sampling, analysis and quality planning to enable the site to be considered suitable for proposed land use. The RAP should include an appropriate Unexpected Finds Protocol (UFP) with provisions for the management of unexpected finds that may be encountered during site remediation/ development activities.

Following completion of remediation activities in accordance with the RAP, a validation report should be prepared to demonstrate the successful validation of the site and suitability of the site for the intended use.

11. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

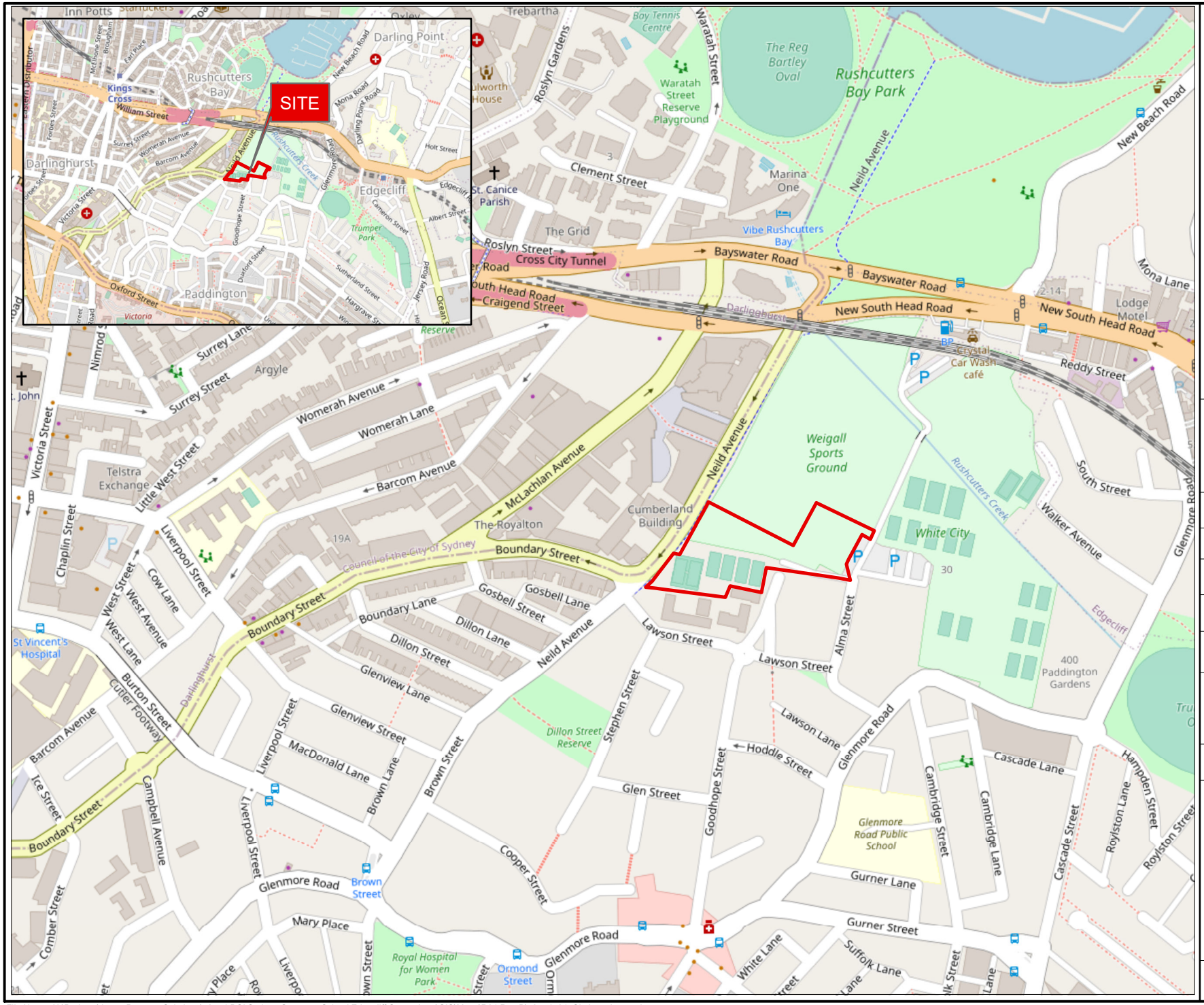
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures



Legend:

Approximate Site Boundary

JBS&G

Job No: 58554	
Client: Jattca Property Solutions	
Version: R01 Rev 0	Date 12/06/2020
Drawn By: RH	Checked By: SG
Scale 1:5,000	

0 60 120

metres

Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

SITE LAYOUT

FIGURE 2

File Name: N:\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev B\58554_01_SiteLocation.mxd

Reference: © OpenStreetMap (and) contributors, CC-BY-SA



Legend:

Approximate Site Boundary

JBS&G

Job No: 58554	
Client: Jattca Property Solutions	
Version: R01 Rev 0	Date 12/06/2020
Drawn By: RH	Checked By: SG
Scale 1:1,100	

0 10 20

metres

Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

SITE LAYOUT

FIGURE 2

File Name: N:\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev B\58554_02_Site_Layout.mxd
Reference:



Legend:

- Approximate Site Boundary

Previous Sample Locations

- Borehole Location (DP 2020)

Sample Locations

- Monitoring Well
- Borehole Location

JBS&G

Job No: 58554	
Client: Jattca Property Solutions	
Version:R01 Rev 0	Date 12/06/2020
Drawn By: RH	Checked By: SG
Scale 1:1,100	

0 10 20
metres

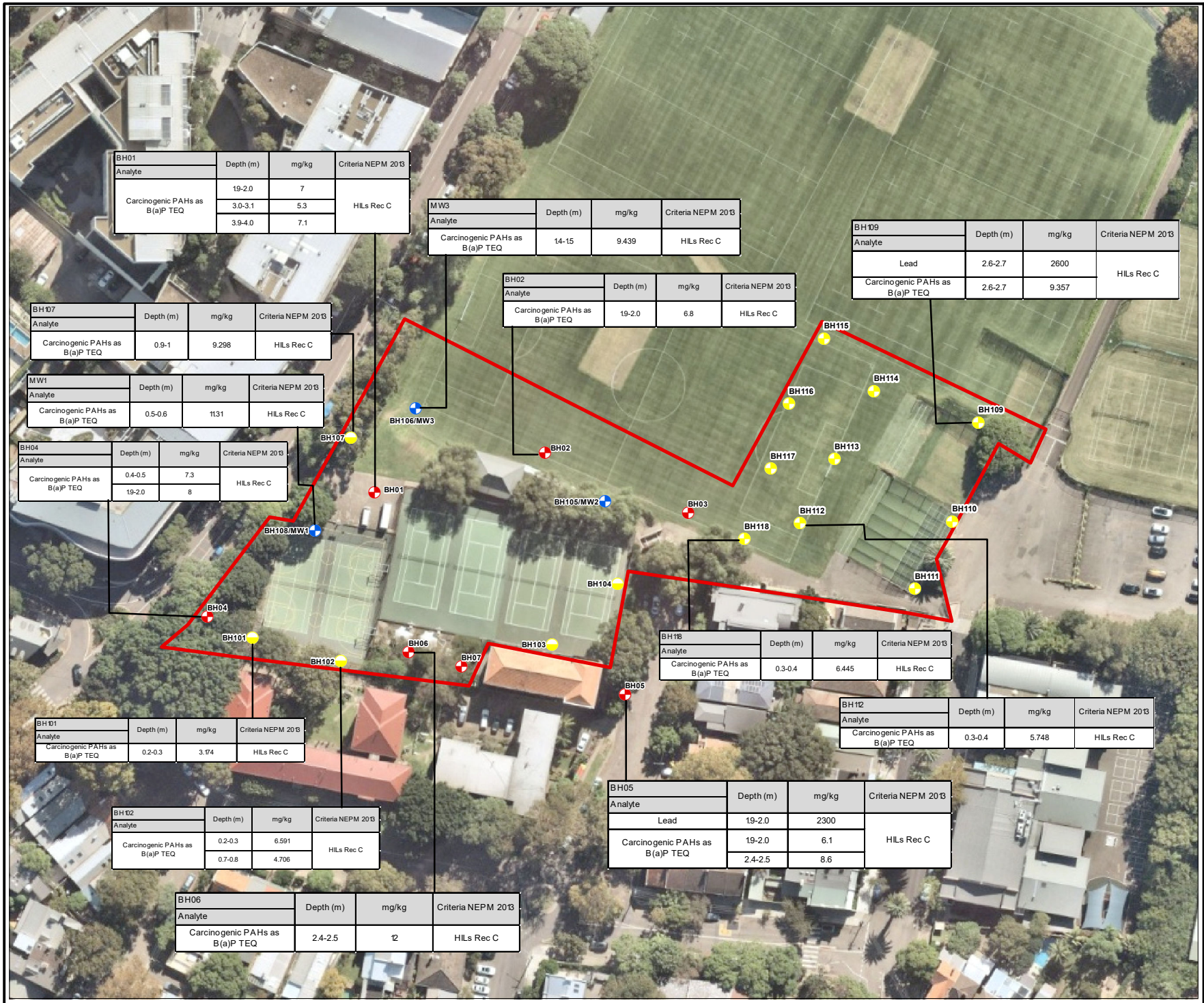
Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

SITE LAYOUT AND SAMPLE LOCATIONS

FIGURE 3

File Name: N:\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev B\58554_03_SampleLocations.mxd
Reference:



Legend:

- Approximate Site Boundary

Previous Sample Locations

- Borehole Location (DP 2020)

Sample Locations

- Monitoring Well
- Borehole Location

JBS&G

Job No: 58554

Client: Jattca Property Solutions

Version: R01 Rev 0	Date 15/06/2020
Drawn By: RH	Checked By: SG

Scale 1:1,300

0 10 20

metres

Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

SOIL CRITERIA EXCEEDANCES (HUMAN HEALTH)

FIGURE 4A

File Name: \\JBSG-NSW-FS01\Company Data\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev B\58554_04a_Soil_exceed_Health.mxd
Reference:



BH01	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
Copper	0.4-0.5	2700	EIL
B(a)P	0.4-0.5	0.74	ESL
	1.9-2.0	4.8	
	3.0-3.1	3.7	
	3.9-4.0	4.9	

MW3	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
>C16-C34 Fraction	1.4-1.5	400	ESL
B(a)P		6	

BH02	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	1.9-2.0	2	ESL

BH115	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.9-1	0.9	ESL

BH107	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
>C16-C34 Fraction	0.9-1	570	ESL
B(a)P		6.3	

MW2	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.2-0.3	2	ESL

BH114	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.2-0.3	1.7	ESL

MW1	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
>C16-C34 Fraction	0.5-0.6	410	ESL
B(a)P		7	

BH03	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.9-1.0	1.3	ESL

BH109	Depth (m)	mg/kg	Criteria Exceeded
Analyte			
Lead	2.6-2.7	2600	NEPC 2013 EIL
B(a)P		6.5	NEPM 2013 ESL

BH04	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
>C16-C34 Fraction	0.4-0.5	320	ESL
B(a)P		4.9	
>C16-C34 Fraction	1.9-2.0	360	
B(a)P		5.5	
B(a)P	5.5-5.6	0.79	

BH118	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.3-0.4	4.8	ESL

BH101	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.2-0.3	2.2	ESL

BH112	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.3-0.4	4.2	ESL

BH102	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.2-0.3	4.5	ESL
	0.7-0.8	4.5	

BH05	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	1.4-1.5	1.5	ESL
Copper		3100	EIL
B(a)P	1.9-2.0	4.1	ESL
Copper		250	EIL
Lead		2300	
B(a)P	2.4-2.5	5.9	ESL

BH06	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0.4-0.5	1	ESL
>C16-C34 Fraction	2.4-2.5	380	
B(a)P		7.7	
B(a)P	3.9-4	0.78	

BH07	Depth (m)	mg/kg	Criteria NEPM 2013
Analyte			
B(a)P	0-0.1	1.3	ESL
	2.9 - 3	1.8	

Legend:

- Approximate Site Boundary

Previous Sample Locations

- Borehole Location (DP 2020)

Sample Locations

- Monitoring Well
- Borehole Location

JBS&G

Job No: 58554

Client: Jattca Property Solutions

Version: R01 Rev 0 | Date 15/06/2020

Drawn By: RH | Checked By: SG

Scale 1:1,300

0 10 20

metres

Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

SOIL CRITERIA EXCEEDANCES (ECOLOGICAL)

FIGURE 4B

File Name: N:\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev B\58554_04b_Soil_exceed_Ecological.mxd
Reference:



MW3 / Analyte	Field ID	mg/L	Criteria Australian Drinking Water (2011)
Arsenic (Total)	QA	0.017	Health
	QC	0.022	

Legend:

- Approximate Site Boundary

Previous Sample Locations

- Borehole Location (DP 2020)

Sample Locations

- Monitoring Well
- Borehole Location

JBS&G

Job No: 58554

Client: Jattca Property Solutions

Version: R01 Rev 0 | Date 12/06/2020

Drawn By: RH | Checked By: SG

Scale 1:1,000

0 10 20

metres

Coord. Sys. GDA 1994 MGA Zone 56

Neild Avenue, Paddington NSW

GROUNDWATER EXCEEDANCES

FIGURE 5

File Name: N:\Projects\Jattca Property Solutions\58554 DSI Sydney Grammar School Edgecliff Sports Area\GIS\Maps\R01 Rev A\58554_05_GWExceedances.mxd
Reference:

Table A – Soil Analytical Results

Table A Soil Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

							Metals & Metalloids								TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN						
							Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene
							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
EQL							2	0.4	1	1	1	0.1	1	1	20	20	50	50	50	50	100	100	50	50	20	20	0.1	0.1	0.1	0.1	0.2	0.3	0.1
NEPC 2013 EIL, EILs Aged Sediment							100			220	1100		200	570																			170
NEPM 2013 Table 1A(1) HILs Rec C Soil							300	90	300	17000	600	80	1200	30000																			
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																	
0-1m																								110		45	0.5	55	160			40	3
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																																	
0-2m																					300	2800		120		180	50	70	85			105	
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				1000	2500	10000			700								
NEPM 2013 Table 7 Rec C Soil HSL for Asbestos in Soil																																	
Field_ID	**LocCode**	**Sample_Depth_Rang**	**Sampled_Date-Tim**	**Lab_Report_Number**																													
BH101_0.2-0.3	BH101	0.2-0.3	30/03/2020	711021	7.1	<0.4	9.2	18	160	1	5.1	98	<20	<20	98	60	158	<50	140	<100	140	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH102_0.2-0.3	BH102	0.2-0.3	30/03/2020	711021	7.5	0.5	11	46	270	1.4	7.2	260	<20	<20	140	92	232	<50	200	<100	200	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.5 - 0.6
BH102_0.7-0.8	BH102	0.7-0.8	30/03/2020	711021	2.8	<0.4	10	31	290	0.3	32	110	<20	<20	160	95	255	<50	220	<100	220	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH103_0.9-1.0	BH103	0.9-1	27/03/2020	711021	10	<0.4	11	16	43	<0.1	<5	<5	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH103_0-0.1	BH103	0-0.1	27/03/2020	711021	<2	<0.4	72	46	5.4	<0.1	85	65	<20	<20	53	220	273	<50	180	440	620	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH104_0.3-0.4	BH104	0.3-0.4	27/03/2020	711021	3	<0.4	27	<5	40	<0.1	5.9	16	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH107_0.9-1.0	BH107	0.9-1	27/03/2020	711021	4.1	<0.4	20	29	140	0.6	16	180	<20	<20	500	170	670	56	570	110	736	56	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5 - 1.4
BH107_0-0.1	BH107	0-0.1	27/03/2020	711021	3.7	<0.4	8.5	17	61	0.3	5.2	55	<20	<20	<50	64	64	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
MW1_0.5-0.6	MW1	0.5-0.6	27/03/2020	711021	8.5	<0.4	14	36	180	1	6.4	110	<20	<20	300	130	430	<50	410	<100	410	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	1.2 - 1.6
MW1_3.5-3.6	MW1	3.5-3.6	27/03/2020	711021	15	<0.4	53	7.3	55	0.3	6.1	27	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
MW2_0.2-0.3	MW2	0.2-0.3	27/03/2020	711021	3.4	<0.4	8	17	110	0.3	<5	47	<20	<20	78	<50	78	<50	110	<100	110	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
MW3_1.0-1.1	MW3	1-1.1	27/03/2020	711021	4.3	<0.4	20	6.2	12	<0.1	<5	<5	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
MW3_1.4-1.5	MW3	1.4-1.5	27/03/2020	711021	4.8	<0.4	18	34	100	0.6	<5	120	<20	<20	240	180	420	<50	400	<100	400	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
QA01	inter-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	240103	6	<0.4	18	6	25	<0.1	1	8	<25	<50	<100	<100	-	<50	<100	<100	<50	<50	<25	<25	<0.2	<1	<0.5	<1	<2	<3	<1 - 0.2
QC01	intra-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	711021	12	<0.4	43	6.5	29	0.2	<5	6.9	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
Statistical Summary																																	
Number of Results					15	15	15	15	15	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Number of Detects					14	1	15	14	15	10	10	13	0	0	8	8	9	1	8	2	8	1	0	0	0	0	0	0	0	0	0	0	4
Minimum Concentration					<2	<0.4	8	<5	5.4	<0.1	1	<5	<20	<20	<50	<50	<50	<50	<100	<100	<50	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
Minimum Detect					2.8	0.5	8	6	5.4	0.2	1	6.9	ND	ND	53	60	64	56	110	110	110	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Maximum Concentration					15	0.5	72	46	290	1.4	85	260	<25	<50	500	220	670	56	570	440	736	56	<25	<25	<0.2	<1	<0.5	<1	<2	<3	1.6
Maximum Detect					15	0.5	72	46	290	1.4	85	260	ND	ND	500	220	670	56	570	440	736	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6
Average Concentration					6.2	0.22	23	21	101	0.42	12	74	10	11	118	81	193	27	172	80	211	27	10	10	0.053	0.08	0.063	0.08	0.16	0.24	0.39
Median Concentration					4.8	0.2	18	17	61	0.3	5.2	55	10	10	53	60	118	25	110	50	110	25	10	10	0.05	0.05	0.05	0.05	0.1	0.15	0.25
Standard Deviation					3.8	0.077	19	15	90	0.42	22	74	0.65	3.9	136	66	200	8	165	101	227	8	0.65	0.65	0.013	0.12	0.052	0.12	0.23	0.35	0.32
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	0	4	4	4	4	0	0	4	0		
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	0	4	4	4	4	0	0	4	0		

Table A Soil Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

					Polycyclic Aromatic Hydrocarbons																	Organochlorine Pesticides																													
					Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs as B(a)P TEQ	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	Total Positive PAHs	4,4-DDE	Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	DDD	DDT	Dieldrin	DDT+DDE+DDD (Sum of Total)	delta-BHC	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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
EQL					0.1	0.1	0.1	0.1	0.05	0.5	0.1	0.5	0.1	0.1		0.1	0.1	0.1	0.1	0.5	0.1		0.05	0.05	0.05	0.05		0.05	0.1	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	0.1	1
NEPC 2013 EIL, EILs Aged Sediment																														180																	
NEPM 2013 Table 1A(1) HILs Rec C Soil															3					300				10			70				400					20				10			400	30
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																														
0-1m																																														
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																																														
0-2m									0.7																																					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																																														
NEPM 2013 Table 7 Rec C Soil HSL for Asbestos in Soil																																														
Field_ID	**LocCode**	**Sample_Depth_Rang**	**Sampled_Date-Tim**	**Lab_Report_Numbe**																																												
BH101_0.2-0.3	BH101	0.2-0.3	30/03/2020	711021	<0.5	<0.5	<0.5	2.4	2.2	1.5	1.4	1.8	2	<0.5	3.174	4.2	<0.5	1.2	1.7	22.7	4.3	-	0.09	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1
BH102_0.2-0.3	BH102	0.2-0.3	30/03/2020	711021	<0.5	0.6	0.8	5	4.5	3.3	2.7	3.8	3.4	0.5	6.591	7.3	<0.5	3.2	4.4	47.3	7.3	-	0.08	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	0.07	<0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1
BH102_0.7-0.8	BH102	0.7-0.8	30/03/2020	711021	<0.5	<0.5	0.7	3.9	3.3	2.1	2	2.7	3.6	<0.5	4.706	5.2	<0.5	2.3	3	34.2	5.4	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10
BH103_0.9-1.0	BH103	0.9-1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
BH103_0-0.1	BH103	0-0.1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	0.6	0.6	<0.5	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10
BH104_0.3-0.4	BH104	0.3-0.4	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
BH107_0.9-1.0	BH107	0.9-1	27/03/2020	711021	2.5	0.9	4.5	7.8	6.3	3.4	3.6	5.3	7.2	0.8	9.298	16	3.5	4.4	27	110.6	16	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10
BH107_0-0.1	BH107	0-0.1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.6	<0.5	<0.5	<0.5	1.3	0.7	-	<0.2	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	<0.1	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1
MW1_0.5-0.6	MW1	0.5-0.6	27/03/2020	711021	0.8	0.6	3.8	9	7	5.5	4.7	6.3	7	1.7	11.31	18	0.9	4.1	13	101	17	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
MW1_3.5-3.6	MW1	3.5-3.6	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
MW2_0.2-0.3	MW2	0.2-0.3	27/03/2020	711021	<0.5	<0.5	<0.5	1.9	2	1.4	1.2	1.5	1.7	<0.5	2.859	3.2	<0.5	1	1.3	18.6	3.4	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
MW3_1.0-1.1	MW3	1-1.1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.6	<0.5	<0.5	0.5	1.8	0.7	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
MW3_1.4-1.5	MW3	1.4-1.5	27/03/2020	711021	<0.5	0.8	1.1	6	6	4.4	4.1	5.6	5.8	1.4	9.439	11	<0.5	3.4	4.7	66.3	12	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
QA01	inter-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	240103	<0.1	0.1	0.4	0.6	0.4	-	0.2	-	0.5	<0.1	0.537	1.2	0.3	0.2	1.2	-	1.2	7.3	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-
QC01	intra-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	711021	<0.5	<0.5	0.6	1.1	0.8	<0.5	<0.5	0.8	0.9	<0.5	1.302	2.3	<0.5	<0.5	2.3	11.2	2.4	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1
Statistical Summary																																															
Number of Results					15	15	15	15	15	14	15	14	15	15	15	15	15	15	15	14	15	1	15	15	15	15	1	15	14	15	15	15	15	15	15	15	15	14	1	15	15	15	15	14
Number of Detects					2	5	7	9	9	7	8	8	9	4	9	11	3	8	11	11	11	1	2	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					<0.1	0.1	0.4	<0.5	0.4	<0.5	0.2	<0.5	<0.5	<0.1	0.537	<0.5	0.3	0.2	<0.5	<0.5	<0.5	7.3	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.1	<1
Minimum Detect					0.8	0.1	0.4	0.6	0.4	1.4	0.2	0.8	0.5	0.5	0.537	0.6	0.3	0.2	0.5	0.6	0.7	7.3	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	ND	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					2.5	0.9	4.5	9	7	5.5	4.7	6.3	7.2	1.7	11.31	18	3.5	4.4	27	110.6	17	7.3	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<10
Maximum Detect					2.5	0.9	4.5	9	7	5.5	4.7	6.3	7.2	1.7	11.31	18	3.5	4.4	27	110.6	17	7.3	0.09	ND	ND	ND	ND	ND	ND	ND	0.07	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					0.42	0.37	0.93	2.6	2.3	1.7	1.4	2.1	2.2	0.46	3.5	4.7	0.51	1.4	4	30	4.8		0.045	0.032	0.035	0.032		0.032	0.061	0.032	0.036	0.032	0.049	0.032	0.032	0.032	0.032	0.032	0.03		0.032	0.032	0.032	0.097	1.5
Median Concentration					0.25	0.25	0.25	1.1	0.8	0.825	0.25	1.15	0.9	0.25	1.302	2.3	0.25	0.25	1.3	14.9	2.4	7.3	0.025	0.025	0.025	0.025	0.05	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.1	0.5
Standard Deviation					0.59	0.24	1.3	3	2.5	1.8	1.6	2.3	2.6	0.47	3.8	5.9	0.84	1.6	7.1	38	5.8		0.026	0.011	0.021	0.011		0.011	0.021	0.011	0.015	0.011	0.037	0.011	0.011	0.011	0.011	0.011	0.011		0.011	0.011	0.011	0.013	1.9
Number of Guideline Exceedances					0	0	0	0	10	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	10	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A Soil Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

					Polychlorinated Biphenyls								Chlorinated Benzenes	Asbestos									Ionic Balance			Other			
					Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	Hexachlorobenzene	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Cation Exchange Capacity	EC 1:5 soil:water	pH 1:5 soil:water	% Clay	% Moisture 103oC	Moisture	Total Organic Carbon
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	%w/w	%w/w	g	g	g	g	g	g	g	meq/100g	µS/cm	ph Units	%	%	%	%
EQL					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05											0.05	10	0.1	1	1		0.1
NEPC 2013 EIL, EILs Aged Sediment																													
NEPM 2013 Table 1A(1) HILs Rec C Soil												1	10																
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																													
0-1m																													
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																													
0-2m																													
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																													
NEPM 2013 Table 7 Rec C Soil HSL for Asbestos in Soil																													
Field_ID	**LocCode**	**Sample_Depth_Rang**	**Sampled_Date-Tim**	**Lab_Report_Numbe**																									
BH101_0.2-0.3	BH101	0.2-0.3	30/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	500	0	0	0	0	0	0	0	0	-	-	-	-	10	-	-
BH102_0.2-0.3	BH102	0.2-0.3	30/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	487	0	0	0	0	0	0	0	0	11	59	6.9	8.1	11	-	4.3
BH102_0.7-0.8	BH102	0.7-0.8	30/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-
BH103_0.9-1.0	BH103	0.9-1	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-
BH103_0-0.1	BH103	0-0.1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	461	0	0	0	0	0	0	0	0	-	-	-	-	4.9	-	-
BH104_0.3-0.4	BH104	0.3-0.4	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	565	0	0	0	0	0	0	0	0	-	-	-	-	8.8	-	-
BH107_0.9-1.0	BH107	0.9-1	27/03/2020	711021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
BH107_0-0.1	BH107	0-0.1	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	549	0	0	0	0	0	0	0	0	-	-	-	-	12	-	-
MW1_0.5-0.6	MW1	0.5-0.6	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	555	0	0	0	0	0	0	0	0	15	150	7.3	8.2	14	-	1
MW1_3.5-3.6	MW1	3.5-3.6	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-
MW2_0.2-0.3	MW2	0.2-0.3	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	559	0	0	0	0	0	0	0	0	-	-	-	-	24	-	-
MW3_1.0-1.1	MW3	1-1.1	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	512	0	0	0	0	0	0	0	0	-	-	-	-	19	-	-
MW3_1.4-1.5	MW3	1.4-1.5	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-
QA01	inter-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	240103	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-
QC01	intra-lab duplicate of MW3_1.0-1.1	1.0-1.1	27/03/2020	711021	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	455	0	0	0	0	0	0	0	0	-	-	-	-	21	-	-
Statistical Summary																													
Number of Results					15	15	15	15	15	15	15	15	15	9	9	9	9	9	9	9	9	9	2	2	2	2	14	1	2
Number of Detects					0	0	0	0	0	0	0	0	0	9	9	9	9	9	9	9	9	9	2	2	2	2	14	1	2
Minimum Concentration					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	455	0	0	0	0	0	0	0	0	11	59	6.9	8.1	4.9	20	1
Minimum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	455	ND	ND	ND	ND	ND	ND	ND	ND	11	59	6.9	8.1	4.9	20	1
Maximum Concentration					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	565	0	0	0	0	0	0	0	0	15	150	7.3	8.2	27	20	4.3
Maximum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	565	ND	ND	ND	ND	ND	ND	ND	ND	15	150	7.3	8.2	27	20	4.3
Average Concentration					0.24	0.09	0.24	0.24	0.24	0.24	0.24	0.24	0.032	516	0	0	0	0	0	0	0	0					15		
Median Concentration					0.25	0.05	0.25	0.25	0.25	0.25	0.25	0.25	0.025	512	0	0	0	0	0	0	0	0	13	104.5	7.1	8.15	14	20	2.65
Standard Deviation					0.052	0.083	0.052	0.052	0.052	0.052	0.052	0.052	0.011	43	0	0	0	0	0	0	0	0					6.1		
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A Soil Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

	Metals & Metalloids								TPHs (NEPC 1999)					TRHs (NEPC 2013)								BTEXN							Polycyclic Aromatic Hydrocarbons															
	Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs as B(a)P TEQ	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	4,4-DDE
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	0.4	1	1	1	0.1	1	1	20	20	50	50	50	50	100	100	50	50	20	20	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.05	0.5	0.1	0.5	0.1	0.1		0.1	0.1	0.1	0.1	0.5	0.1	0.05
NEPC 2013 EIL, EILs Aged Sediment	100			220	1100		200	570																			170																	
NEPM 2013 Table 1A(1) HILs Rec C Soil	300	90	300	17000	600	80	1200	30000																														3				300		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																												
0-1m																		110		45	0.5	55	160			40	3																		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																																												
0-2m															300	2800		120		180	50	70	85			105						0.7												
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil														1000	2500	10000			700																									
NEPM 2013 Table 7 Rec C Soil HSL for Asbestos in Soil																																												

Field_ID	LocCode	Sample_Depth_Rang	Sampled_Date-Tim	Lab_Report_Number																																										
BH109 0-0.1	BH109	0-0.1	27/05/2020	722434	15	<0.4	19	18	37	<0.1	10	49	<20	26	60	140	226	<50	150	190	340	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH109 2.6-2.7	BH109	2.6-2.7	27/05/2020	722434	21	<0.4	14	110	2600	0.6	27	260	<20	29	330	370	729	<50	610	240	850	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	0.6	1	6.9	6.5	5.9	2.5	5.7	6.2	0.7	9.357	13	0.7	2.2	5.7	70.6	13	<0.05
BH109 3.2-3.3	BH109	3.2-3.3	27/05/2020	724951	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110 0.5-0.6	BH110	0.5-0.6	28/05/2020	722434	3.4	<0.4	12	8.5	27	<0.1	<5	130	<20	<20	<50	56	56	<50	<100	110	110	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH111 0.1-0.2	BH111	0.1-0.2	28/05/2020	722434	2.4	<0.4	13	17	25	<0.1	<5	36	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH111 1.5-1.6	BH111	1.5-1.6	28/05/2020	722434	<2	<0.4	11	<5	9.3	<0.1	<5	<5	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH112 0.3-0.4	BH112	0.3-0.4	27/05/2020	722434	4.7	<0.4	12	23	150	0.4	5.2	120	<20	<20	190	100	290	<50	250	100	350	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	0.9	4.4	4.2	3.3	1	3.8	3.8	<0.5	5.748	11	<0.5	1	5	49.4	11	<0.05
BH113 0.4-0.5	BH113	0.4-0.5	27/05/2020	722434	6.6	<0.4	12	24	410	<0.1	<5	120	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH113 2.6-2.7	BH113	2.6-2.7	27/05/2020	722434	<2	<0.4	<5	<5	22	<0.1	<5	47	<20	<20	<50	50	50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH114 0.2-0.3	BH114	0.2-0.3	27/05/2020	722434	8.5	<0.4	26	16	64	<0.1	12	60	<20	<20	86	84	170	<50	140	100	240	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	1.1	1.7	1.4	<0.5	1.9	1.2	<0.5	2.43	2.3	<0.5	<0.5	<0.5	12.6	3	<0.05
BH115 0.9-1.0	BH115	0.9-1	27/05/2020	722434	6.1	<0.4	11	7.7	27	<0.1	<5	13	<20	<20	59	<50	59	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	1	0.9	0.6	<0.5	1.1	1	<0.5	1.458	1.9	<0.5	<0.5	1	9.6	2.1	<0.05
BH115 2.5-2.6	BH115	2.5-2.6	27/05/2020	722434	2.2	<0.4	7	9.3	46	0.2	<5	24	<20	20	54	66	140	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.64	0.8	<0.5	<0.5	<0.5	2.2	0.8	<0.05
BH116 0.3-0.4	BH116	0.3-0.4	27/05/2020	722434	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH116 1.5-1.6	BH116	1.5-1.6	27/05/2020	722434	4.1	<0.4	29	<5	62	0.2	<5	220	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.7	<0.5	<0.5	1	2.4	0.7	<0.05
BH117 0-0.1	BH117	0-0.1	27/05/2020	722434	<2	<0.4	<5	<5	11	<0.1	<5	10	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
BH117 1.5-1.6	BH117	1.5-1.6	27/05/2020	722434	9.3	<0.4	11	8.8	17	<0.1	<5	13	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	0.6	0.6	<0.05
BH118 0.3-0.4	BH118	0.3-0.4	27/05/2020	722434	5.2	<0.4	13	27	130	0.3	5.4	87	<20	<20	220	130	350	<50	300	100	400	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	3.8	4.8	4.3	1.1	4.6	3.4	<0.5	6.445	7.6	<0.5	0.8	2.4	41.8	9	<0.05
QA01	Inter-lab duplicate of BH109 0-0.1		27/05/2020	243807	<4	<0.4	12	19	19	<0.1	2	31	<25	<50	<100	<100		<50	<100	<100	<50	<50	<25	<25	<0.2	<1	<0.5	<1	<2	<3	<0.1	<0.1	<0.1	<0.1	0.1	0.2		0.1		0.2	<0.1	0.268	0.2	<0.1	<0.1	<0.1	1.5	0.3	<0.1
QC01	Intra-lab duplicate of BH109 0-0.1		27/05/2020	722434	20	0.5	29	24	58	<0.1	14	66	<20	<20	<50	52	52	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.6	<0.5	<0.5	<0.5	1.3	0.7	<0.05

Statistical Summary

Number of Results	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	18	19	19	19	19	19	19	19	19	19
Number of Detects	15	3	17	15	19	7	9	18	2	5	9	11	12	2	7	8	8	2	2	2	2	2	2	2	2	2	2	2	3	4	8	8	7	6	8	8	3	9	11	3	5	7	12	12	2
Minimum Concentration	<2	<0.4	<5	<5	9.3	<0.1	2	<5	<20	<20	<50	<50	<50	<50	<100	<100	<50	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.5	0.1	<0.5	0.2	<0.1	0.268	0.2	<0.1	<0.1	<0.1	<0.5	0.3	<0.05
Minimum Detect	2.2	0.5	7	7.7	9.3	0.2	2	10	ND	20	54	50	50	ND	140	100	110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	0.9	0.1	0.2	0.6	0.1	0.6	0.2	0.7	0.268	0.2	0.7	0.8	1	0.6	0.3	ND
Maximum Concentration	21	0.5	29	110	2600	0.6	27	260	<25	<50	330	370	729	<50	610	240	850	<50	<25	<25	<0.2	<1	<0.5	<1	<2	<3	<0.5	<0.5	0.6	1	6.9	6.5	5.9	2.5	5.7	6.2	0.7	9.357	13	0.7	2.2	5.7	70.6	13	<0.1
Maximum Detect	21	0.5	29	110	2600	0.6	27	260	ND	29	330	370	729	ND	610	240	850	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	1	6.9	6.5	5.9	2.5	5.7	6.2	0.7	9.357	13	0.7	2.2	5.7	70.6	13	ND
Average Concentration	6.7	0.22	14	19	207	0.14	5.9	76	10	14	75	75	142	25	121	82	166	25	10	10	0.053	0.076	0.062	0.076	0.15	0.23	0.24	0.24	0.26	0.32	1.2	1.2	1.1	0.47	1.3	1.1	0.26	1.9	2.4	0.26	0.43	1.1	11	2.5	0.026
Median Concentration	4.7	0.2	12	16	32	0.05	2.5	49	10	10	25	50	54	25	50	50	50	25	10	10	0.05	0.05	0.05	0.05	0.1	0.15	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.605	0.25	0.25	0.25	0.25	1.3	0.6	0.025
Standard Deviation	6.3	0.073	7.8	25	605	0.16	6.6	74	0.61	6.8	88	85	188	0	148	56	216	0	0.61	0.61	0.012	0.11	0.049	0.11	0.22	0.33	0.049	0.049	0.1	0.24	1.9	2	1.8	0.59	1.8	1.7	0.12	2.7	4.1	0.12	0.51	1.7	21	4.2	0.0061
Number of Guideline Exceedances	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	3	3	3	3	0	0	3	0	0	0	0	0	6	0	0	0	0	0	0	3	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	3	3	3	3	0	0	3	0	0	0	0	0	6	0	0	0	0	0	0	3	0	0	0	0	0	0

Table A Soil Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

| | | |

Table B – Groundwater Analytical Results

Tabke B Groundwater Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

	VOC	Metals & Metalloids									TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN					
	Total MAH*	Arsenic (Total)	Arsenic (Total) (Filtered)	Cadmium (Filtered)	Chromium (Total) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Inorganic) (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)
	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.003	0.001	0.001	0.0001	0.001	0.001	0.001	0.00005	0.001	0.001	0.01	0.05	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.05	0.01	0.01	0.001	0.001	0.001	0.001	0.002	0.003
ANZG (2018) Marine water 95% toxicant DGVs				0.0055		0.0013	0.0044	0.0004	0.07	0.015													0.7					
Australian Drinking Water (2011) (as amended Oct 2017) – Aesthetics						1				3														0.003	0.025			0.02
Australian Drinking Water (2011) (as amended Oct 2017) – Health		0.01	0.01	0.002		2	0.01	0.001	0.02			0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09			0.001	0.3	0.8			0.6
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics						10				30														0.03	0.25			0.2
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health		0.1	0.1	0.02		20	0.1	0.01	0.2			0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9			0.01	3	8			6
NEPM 2013 Table 1A(4) Res HSL A/B GW for Vapour Intrusion, Sand																												
2-4m																				1		1	0.8	NL	NL			NL

Field_ID	LocCode	Sampled_Date-Time	Lab_Report_Number																										
MW1	MW1	3/04/2020	712063	<0.003	-	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.014	<0.02	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
MW2	MW2	3/04/2020	712063	<0.003	-	0.002	<0.0002	<0.001	<0.001	<0.001	0.0002	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
MW3	MW3	3/04/2020	712063	<0.003	-	0.009	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
QA	inter-lab duplicate of MW3	3/04/2020	240339	-	-	0.017	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.003	<0.01	<0.05	<0.1	<0.1	-	<0.05	<0.1	<0.1	-	<0.05	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.002	-
QC	intra-lab duplicate of MW3	3/04/2020	712063	<0.003	-	0.022	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.007	<0.02	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003

Statistical Summary

Number of Results	4	0	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5	5	4
Number of Detects	0	0	4	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.003	99999	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.003	<0.01	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
Minimum Detect	ND	ND	0.002	ND	ND	ND	ND	0.0002	ND	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.003	0	0.022	<0.0002	<0.001	<0.001	<0.001	0.0002	<0.001	0.014	<0.02	<0.05	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
Maximum Detect	ND	ND	0.022	ND	ND	ND	ND	0.0002	ND	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.0015		0.01	0.00009	0.0005	0.0005	0.0005	0.000075	0.0005	0.0058	0.009	0.025	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.025	0.009	0.009	0.0005	0.0005	0.0005	0.0005	0.001	0.0015
Median Concentration	0.0015		0.009	0.0001	0.0005	0.0005	0.0005	0.00005	0.0005	0.003	0.01	0.025	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.025	0.01	0.01	0.0005	0.0005	0.0005	0.0005	0.001	0.0015
Standard Deviation	0		0.0093	0.000022	0	0	0	0.000071	0	0.005	0.0022	0	0	0	0	0	0	0	0	0	0.0022	0.0022	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	2	0	0	0	0	0	0	0	0	0	5	5	4	0	5	5	4	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tabke B Groundwater Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

		Polycyclic Aromatic Hydrocarbons																				
	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (WHO)	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	Total Positive PAHs	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.001	0.001	0.001
ANZG (2018) Marine water 95% toxicant DGVs	0.07																					
Australian Drinking Water (2011) (as amended Oct 2017) – Aesthetics																						
Australian Drinking Water (2011) (as amended Oct 2017) – Health						0.00001																
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics																						
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health						0.0001																
NEPM 2013 Table 1A(4) Res HSL A/B GW for Vapour Intrusion, Sand																						
2-4m	NL																					

Field_ID	LocCode	Sampled_Date-Time	Lab_Report_Number																				
MW1	MW1	3/04/2020	712063	<0.01 - 0.00004	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	0.00008	<0.00001	-	<0.001	<0.001	<0.001
MW2	MW2	3/04/2020	712063	<0.01 - 0.00031	0.00035	<0.00001	0.00011	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00005	0.00015	<0.00001	0.00024	0.00125	0.00004	-	<0.001	<0.001	<0.001
MW3	MW3	3/04/2020	712063	<0.01 - 0.00053	0.0011	0.00029	0.00032	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.0001	0.00084	<0.00001	0.00074	0.004	0.00008	-	<0.001	<0.001	<0.001
QA	inter-lab duplicate of MW3	3/04/2020	240339	0.001 - 0.002	0.0027	0.0009	0.0004	<0.0001	<0.0001	<0.0005	-	<0.0001	-	<0.0001	<0.0001	0.0004	0.0021	<0.0001	0.0023	-	0.0002	0.01	<0.001	<0.001	<0.001
QC	intra-lab duplicate of MW3	3/04/2020	712063	<0.01 - 0.0003	0.00059	0.00014	0.00016	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00006	0.00039	<0.00001	0.00038	0.00206	0.00004	-	<0.001	<0.001	<0.001

Statistical Summary

Number of Results	5	5	5	5	5	5	1	4	5	4	5	5	5	5	5	5	4	5	1	5	5	5
Number of Detects	5	5	3	4	0	0	0	0	0	0	0	0	4	4	0	5	4	4	1	0	0	0
Minimum Concentration	0.001	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.0005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	0.00008	<0.00001	0.01	<0.001	<0.001	<0.001
Minimum Detect	0.001	0.00002	0.00014	0.00011	ND	ND	ND	ND	ND	ND	ND	ND	0.00005	0.00015	ND	0.00002	0.00008	0.00004	0.01	ND	ND	ND
Maximum Concentration	0.002	0.0027	0.0009	0.0004	<0.0001	<0.0001	<0.0005	<0.00001	<0.0001	<0.00001	<0.0001	<0.0001	0.0004	0.0021	<0.0001	0.0023	0.004	0.0002	0.01	<0.001	<0.001	<0.001
Maximum Detect	0.002	0.0027	0.0009	0.0004	ND	ND	ND	ND	ND	ND	ND	ND	0.0004	0.0021	ND	0.0023	0.004	0.0002	0.01	ND	ND	ND
Average Concentration	0.0024	0.00095	0.00027	0.0002	0.000014	0.000014		0.000005	0.000014	0.000005	0.000014	0.000014	0.00012	0.0007	0.000014	0.00074	0.0018	0.000073		0.0005	0.0005	0.0005
Median Concentration	0.00265	0.00059	0.00014	0.00016	0.000005	0.000005	0.00025	0.000005	0.000005	0.000005	0.000005	0.000005	0.00006	0.00039	0.000005	0.00038	0.001655	0.00004	0.01	0.0005	0.0005	0.0005
Standard Deviation	0.00052	0.0011	0.00037	0.00016	0.00002	0.00002		0	0.00002	0	0.00002	0.00002	0.00016	0.00085	0.00002	0.00091	0.0016	0.000076		0	0	0
Number of Guideline Exceedances	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tabke B Groundwater Analytical Results
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	Chlorinated Alkanes															Chlorinated Alkenes												
	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.001	0.001	0.001		0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZG (2018) Marine water 95% toxicant DGVs	1.9																											
Australian Drinking Water (2011) (as amended Oct 2017) – Aesthetics																												
Australian Drinking Water (2011) (as amended Oct 2017) – Health					0.003					0.003				0.004		0.03							0.05			0.02	0.0003
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics																												
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health					0.03					0.03				0.04		0.3							0.5			0.2	0.003
NEPM 2013 Table 1A(4) Res HSL A/B GW for Vapour Intrusion, Sand																												
2-4m																												
Field_ID	**LocCode**	**Sampled_Date-Time**	**Lab_Report_Number**																										
MW1	MW1	3/04/2020	712063	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW2	MW2	3/04/2020	712063	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW3	MW3	3/04/2020	712063	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QA	inter-lab duplicate of MW3	3/04/2020	240339	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	<0.01	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
QC	intra-lab duplicate of MW3	3/04/2020	712063	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Statistical Summary																												
Number of Results	5	5	5	1	5	5	5	1	5	5	5	5	5	4	5	5	1	1	4	5	5	5	5	5	5	5	5	5
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Minimum Detect	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
Maximum Concentration	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Maximum Detect	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
Average Concentration	0.0005	0.0005	0.0005		0.0005	0.0005	0.0005		0.0005	0.0005	0.0014	0.0014	0.0014	0.0005	0.0014	0.0005			0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0014
Median Concentration	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Standard Deviation	0	0	0		0	0	0		0	0	0.002	0.002	0.002	0	0.002	0			0	0	0	0	0	0	0	0	0	0.002
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tabke B Groundwater Analytical Results
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Project Name: SGS Weigall Sports Complex DSI

	Solvents	Monocyclic Aromatic Hydrocarbons										Miscellaneous Hydrocarbons					
	2-Propanone (Acetone)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Bromobenzene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromomethane	Cyclohexane	Dibromomethane
	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	1	0.001	0.001		0.001	0.001				0.001		0.001	0.001	0.001	0.001		0.001
ANZG (2018) Marine water 95% toxicant DGVs																	
Australian Drinking Water (2011) (as amended Oct 2017) – Aesthetics										0.004							
Australian Drinking Water (2011) (as amended Oct 2017) – Health	14000									0.03		0.001			0.001		
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics										0.04							
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health	140000									0.3		0.01			0.01		
NEPM 2013 Table 1A(4) Res HSL A/B GW for Vapour Intrusion, Sand																	
2-4m																	
Field_ID	**LocCode**	**Sampled_Date-Time**	**Lab_Report_Number**														
MW1	MW1	3/04/2020	712063	1	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001
MW2	MW2	3/04/2020	712063	<1	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001
MW3	MW3	3/04/2020	712063	<1	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001
QA	inter-lab duplicate of MW3	3/04/2020	240339	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.01	<0.001	<0.001
QC	intra-lab duplicate of MW3	3/04/2020	712063	1	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001

Statistical Summary

Number of Results	4	5	5	1	5	5	1	1	1	5	1	5	4	4	5	1	5
Number of Detects	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Minimum Detect	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001
Maximum Detect	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.75	0.0005	0.0005		0.0005	0.0005				0.0005		0.0005	0.0005	0.0005	0.0014		0.0005
Median Concentration	0.75	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Standard Deviation	0.29	0	0		0	0				0		0	0	0	0.002		0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tabke B Groundwater Analytical Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

			Chlorinated Benzenes							Trihalomethanes				Miscellaneous Industrial Chemicals	Organic Sulfur Compounds	Ionic Balance	Other		EPA VIC - IWRG621			
		Iodomethane	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Hexachlorobenzene	Bromodichloromethane	Chloroform	Dibromochloromethane	Tribromomethane	Hexachlorobutadiene	Carbon disulfide	EC_Lab	Total Dissolved Solids	Total Suspended Solids	Chlorinated Hydrocarbons EPAVic	Other Chlorinated Hydrocarbons EPAVic	Organochlorine Pesticides EPAVic	Other Organochlorine Pesticides EPAVic
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.001			0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001		0.001	10	5	1	5	5	1	1
ANZG (2018) Marine water 95% toxicant DGVs				0.08																		
Australian Drinking Water (2011) (as amended Oct 2017) – Aesthetics					0.001	0.02	0.003	0.01									600					
Australian Drinking Water (2011) (as amended Oct 2017) – Health					1.5		0.04	0.3		0.25	0.25	0.25	0.25	0.0007								
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics					0.01	0.2	0.03	0.1									6000					
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health					15		0.4	3		2.5	2.5	2.5	2.5	0.007								
NEPM 2013 Table 1A(4) Res HSL A/B GW for Vapour Intrusion, Sand																						
2-4m																						
Field_ID	**LocCode**	**Sampled_Date-Time**	**Lab_Report_Number**																			
MW1	MW1	3/04/2020	712063	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.005	<0.001	<0.001	-	<0.001	660	390	140	<5	<5	-	-
MW2	MW2	3/04/2020	712063	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.005	<0.001	<0.001	-	<0.001	490	330	120	<5	<5	-	-
MW3	MW3	3/04/2020	712063	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.005	<0.001	<0.001	-	<0.001	710	400	61	<5	<5	-	-
QA	inter-lab duplicate of MW3	3/04/2020	240339	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	410	46	-	-	-	-
QC	intra-lab duplicate of MW3	3/04/2020	712063	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.005	<0.001	<0.001	-	<0.001	710	390	52	<5	<5	-	-
Statistical Summary																						
Number of Results		4	1	1	5	5	5	5	0	5	5	5	5	1	4	4	5	5	4	4	0	0
Number of Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	5	0	0	0	0
Minimum Concentration		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	99999	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	490	330	46	<5	<5	99999	99999
Minimum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	490	330	46	ND	ND	ND	ND
Maximum Concentration		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	710	410	140	<5	<5	0	0
Maximum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	710	410	140	ND	ND	ND	ND
Average Concentration		0.0005			0.0005	0.0005	0.0005	0.0005		0.0005	0.0021	0.0005	0.0005		0.0005	643	384	84	2.5	2.5		
Median Concentration		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005		0.0005	0.0025	0.0005	0.0005	0.0005	0.0005	685	390	61	2.5	2.5		
Standard Deviation		0			0	0	0	0		0	0.00089	0	0		0	104	31	43	0	0		
Number of Guideline Exceedances		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C – Soil Waste Classification

Table C Waste Classification Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

	Asbestos ID - soils NEPM - A			PAHs in Soil	Metals & Metalloids								TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN							Polycyclic Aromatic Hydrocarbons																	
	FA and AF Estimation* #2	Total Asbestos#1	ACM >7mm Estimation*	Benzo(b,j+k)fluoranthene	Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs as B(a)P TEQ	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene
	%(w/w)	g/kg	%(w/w)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	0.4	1	1	1	0.1	1	1	20	20	50	50	50	50	100	100	50	50	20	20	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5	0.5	0.1	0.5	0.1	0.1		0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)					100	20	100		100	4	40		650				10000								10	600	288			1000						0.8													
NSW 2014 General Solid Waste SCC1 (with leached)					500	100	1900		1500	50	1050		650				10000								18	1080	518			1800						10													
Field_ID	**LocCode**	**Sample_Depth_Range**	**Sampled_Date-Time**	**Lab_Report_Number**																																														
BH101_0.2-0.3	BH101	0.2-0.3	30/03/2020	711021	-	-	-	-	7.1	<0.4	9.2	18	160	1	5.1	98	<20	<20	98	60	158	<50	140	<100	140	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	2.4	2.2	2.9	3.2	3.4	1.5	1.4	1.8	2	<0.5	3.174	4.2	<0.5	1.2	1.7
BH102_0.2-0.3	BH102	0.2-0.3	30/03/2020	711021	-	-	-	-	7.5	0.5	11	46	270	1.4	7.2	260	<20	<20	140	92	232	<50	200	<100	200	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.5 - 0.6	<0.5	0.6	0.8	5	4.5	6.6	6.6	6.6	3.3	2.7	3.8	3.4	0.5	6.591	7.3	<0.5	3.2	4.4
BH102_0.7-0.8	BH102	0.7-0.8	30/03/2020	711021	-	-	-	-	2.8	<0.4	10	31	290	0.3	32	110	<20	<20	160	95	255	<50	220	<100	220	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	0.7	3.9	3.3	4.5	4.7	5	2.1	2	2.7	3.6	<0.5	4.706	5.2	<0.5	2.3	3
BH103_0.9-1.0	BH103	0.9-1	27/03/2020	711021	-	-	-	-	10	<0.4	11	16	43	<0.1	<5	<5	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5
BH103_0-0.1	BH103	0-0.1	27/03/2020	711021	-	-	-	-	<2	<0.4	72	46	5.4	<0.1	85	65	<20	<20	53	220	273	<50	180	440	620	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	0.6
BH104_0.3-0.4	BH104	0.3-0.4	27/03/2020	711021	-	-	-	-	3	<0.4	27	<5	40	<0.1	5.9	16	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5
BH107_0.9-1.0	BH107	0.9-1	27/03/2020	711021	-	-	-	-	4.1	<0.4	20	29	140	0.6	16	180	<20	<20	500	170	670	56	570	110	736	56	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5 - 1.4	2.5	0.9	4.5	7.8	6.3	9.3	9.3	9.3	3.4	3.6	5.3	7.2	0.8	9.298	16	3.5	4.4	27
BH107_0-0.1	BH107	0-0.1	27/03/2020	711021	-	-	-	-	3.7	<0.4	8.5	17	61	0.3	5.2	55	<20	<20	<50	64	64	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.6	<0.5	<0.5	<0.5
MW1_0.5-0.6	MW1	0.5-0.6	27/03/2020	711021	-	-	-	-	8.5	<0.4	14	36	180	1	6.4	110	<20	<20	300	130	430	<50	410	<100	410	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	1.2 - 1.6	0.8	0.6	3.8	9	7	11	11	11	5.5	4.7	6.3	7	1.7	11.31	18	0.9	4.1	13
MW1_3.5-3.6	MW1	3.5-3.6	27/03/2020	711021	-	-	-	-	15	<0.4	53	7.3	55	0.3	6.1	27	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5
MW2_0.2-0.3	MW2	0.2-0.3	27/03/2020	711021	-	-	-	-	3.4	<0.4	8	17	110	0.3	<5	47	<20	<20	78	<50	78	<50	110	<100	110	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	1.9	2	2.6	2.9	3.1	1.4	1.2	1.5	1.7	<0.5	2.859	3.2	<0.5	1	1.3
MW3_1.0-1.1	MW3	1-1.1	27/03/2020	711021	-	-	-	-	4.3	<0.4	20	6.2	12	<0.1	<5	<5	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	0.6	<0.5	<0.5	0.5
MW3_1.4-1.5	MW3	1.4-1.5	27/03/2020	711021	-	-	-	-	4.8	<0.4	18	34	100	0.6	<5	120	<20	<20	240	180	420	<50	400	<100	400	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	0.8	1.1	6	6	9.4	9.4	9.4	4.4	4.1	5.6	5.8	1.4	9.439	11	<0.5	3.4	4.7
QA01	QA01		27/03/2020	240103	<0.001	<0.1	<0.01	0.7	6	<0.4	18	6	25	<0.1	1	8	<25	<50	<100	<100	-	<50	<100	<100	<50	<50	<25	<25	<0.2	<1	<0.5	<1	<2	<3	<1 - 0.2	<0.1	0.1	0.4	0.6	0.4	0.6	0.7	0.7	-	0.2	-	0.5	<0.1	0.537	1.2	0.3	0.2	1.2
QC01	MW3_1.0-1.1		27/03/2020	711021	-	-	-	-	12	<0.4	43	6.5	29	0.2	<5	6.9	<20	<20	<50	<50	<50	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	0.6	1.1	0.8	1	1.3	1.6	<0.5	<0.5	0.8	0.9	<0.5	1.302	2.3	<0.5	<0.5	2.3
Statistical Summary																																																	
Number of Results					1	1	1	1	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	14	15	15	15	15	15	15	15
Number of Detects					0	0	0	1	14	1	15	14	15	10	10	13	0	0	8	8	9	1	8	2	8	1	0	0	0	0	0	0	0	4	2	5	7	9	9	9	15	15	7	8	8	9	4	9	11	3	8	11
Minimum Concentration					<0.001	<0.1	<0.01	0.7	<2	<0.4	8	<5	5.4	<0.1	1	<5	<20	<20	<50	<50	<50	<50	<100	<100	<50	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.1	0.1	0.4	<0.5	0.4	<0.5	0.6	0.7	<0.5	0.2	<0.5	<0.5	<0.1	0.537	<0.5	0.3	0.2	<0.5
Minimum Detect					ND	ND	ND	0.7	2.8	0.5	8	6	5.4	0.2	1	6.9	ND	ND	53	60	64	56	110	110	110	56	ND	ND	ND	ND	ND	ND	ND	0.5	0.8	0.1	0.4	0.6	0.4	0.6	0.6	0.7	1.4	0.2	0.8	0.5	0.5	0.537	0.6	0.3	0.2	0.5
Maximum Concentration					<0.001	<0.1	<0.01	0.7	15	0.5	72	46	290	1.4	85	260	<25	<50	500	220	670	56	570	440	736	56	<25	<25	<0.2	<1	<0.5	<1	<2	<3	1.6	2.5	0.9	4.5	9	7	11	11	11	5.5	4.7	6.3	7.2	1.7	11.31	18	3.5	4.4	27
Maximum Detect					ND	ND	ND	0.7	15	0.5	72	46	290	1.4	85	260	ND	ND	500	220	670	56	570	440	736	56	ND	ND	ND	ND	ND	ND	ND	1.6	2.5	0.9	4.5	9	7	11	11	11	5.5	4.7	6.3	7.2	1.7	11.31	18	3.5	4.4	27
Average Concentration									6.2	0.22	23	21	101	0.42	12	74	10	11	118	81	193	27	172	80	211	27	10	10	0.053	0.08	0.063	0.08	0.16	0.24	0.39	0.42	0.37	0.93	2.6	2.3	3.3	3.5	3.8	1.7	1.4	2.1	2.2	0.46	3.5	4.7	0.51	1.4	4
Median Concentration					0.0005	0.05	0.005	0.7	4.8	0.2	18	17	61	0.3	5.2	55	10	10	53	60	118	25	110	50	110	25	10	10	0.05	0.05	0.05	0.05	0.1	0.15	0.25	0.25	0.25	0.25	1.1	0.8	1	1.3	1.6	0.825	0.25	1.15	0.9	0.25	1.302	2.3	0.25	0.25	1.3
Standard Deviation									3.8	0.077	19	15	90	0.42	22	74	0.65	3.9	136	66	200	8	165	101	227	8	0.65	0.65	0.013	0.12	0.052	0.12	0.23	0.35	0.32	0.59	0.24	1.3	3	2.5	3.9	3.8	3.6	1.8	1.6	2.3	2.6	0.47	3.8	5.9	0.84	1.6	7.1
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0

Table C Waste Classification Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

				Organochlorine Pesticides																											Polychlorinated Biphenyls									Chlorinated Benzenes	Asbestos									
	PAHs (Total)	Pyrene	Total Positive PAHs	4,4-DDE	Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	DDD	DDT	Dieldrin	DDT+DDE+DDD (Sum of Total)	delta-BHC	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	Hexachlorobenzene	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	%w/w	%w/w	g	g	g	g	g	g	g
EQL	0.5	0.1		0.05	0.05	0.05	0.05		0.05	0.1	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	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05										
NSW 2014 General Solid Waste CT1 (No Leaching)	200																																	<50											
NSW 2014 General Solid Waste SCC1 (with leached)	200																																	<50-											
Field_ID	**LocCode**	**Sample_Depth_Range**	**Sampled_Date-Time**	**Lab_Report_Number**																																											
BH101_0.2-0.3	BH101	0.2-0.3	30/03/2020	711021	22.7	4.3	-	0.09	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	500	0	0	0	0	0	0	0	0	0
BH102_0.2-0.3	BH102	0.2-0.3	30/03/2020	711021	47.3	7.3	-	0.08	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	0.07	<0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	487	0	0	0	0	0	0	0	0	0
BH102_0.7-0.8	BH102	0.7-0.8	30/03/2020	711021	34.2	5.4	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	-	-	-	-	-	-	-	-	-
BH103_0.9-1.0	BH103	0.9-1	27/03/2020	711021	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-
BH103_0-0.1	BH103	0-0.1	27/03/2020	711021	0.6	<0.5	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	461	0	0	0	0	0	0	0	0	0
BH104_0.3-0.4	BH104	0.3-0.4	27/03/2020	711021	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	565	0	0	0	0	0	0	0	0	0
BH107_0.9-1.0	BH107	0.9-1	27/03/2020	711021	110.6	16	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	-	-	-	-	-	-	-	-	-
BH107_0-0.1	BH107	0-0.1	27/03/2020	711021	1.3	0.7	-	<0.2	<0.05	<0.05	<0.05	-	<0.05	<0.1	<0.05	<0.1	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	549	0	0	0	0	0	0	0	0	0
MW1_0.5-0.6	MW1	0.5-0.6	27/03/2020	711021	101	17	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	555	0	0	0	0	0	0	0	0	0
MW1_3.5-3.6	MW1	3.5-3.6	27/03/2020	711021	<0.5	<0.5	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-
MW2_0.2-0.3	MW2	0.2-0.3	27/03/2020	711021	18.6	3.4	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	559	0	0	0	0	0	0	0	0	0
MW3_1.0-1.1	MW3	1-1.1	27/03/2020	711021	1.8	0.7	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	512	0	0	0	0	0	0	0	0	0
MW3_1.4-1.5	MW3	1.4-1.5	27/03/2020	711021	66.3	12	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-
QA01	QA01		27/03/2020	240103	-	1.2	7.3	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
QC01	MW3_1.0-1.1		27/03/2020	711021	11.2	2.4	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.1	<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	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	455	0	0	0	0	0	0	0	0	0
Statistical Summary																																																
Number of Results					14	15	1	15	15	15	15	1	15	14	15	15	15	15	15	15	15	15	15	15	15	14	1	15	15	15	15	14	15	15	15	15	15	15	15	15	9	9	9	9	9	9	9	9	9
Number of Detects					11	11	1	2	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9	9	9	9	9	9
Minimum Concentration					<0.5	<0.5	7.3	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	455	0	0	0	0	0	0	0	0
Minimum Detect					0.6	0.7	7.3	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	ND	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	455	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					110.6	17	7.3	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	565	0	0	0	0	0	0	0	0
Maximum Detect					110.6	17	7.3	0.09	ND	ND	ND	ND	ND	0.07	ND	0.15	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	565	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					30	4.8		0.045	0.032	0.035	0.032		0.032	0.061	0.032	0.036	0.032	0.049	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.03		0.032	0.032	0.032	0.097	1.5	0.24	0.09	0.24	0.24	0.24	0.24	0.24	0.24	0.032	516	0	0	0	0	0	0	0	0	0
Median Concentration					14.9	2.4	7.3	0.025	0.025	0.025	0.025	0.05	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.1	0.5	0.25	0.05	0.25	0.25	0.25	0.25	0.25	0.25	0.025	512	0	0	0	0	0	0	0	0
Standard Deviation					38	5.8		0.026	0.011	0.021	0.011		0.011	0.021	0.011	0.015	0.011	0.037	0.011	0.011	0.011	0.011	0.011	0.011	0.011			0.011	0.011	0.011	0.013	1.9	0.052	0.083	0.052	0.052	0.052	0.052	0.052	0.052	0.011	43	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0

Table C Waste Classification Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

| | Metals & Metalloids | | | | | | | | TPHs (NEPC 1999) | | | | | TRHs (NEPC 2013) | | | | | | | BTEXN | | | | | | | Polycyclic Aromatic Hydrocarbons | | | | | | | |

Table C Waste Classification Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

	Organochlorine Pesticides																						Polychlorinated Biphenyls								Chlorinated Benzenes	Asbestos									
	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	DDD	DDT	Dieldrin	DDT+DDE+DDD (Sum of Total)	delta-BHC	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	Hexachlorobenzene	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF
	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	g	%w/w	%w/w	g	g	g	g	g	g	g
EQL	0.05	0.05		0.05	0.1	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	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05										
NSW 2014 General Solid Waste CT1 (No Leaching)																														<50											
NSW 2014 General Solid Waste SCC1 (with leached)																														<50-											
Field_ID	**LocCode**	**Sample_Depth_Range**	**Sampled_Date-Time**	**Lab_Report_Number**																																						
BH109 0-0.1	BH109	0-0.1	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	363	0	0	0	0	0	0	0	0	0
BH109 2.6-2.7	BH109	2.6-2.7	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH110 0.5-0.6	BH110	0.5-0.6	28/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	599	0	0	0	0	0	0	0	0	0
BH111 0.1-0.2	BH111	0.1-0.2	28/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	520	0	0	0	0	0	0	0	0	0
BH111 1.5-1.6	BH111	1.5-1.6	28/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH112 0.3-0.4	BH112	0.3-0.4	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	660	0	0	0	0	0	0	0	0	0
BH113 0.4-0.5	BH113	0.4-0.5	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	570	0	0	0	0	0	0	0	0	0
BH113 2.6-2.7	BH113	2.6-2.7	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH114 0.2-0.3	BH114	0.2-0.3	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	532	0	0	0	0	0	0	0	0	0
BH115 0.9-1.0	BH115	0.9-1	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	614	0	0	0	0	0	0	0	0	0
BH115 2.5-2.6	BH115	2.5-2.6	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH116 0.3-0.4	BH116	0.3-0.4	27/05/2020	722434																												631	0	0	0	0	0	0	0	0	0
BH116 1.5-1.6	BH116	1.5-1.6	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH117 0-0.1	BH117	0-0.1	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	515	0	0	0	0	0	0	0	0	0
BH117 1.5-1.6	BH117	1.5-1.6	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05										
BH118 0.3-0.4	BH118	0.3-0.4	27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	603	0	0	0	0	0	0	0	0	0
QA01	QA01		27/05/2020	243807	<0.2	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										
QC01	BH109 0-0.1		27/05/2020	722434	<0.05	<0.05		<0.05	<0.1	<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	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	501	0	0	0	0	0	0	0	0	0
Statistical Summary																																								
Number of Results					17	17	1	17	16	17	17	17	17	17	17	17	17	17	16	1	17	17	17	17	16	17	17	17	17	17	17	17	17	11	11	11	11	11	11	11	11	11
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11	11	11	11	11	11
Minimum Concentration					<0.05	<0.05	<0.1	<0.05	<0.1	<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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	363	0	0	0	0	0	0	0	0	0
Minimum Detect					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	363	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.2	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	660	0	0	0	0	0	0	0	0	0
Maximum Detect					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	660	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					0.026	0.05		0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.025		0.026	0.026	0.026	0.026	0.097	0.5	0.24	0.05	0.24	0.24	0.24	0.24	0.24	0.24	0.026	555	0	0	0	0	0	0	0	0	0
Median Concentration					0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.05	0.05	0.025	0.025	0.025	0.025	0.1	0.5	0.25	0.05	0.25	0.25	0.25	0.25	0.25	0.25	0.025	570	0	0	0	0	0	0	0	0	0
Standard Deviation					0.018	0.0061		0.0061	0	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0		0.0061	0.0061	0.0061	0.012	0	0.049	0	0.049	0.049	0.049	0.049	0.049	0.049	0.0061	82	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0

Table C Waste Classification Results
Project Number: 58554
Project Name: SGS Weigall Sports Complex DSI

	Metals & Metalloids	BTEXN	Polycyclic Aromatic Hydrocarbons																Ionic Balance		
	Lead	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	pH (TCLP - HCl addition)	pH (TCLP - initial)	pH (TCLP - off)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ph Units	ph Units	ph Units
EQL	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.1	0.1	0.1
NSW 2014 General Solid Waste TCLP1 (leached)	5						0.04														
Field_ID **LocCode** **Sample_Depth_Range** **Sampled_Date-Time** **Lab_Report_Number**																					
BH109 2.6-2.7 BH109 2.6-2.7 27/05/2020 724951	0.81	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.6	8.4	5.1
BH118 0.3-0.4 BH118 0.3-0.4 27/05/2020 724951	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.6	8.2	5
MW1_0.5-0.6 MW1 0.5-0.6 27/03/2020 715872	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.7	3.5	5.2
MW3_1.4-1.5 MW3 1.4-1.5 27/03/2020 715872	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.7	3.6	5.1
Statistical Summary																					
Number of Results	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Number of Detects	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4
Minimum Concentration	0.81	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.6	3.5	5
Minimum Detect	0.81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	3.5	5
Maximum Concentration	0.81	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.7	8.4	5.2
Maximum Detect	0.81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	8.4	5.2
Average Concentration		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	1.7	5.9	5.1
Median Concentration	0.81	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	1.65	5.9	5.1
Standard Deviation		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.058	2.7	0.082
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix A Photo Log

PHOTOGRAPH 1: NORTHWESTERN EXTENT OF THE SITE FACING EAST



PHOTOGRAPH 2: NORTHEASTERN EXTENT OF THE SITE FACING SOUTH



PHOTOGRAPH 3: NORTHWESTERN EXTENT OF THE SITE FACING NORTH



PHOTOGRAPH 4: INSTALLATION OF MONITORING WELL MW1



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	

Neild Avenue, Paddington NSW

APPENDIX A

PHOTOGRAPH 5: NORTHWESTERN EXTENT OF THE SITE FACING NORTH



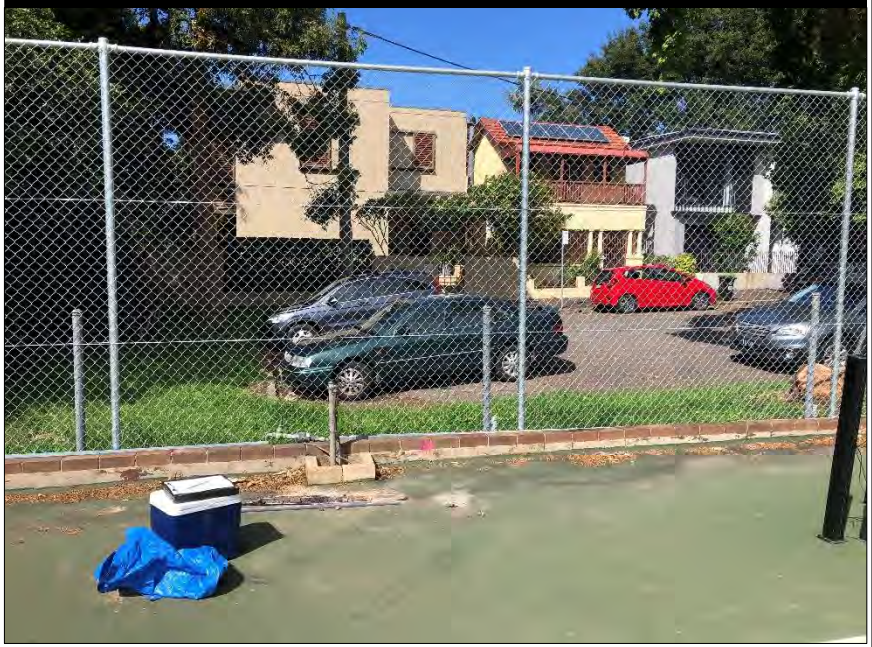
PHOTOGRAPH 6: BOREHOLE BH103 LOCATION



PHOTOGRAPH 7: BOREHOLE BH107 LOCATION



PHOTOGRAPH 8: EASTERN EXTENT OF THE SITE FACING EAST ADJACENT BH104



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	

Neild Avenue, Paddington NSW

APPENDIX A

PHOTOGRAPH 9: BH104 PUSHTUBE RECOVERY



PHOTOGRAPH 10: SOUTHERN BOUNDARY OF THE SITE



PHOTOGRAPH 11: INSTALLATION OF MW2



PHOTOGRAPH 12: NORTHEASTERN EXTENT OF THE SITE FACING SOUTHEAST



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	

Neild Avenue, Paddington NSW

APPENDIX A

PHOTOGRAPH 13: BARRY PAVILION STRUCTURE



PHOTOGRAPH 14: BARRY PAVILION STRUCTURE



PHOTOGRAPH 15: NORTHWESTERN EXTENT OF THE SITE FACING EAST



PHOTOGRAPH 16: NORTHWESTERN EXTENT OF THE SITE FACING SOUTH



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	
Neild Avenue, Paddington NSW	

APPENDIX A

PHOTOGRAPH 17: CRICKET NETS AREA FACING EAST



PHOTOGRAPH 18: CRICKET NETS AREA FACING NORTH



PHOTOGRAPH 19: CRICKET NETS AREA FACING SOUTH



PHOTOGRAPH 20: CRICKET NETS AREA FACING WEST



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	

Neild Avenue, Paddington NSW

APPENDIX A

PHOTOGRAPH 21: SOUTHEASTERN EXTENT OF CRICKET NETS AREA FACING NORTHEAST



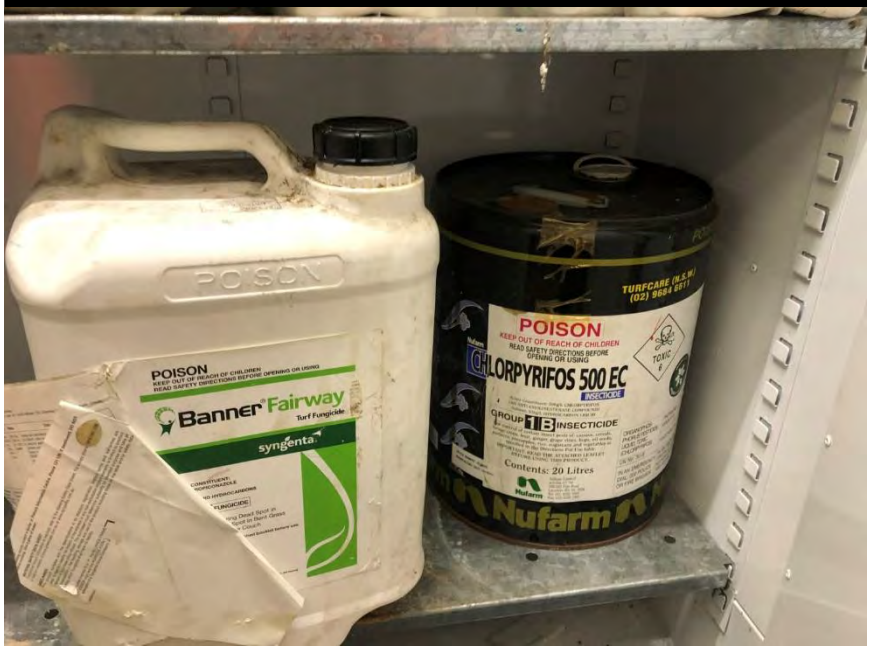
PHOTOGRAPH 22: CHEMICAL STORAGE AREA WITHIN BARRY PAVILION



PHOTOGRAPH 23: CHEMICAL STORAGE AREA WITHIN BARRY PAVILION



PHOTOGRAPH 24: CHEMICAL STORAGE AREA WITHIN BARRY PAVILION



JBS&G

Job No: 58554	
Client: SGS c/- Jattca Property Solutions	
Version: R01 Rev A	Date: 5 May 2020
Drawn By: SG	Checked By: GRD
Not to Scale	
Coord. Sys n/a	
Neild Avenue, Paddington NSW	

APPENDIX A

Appendix B Groundwater Bore Searches

State Overview
State Overview

Rivers and Streams
favourites · search · download sites · find a site
Real Time Data - Rivers And Streams

Daily River Reports
Daily River Reports

Dams
favourites · search · download sites · find a site
Real Time Data - Major Dams

Groundwater (Telemetered data)
favourites · search · download sites · find a site
Real Time Data - Bores

All Groundwater Site details
search · download sites · find a site ·
search by licence

Search
Enter keywords
(site name or number)

search

All Groundwater Map

Meteorology
favourites · search · download sites · find a site
Real Time Data - Weather Stations

Hunter Integrated Telemetry System
Hunter Integrated Telemetry System

glossary and metadata

All Groundwater Site Details

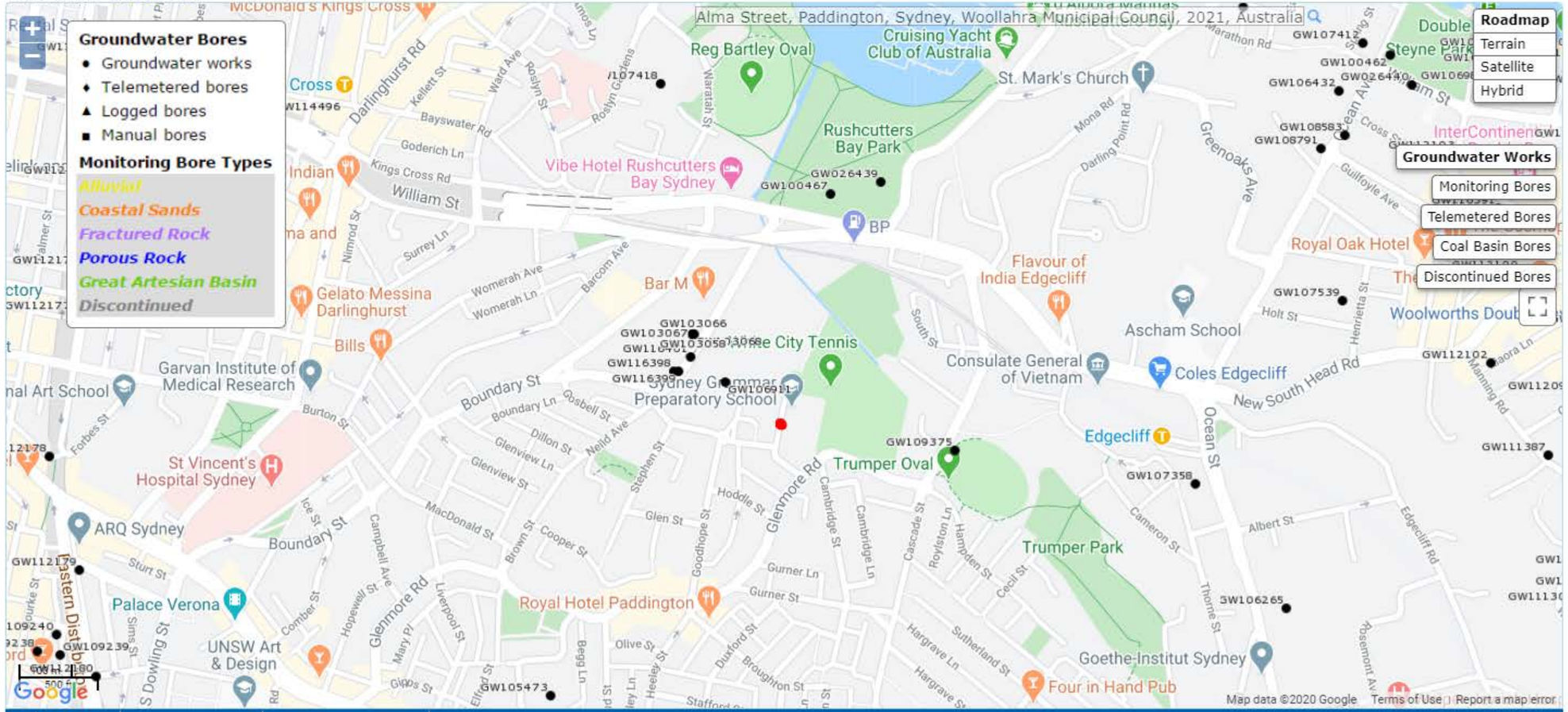
All Groundwater Map

bookmark this page

All data times are Eastern Standard Time

Map | Info

current site: GW105473



WaterNSW
Work Summary

GW026439

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date:
Completion Date: 01/07/1966
Final Depth: 7.90 m
Drilled Depth: 7.90 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description: Potable
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 213 - SYDNEY COAST - GEORGES RIVER
Area/District:
CMA Map: 9130-3S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6250190.000
Easting: 336454.000
Latitude: 33°52'33.5"S
Longitude: 151°13'54.1"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing		0.00	4.80	152			
1	1	Opening	Screen - Gauze/Mesh	4.80	7.80	152		1	Copper Alloy

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
2.10	7.80	5.70	Unconsolidated	1.00		3.28			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.79	1.79	Clay Rubble	Clay	
1.79	2.13	0.34	Clay	Clay	
2.13	5.18	3.05	Sand White Fossils:carbonised Wood Water Supply	Sand	
5.18	7.92	2.74	Sand White Clean Water Supply	Sand	

Remarks

07/08/1974: SITED RUSHCUTTER'S BAY PARK

***** End of GW026439 *****

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

WaterNSW
Work Summary

GW100467

Licence: 10WA109385
Licence Status: CURRENT

Authorised Purpose(s): RECREATION (GROUNDWATER)
Intended Purpose(s): RECREATION (GROU

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Cable Tool
Owner Type: Private

Commenced Date:
Completion Date: 15/03/1996
Final Depth: 14.50 m
Drilled Depth: 15.50 m

Contractor Name: B & B DRILLING INC
Driller: Michael Gerard Barrett
Assistant Driller:

Property: RUSHCUTTERS BAY PARK New South Head Rd DOUBLE BAY 2028 NSW
GWMA: -
GW Zone: -
Standing Water Level (m): 2.350
Salinity Description:
Yield (L/s): 5.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	RESERVE 3197-3000
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot 7321//1165813

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6250169.000
Easting: 336373.000
Latitude: 33°52'34.1"S
Longitude: 151°13'50.9"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	14.50	150			Cable Tool
1		Annulus	(Unknown)	11.50	14.50				Graded
1	1	Casing	Steel	0.00	12.50	160	159		Seated on Bottom, Welded
1	1	Opening	Screen - Wire Wound	12.50	14.50	160		0	Stainless Steel, Welded, A: 0.40mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
2.35	14.50	12.15	Unknown	2.35	2.35	5.00	14.50	08:00:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	BROWN SANDY SOIL	Soil	
0.20	1.30	1.10	FILL SAND, BRICKS, BOTTLES	Sand	
1.30	6.50	5.20	BROWN SAND	Sand	
6.50	12.00	5.50	YELLOW SAND	Sand	
12.00	13.00	1.00	BROWN SAND	Sand	
13.00	14.50	1.50	VERY SILTY BROWN SAND	Sand	
14.50	15.50	1.00	GREY CLAY	Clay	

Remarks

10/10/2011: Adjusted Inside, Outside Diameter and Thickness due to data entry errors with advice from Madhwan Keshwan. GDS Data Cleanup project 2011.
14/01/2013: Nat Carling, 14-Jan-2013; Added rock type codes to driller's log & added missing information (based on existing data).

***** End of GW100467 *****

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

WaterNSW
Work Summary

GW103058

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 23/09/1999
Final Depth: 6.20 m
Drilled Depth: 6.20 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336148.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.20	100			Auger
1		Annulus	(Unknown)	1.30	5.50				Graded, Q:2.000m3
1	1	Opening	Slots - Vertical	2.50	5.50	50		0	PVC, SL: 6.2mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.00	5.00	FILL	Fill	
5.00	6.20	1.20	SAND	Sand	

Remarks

23/09/1999: Form A Remarks:
AQUIFERS: S.W.L.: 4.5

***** End of GW103058 *****

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WaterNSW
Work Summary

GW103059

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 23/09/1999
Final Depth: 5.50 m
Drilled Depth: 6.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336150.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.1"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.50	100			Auger
1		Annulus	(Unknown)	1.30	5.50				Graded, Q:2.000m3
1	1	Opening	Slots - Vertical	2.50	5.50	50		0	PVC, SL: 5.5mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.00	5.00	FILL	Fill	
5.00	6.00	1.00	SAND	Sand	

Remarks

23/09/1999: Form A Remarks:
AQUIFERS: S.W.L.: 4.5m

***** End of GW103059 *****

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WaterNSW
Work Summary

GW103063

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 21/08/2000
Final Depth:
Drilled Depth: 5.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336148.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	100			Auger
1		Annulus	(Unknown)	1.50	5.00				Q:2.000m3
1	1	Opening	Slots	2.00	5.00	50		0	PVC, SL: 5.0mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.50	3.50	FILL	Fill	
3.50	5.00	1.50	SAND	Sand	

Remarks

21/08/2000: Form A Remarks:
Aquifers: 3.6m

***** End of GW103063 *****

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WaterNSW
Work Summary

GW103064

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 21/08/2000
Final Depth:
Drilled Depth: 5.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336149.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.1"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	100			Auger
1		Annulus	(Unknown)	1.50	5.00				Q:2.000m3
1	1	Opening	Slots	2.00	5.00	50		0	PVC, SL: 5.0mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.60	3.60	FILL	Fill	
3.60	5.00	1.40	SAND	Sand	

Remarks

21/08/2000: Form A Remarks:
Aquifers: 3.6m

***** End of GW103064 *****

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WaterNSW
Work Summary

GW103066

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 23/09/1999
Final Depth: 4.70 m
Drilled Depth: 6.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336148.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	4.70	100			Auger
1		Annulus	(Unknown)	2.60	5.80				
1	1	Opening	Slots - Vertical	2.80	5.80	50		0	PVC

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.70	4.70	fill	Fill	
4.70	6.00	1.30	sandstone	Sandstone	

Remarks

23/09/1999: Form A Remarks:
Aquifers: 3.4m

***** End of GW103066 *****

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WaterNSW
Work Summary

GW103067

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 24/09/1999
Final Depth: 5.00 m
Drilled Depth: 5.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249933.000
Easting: 336149.000
Latitude: 33°52'41.6"S
Longitude: 151°13'42.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	100			Auger
1		Annulus	(Unknown)	0.00	5.00				Graded
1	1	Opening	Slots	1.80	4.80	50		0	PVC

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.00	4.00	fill	Fill	
4.00	4.80	0.80	sand	Sand	
4.80	5.00	0.20	sandstone	Sandstone	

Remarks

24/09/1999: Form A Remarks:
Aquifers:3.5m

***** End of GW103067 *****

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WaterNSW
Work Summary

GW103068

Licence: 10BL159568 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:** 5.00 m
Completion Date: 24/09/1999 **Drilled Depth:** 5.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: N/A NSW **Standing Water Level (m):**
GWMA: - **Salinity Description:**
GW Zone: - **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	1//503527
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot B//326444

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6249933.000 **Latitude:** 33°52'41.6"S
Elevation Source: Unknown **Easting:** 336148.000 **Longitude:** 151°13'42.0"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	100			Auger
1		Annulus	(Unknown)	0.00	5.00				Graded
1	1	Opening	Slots	1.75	4.75	50		0	PVC

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.90	3.90	FILL	Fill	
3.90	5.00	1.10	SANDSTONE	Sandstone	

Remarks

24/09/1999: Form A Remarks:
Aquifers: 3.3m

***** End of GW103068 *****

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

WaterNSW
Work Summary

GW105473

Licence:
Licence Status:

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

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

Commenced Date:
Completion Date: 12/06/2003
Final Depth: 2.40 m
Drilled Depth: 2.40 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	64558
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249333.000
Easting: 335922.000
Latitude: 33°53'01.0"S
Longitude: 151°13'32.8"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	2.40	100			Unknown

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.00	2.00	SAND,GREY/BROWN,MEDIUM GRAINED	Sand	
2.00	2.40	0.40	SANDSTONE,BEDROCK	Sandstone	

***** End of GW105473 *****

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

WaterNSW
Work Summary

GW106911

Licence: 10WA109419
Licence Status: CURRENT

Authorised Purpose(s): RECREATION (GROUNDWATER)
Intended Purpose(s): RECREATION (GROU

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

Commenced Date:
Completion Date: 11/11/2004
Final Depth: 42.60 m
Drilled Depth: 42.60 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Colin Leslie Barden
Assistant Driller:

Property: WEIGALL SPORTS GROUND Cnr Neild Ave & New South Head Rd PADDINGTON 2021 NSW
GWMA: -
GW Zone: -
Standing Water Level (m): 10.500
Salinity Description:
Yield (L/s): 1.300

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	2 547260
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot 2//547260

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249856.000
Easting: 336204.000
Latitude: 33°52'44.2"S
Longitude: 151°13'44.1"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.60	204			Down Hole Hammer
1		Hole	Hole	5.60	42.60	158			Down Hole Hammer
1	1	Casing	Steel	-0.40	5.60	168	158		Driven into Hole
1	1	Casing	Pvc Class 9	0.40	23.60	140			Suspended in Clamps, Screwed and Glued
1	1	Opening	Slots - Diagonal	15.50	23.60	140		0	Sawn, PVC Class 9, SL: 100.0mm, A: 3.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
2.50	3.00	0.50	Unknown			1.00	6.00		
16.50	17.10	0.60	Unknown	10.50		1.30	18.00	01:00:00	360.00

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.40	0.40	BLACK SAND ,CLAY	Sand	
0.40	0.80	0.40	DARK GREY SHALE	Shale	
0.80	2.40	1.60	DARK GREY SAND	Sand	
2.40	3.30	0.90	DARK GREY SANDY CLAY	Sandy Clay	
3.30	6.60	3.30	GREY SANDSTONE	Sandstone	
6.60	8.10	1.50	BROWN SANDSTONE	Sandstone	
8.10	9.40	1.30	GREY SANDSTONE	Sandstone	
9.40	9.60	0.20	GREY SHALE	Shale	
9.60	16.50	6.90	GREY SANDSTONE	Sandstone	
16.50	17.10	0.60	GREY SANDSTONE FRACTURED	Sandstone	
17.10	27.40	10.30	LT GREY SANDSTONE	Sandstone	
27.40	27.50	0.10	GREY CLAY	Clay	
27.50	33.50	6.00	LT GREY SANDSTONE	Sandstone	
33.50	34.10	0.60	DARK GREY SHALE	Shale	
34.10	42.60	8.50	GREY SANDSTONE	Sandstone	

Remarks

20/03/2006: Previous Lic No:10BL163916
11/03/2011: Karla Abbs, 11-Mar-2011: Replaced invalid codes in Drillers Log

***** End of GW106911 *****

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WaterNSW
Work Summary

GW107358

Licence: 10WA108882
Licence Status: CURRENT

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Down Hole Hamm
Owner Type: Private

Commenced Date:
Completion Date: 26/08/2005
Final Depth: 180.50 m
Drilled Depth: 180.50 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Brett Roy Wyatt
Assistant Driller:

Property: STRATA PLAN 32124 170 Ocean St EDGECLIFF 2027 NSW
GWMA: -
GW Zone: -
Standing Water Level (m): 41.800
Salinity Description:
Yield (L/s): 0.130

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	SP32124
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot //32124

Region: 10 - Sydney South Coast
River Basin: 213 - SYDNEY COAST - GEORGES RIVER
Area/District:
CMA Map: 9130-3S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249700.000
Easting: 336985.000
Latitude: 33°52'49.7"S
Longitude: 151°14'14.4"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unidentified

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.60	202			Down Hole Hammer
1		Hole	Hole	5.60	180.50	159			Down Hole Hammer
1		Annulus	Concrete	0.00	5.70	159			
1	1	Casing	Pvc Class 9	-0.30	35.70	140			Suspended in Clamps, Screwed and Glued
1	1	Casing	Steel	-0.30	5.70	159	149		Driven into Hole
1	1	Opening	Slots - Diagonal	17.70	25.70	140		0	Sawn, PVC Class 9, SL: 100.0mm, A: 3.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
22.50	24.30	1.80	Unknown			0.10		00:50:00	166.00
60.60	61.00	0.40	Unknown			0.03		00:50:00	160.00

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	fill	Fill	
0.20	0.50	0.30	sand, light brown	Sand	
0.50	1.40	0.90	clay, dark brown sandy	Clay	
1.40	2.00	0.60	sand, golden	Sand	
2.00	3.50	1.50	sandstone, brown weathered	Sandstone	
3.50	7.60	4.10	sandstone, light grey	Sandstone	
7.60	8.10	0.50	shale, grey	Shale	
8.10	22.50	14.40	sandstone, light grey	Sandstone	
22.50	22.70	0.20	shale, black, mineralised, water bearing	Shale	
22.70	24.10	1.40	sandstone, light grey	Sandstone	
24.10	24.30	0.20	shale, black, mineralised, water bearing	Shale	
24.30	60.60	36.30	sandstone, light grey	Sandstone	
60.60	61.00	0.40	siltstone, dark grey/grey sandstone & quartz, water bearing	Siltstone	
61.00	78.40	17.40	sandstone, light grey	Sandstone	
78.40	129.80	51.40	sandstone, ligh grey & some quartz bands	Sandstone	
129.80	180.50	50.70	sandstone, light grey with siltstone bands	Sandstone	

Remarks

26/08/2005: Form A Remarks:
bore cap pop riveited on
30/03/2010: updated from original form A

***** End of GW107358 *****

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WaterNSW
Work Summary

GW107418

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): DOMESTIC

Work Type: Spear
Work Status: Supply Obtained
Construct.Method: Cable Tool
Owner Type: Private

Commenced Date:
Completion Date: 21/10/2005
Final Depth: 11.50 m
Drilled Depth: 11.50 m

Contractor Name: B & B DRILLING INC
Driller: Michael Gerard Barrett
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m): 3.500
Salinity Description: Good
Yield (L/s): 1.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	SP10872
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 213 - SYDNEY COAST - GEORGES RIVER
Area/District:
CMA Map: 9130-3N
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6250345.000
Easting: 336088.000
Latitude: 33°52'28.2"S
Longitude: 151°13'40.0"E

GS Map: -
MGA Zone: 56
Coordinate Source: GIS - Geogra

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	11.50	150			Cable Tool
1	1	Casing	Steel	0.00	8.50	150			Seated on Bottom, Welded
1	1	Opening	Screen - Wire Wound	8.50	11.50	125		0	Stainless Steel, Packer, A: 0.15mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
3.50	11.50	8.00	Unknown	3.50		1.00		01:00:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	bitumen	Fill	
0.10	1.50	1.40	fill, round bands	Fill	
1.50	7.00	5.50	sand, grey silty	Sand	
7.00	11.50	4.50	sand, yellow silty	Sand	

Remarks

31/03/2010: updated from original form A

***** End of GW107418 *****

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WaterNSW
Work Summary

GW109375

Licence: 10CA109547 **Licence Status:** CURRENT

Authorised Purpose(s): IRRIGATION
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date: **Final Depth:** 13.50 m
Completion Date: 29/09/2008 **Drilled Depth:**

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: TRUMPER PARK 361-441 Glenmore Rd PADDINGTON 2021 NSW **Standing Water Level (m):**
GWMA: - **Salinity Description:**
GW Zone: - **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	ALEXANDRI	7097 1122405
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot 10//1156846

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6249749.000 **Latitude:** 33°52'47.8"S
Elevation Source: Unknown **Easting:** 336586.000 **Longitude:** 151°13'58.9"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.50	250			Cable Tool
1	1	Casing	Steel	0.00	10.50	168			Seated on Bottom, Welded
1	1	Opening	Screen	10.50	13.50	168		0	Stainless Steel, Welded, A: 0.50mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	BROWN SOIL	Unknown	
1.00	3.50	2.50	BROWN SAND	Unknown	
3.50	3.80	0.30	BLACK PEATY SAND	Unknown	
3.80	5.00	1.20	SANDY BROWN CLAY	Unknown	
5.00	6.00	1.00	BLACK PEATY SAND	Unknown	
6.00	13.50	7.50	BROWN SILTY SAND	Unknown	

Remarks

29/09/2008: Previously 10BL601728

***** End of GW109375 *****

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Appendix C Field Borehole Logs

SOIL BOREHOLE BH101

PROJECT NUMBER 58554	**DRILLING COMPANY**	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Hand Auger:Hand Auger	**TOTAL DEPTH** 0.8 m bgl
DRILLING DATE 30-Mar-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8		Silty sand, dark brown, heterogeneous, damp, poorly graded, medium dense, with inclusion of gravel and rootlets.	SM	BH101 0.0-0.1 BH101 0.2-0.3 BH101 0.5-0.6	0.2 0.6 0.8	No ACM, odours or staining observed. Refusal on roots.
		0.85 0.9 0.95 1 1.05		Termination Depth at:0.800 m.				

SOIL BOREHOLE BH102

PROJECT NUMBER 58554	**DRILLING COMPANY**	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Hand Auger:Hand Auger	**TOTAL DEPTH** 0.8 m bgl
DRILLING DATE 30-Mar-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5		Sandy clay, dark brown, heterogeneous, damp, soft, medium plasticity, with inclusion of gravel and rootlets.	SM	BH102 0.0-0.1 BH102 0.2-0.3	2.8 2.9	No ACM, odours or staining observed.
		0.55 0.6 0.65 0.7 0.75 0.8		Sandy gravel, brown, heterogeneous, damp, poorly graded, medium dense, with inclusion of roots and terracotta.	SM	BH102 0.5-0.6 BH102 0.7-0.8	4.1 4.2	No ACM, odours or staining observed. Refusal on anthropogenic fill and roots.
		0.85 0.9 0.95 1 1.05		Termination Depth at:0.800 m.				

SOIL BOREHOLE BH103

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube:Push Tube	**TOTAL DEPTH** 1 m bgl
DRILLING DATE 27-Mar-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
Push Tube		0.05		Roadbase, grey, heterogeneous, dry, coarse, loose.	D	BH103 0.0-0.1	1.5	No ACM, odours or staining observed.
		0.1						
		0.15						
		0.2						
		0.25						
		0.3		Sandy clay, brown/black/grey, heterogeneous, dry, medium plasticity, with inclusion of gravel and sandstone.	D			No ACM, odours or staining observed.
		0.35						
		0.4						
		0.45						
		0.5						
		0.55						
		0.6						
		0.65						
		0.7						
		0.75						
		0.8		Clay, brown/red, heterogeneous, dry, stiff, high plasticity.	D			No ACM, odours or staining observed.
		0.85						
		0.9				BH103 0.9-1.0	2.5	
		0.95						
		1		Termination Depth at:1.000 m.				
		1.05						

SOIL BOREHOLE BH104

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube:Push Tube	**TOTAL DEPTH** 1 m bgl
DRILLING DATE 27-Mar-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
Push Tube		0.05 0.1 0.15 0.2 0.25 0.3		Roadbase, grey, heterogeneous, dry, coarse, loose.	D	BH104 0.0-0.1	1.2	No ACM, odours or staining observed.
		0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8		Sandy clay, brown/black/grey, heterogeneous, dry, medium plasticity, with inclusion of gravel and sandstone.	D	BH104 0.3-0.4	5.1	No ACM, odours or staining observed.
		0.85 0.9 0.95 1		Sandy clay, brown/red, heterogeneous, dry, stiff, high plasticity, with inclusion of sandstone and slag.	D			No ACM, odours or staining observed.
		1.05		Termination Depth at:1.000 m.				

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GROUNDWATER WELL BH105/MW2

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube / Hollow Flight Au	**ELEVATION** N/A
DRILLING DATE 30-Mar-20	**TOTAL DEPTH** 4.5 m bgl	**LOGGED BY** MN
PERMIT NO. N/A	**DIAMETER** 200 mm	**CHECKED BY** -
COMPLETION Roadbox	**CASING** Class 18 PVC - 50mm	**SCREEN INTERVAL** 1.5 - 4.5 m bgl

COMMENTS

Drilling Method	Water (m bgl)	Well Details	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA			0.2		Silty sand, dark brown, heterogeneous, damp, loose, coarse sand, with inclusion of rootlets.	SM	BH105/MW2 0.0-0.1	2.3	No ACM, odours or staining observed.
			0.4		Clayey silty sand, dark brown, heterogeneous, damp, medium dense.	SM	BH105/MW2 0.2-0.3	1.8	No ACM, odours or staining observed.
			0.6				BH105/MW2 0.5-0.6	1.3	
			0.8		Sandy clay, red/brown, heterogeneous, damp, stiff, high plasticity, with inclusion of charcoal.	SM	BH105/MW2		Charcoal odour. No ACM or staining observed.
Push Tube			1		Charcoal, black, heterogeneous, damp, with inclusion of gravel.	SM	0.9-1.0	4.2	Charcoal odour. No ACM or staining observed.
			1.2						
			1.4						
			1.6		Sandy clay, brown/yellow, heterogeneous, damp, firm, medium plasticity, with inclusion of sandstone.	SM			Charcoal odour. No ACM or staining observed.
			1.8						
			2				BH105/MW2 2.0-2.1	2.1	
	▽		2.2		Clayey sand, dark grey, heterogeneous, wet, dense, with inclusion of gravel.	W			Organic odour. No ACM or staining observed.
			2.4						
			2.6				BH105/MW2 2.5-2.6	1.8	
			2.8		Sand, brown/grey, heterogeneous, wet, dense, with inclusion of gravel.	W			No ACM, odours or staining observed.
			3				BH105/MW2 3.0-3.1	1.3	
			3.2						
			3.4						
			3.6		Sand, beige, homogeneous, wet, dense, poorly graded.	W			No ACM, odours or staining observed.
			3.8						
HFA			4				BH105/MW2 4.0-4.1	1.6	
			4.2						
			4.4						
			4.6		Termination Depth at:4.500 m.				
			4.8						
			5						
			5.2						
			5.4						

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GROUNDWATER WELL BH106/MW3

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube / Solid Flight Aug	**ELEVATION** N/A
DRILLING DATE 27-Mar-20	**TOTAL DEPTH** 5 m bgl	**LOGGED BY** MN
PERMIT NO. N/A	**DIAMETER** 125 mm	**CHECKED BY** -
COMPLETION Roadbox	**CASING** Class 18 PVC - 50mm	**SCREEN INTERVAL** 2 - 5 m bgl

COMMENTS

Drilling Method	Water (m bgl)	Well Details	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA			0.2		Sand, brown, heterogeneous, damp, medium sand, medium dense, with inclusion of rootlets and some gravel.	SM	BH106/MW3 0.0-0.1	1.5	No ACM, odours or staining observed.
			0.4		Clayey sand, dark brown, heterogeneous, damp, medium dense, with inclusion of rootlets.	SM	BH106/MW3 0.2-0.3	1.3	No ACM, odours or staining observed.
Push Tube			0.6		Sandy clay, light brown/orange turning black on the outside from 0.5 to 0.6 m bgs then changes to brown/grey, heterogeneous, dry, firm, medium plasticity.	D	BH106/MW3 0.4-0.5	1.8	No ACM, odours or staining observed.
			0.8						
			1				BH106/MW3 1.0-1.1	2.3	
			1.2		Sandy clay, grey, heterogeneous, damp, firm, medium plasticity.	SM			No ACM, odours or staining observed.
			1.4				BH106/MW3 1.4-1.5	2.4	
			1.6		Sand, brown, homogeneous, damp, medium sand, medium dense.	SM			No ACM, odours or staining observed.
			1.8		Sandstone, white, homogeneous, damp, coarse.	SM			No ACM, odours or staining observed.
			2				BH106/MW3 1.9-2.0	1.6	
			2.2		Sand, brown, homogeneous, damp, medium sand, medium dense.	SM			No ACM, odours or staining observed.
			2.4		Sandy clay, grey, heterogeneous, damp, firm, medium/high plasticity.	SM	BH106/MW3 2.4-2.5	3.7	No ACM, odours or staining observed.
			2.6		Sand, grey, moist, becomes wet at 3.0 m bgs dense.	M			No ACM, odours or staining observed.
	▽		2.8						
			3				BH106/MW3 3.0-3.1	3.5	
			3.2		Sand, grey/brown, wet, dense.	W			No ACM, odours or staining observed.
			3.4						
			3.6						
			3.8						
SFA			4				BH106/MW3 4.0-4.1	2.8	
			4.2						
			4.4						
			4.6						
			4.8				BH106/MW3 4.9-5.0	3.1	
			5		Termination Depth at:5.000 m.				
			5.2						
			5.4						

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SOIL BOREHOLE BH107

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Solid Flight Auger:Solid Fligh	**TOTAL DEPTH** 1 m bgl
DRILLING DATE 27-Mar-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8 0.85 0.9 0.95 1		Silty sand, dark brown, heterogeneous, damp, loose, medium sand, with inclusion of gravel.	SM	BH107 0.0-0.1 BH107 0.2-0.3 BH107 0.5-0.6 BH107 0.9-1.0	0.5 1.3 1.8 2	No ACM, odours or staining observed.
		1.05		Termination Depth at:1.000 m.				

GROUNDWATER WELL BH108/MW1

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube / Solid Flight Aug	**ELEVATION** N/A
DRILLING DATE 27-Mar-20	**TOTAL DEPTH** 5.4 m bgl	**LOGGED BY** MN
PERMIT NO. N/A	**DIAMETER** 125 mm	**CHECKED BY** -
COMPLETION Roadbox	**CASING** Class 18 PVC - 50mm	**SCREEN INTERVAL** 2.4 - 5.4 m bgl

COMMENTS

Drilling Method	Water (m bgl)	Well Details	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
Push Tube			0		Asphalt.	D	BH108/MW1 0.05-0.1	0.1	No ACM, odours or staining observed.
			0.2		Roadbase: Gravelly silty sand, grey, heterogeneous, dry, loose.	D			
			0.4		Sandy clay, grey, heterogeneous, dry, stiff, low plasticity, with inclusion of gravel and glass fragments.	D	BH108/MW1 0.30-0.4	0.1	No ACM, odours or staining observed.
			0.6			D	BH108/MW1 0.50-0.6	1	No ACM, odours or staining observed.
			0.8		Sandy clay, brown/grey turning red/light grey at 0.8 m bgs, heterogeneous, dry, stiff, low plasticity, with inclusion of ash and charcoal.				Slightly odourous. No ACM or staining observed.
			1				BH108/MW1 1.00-1.1	1.7	
			1.2						
			1.4						
			1.6						
			1.8						
			2				BH108/MW1 2.00-2.1	1.5	
			2.2		Sandy clay, grey turning light brown at 2.7 m bgs, heterogeneous, dry, firm, low/medium plasticity, with inclusion of sandstone and charcoal.	D			Slightly odourous. No ACM or staining observed.
			2.4						
			2.6						
			2.8				BH108/MW1 2.90-3.0	2.4	
			3		Clayey sand, grey, moist, dense, medium sand.	M			Slightly odourous. No ACM or staining observed.
			3.2						
	▽		3.4				BH108/MW1 3.50-3.6	1.2	
			3.6		Clayey sand, grey, wet, dense, medium sand.	W			Slightly odourous. No ACM or staining observed.
			3.8						
SFA			4						
			4.2						
			4.4				BH108/MW1 4.50-4.6	1.4	
			4.6						
			4.8						
			5						
			5.2				BH108/MW1 5.30-5.4	1.1	
			5.4		Termination Depth at:5.400 m.				

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SOIL BOREHOLE BH109

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sandy silty clay (topsoil), dark brown/black, heterogeneous, damp, with inclusions of rootlets.	SM	BH109 0-0.1	1.6	No odours, staining or ACM observed.
		0.4		Sand, brown/grey, heterogeneous, damp, medium sand, with traces of sandstone gravles and ash.	SM	BH109 0.3-0.4	2.4	No odours, staining or ACM observed.
PT		0.6						
		0.8						
		1				BH109 0.9-1	1.9	No odours, staining or ACM observed.
		1.2						
		1.4		Sandy silty clay, light grey turning red at 1.5 m bgs then changes to light grey at 1.7 m bgs, damp, firm, medium to high plasticity.	SM			
		1.6				BH109 1.5-1.6	2.1	No odours, staining or ACM observed.
		1.8						
		2		Clayey sand, light grey turning black at 2.6 m bgs then changes to beige at 2.8 m bgs, homogeneous, damp turning moist at 2.5 m bgs, with traces of sandstone gravel.	SM			
		2.2						
		2.4						
		2.6				BH109 2.6-2.7	1.4	No odours, staining or ACM observed.
		2.8						
SFA		3		Sandstone, light grey, homogeneous, wet, very hard.	W			
		3.2				BH109 3.2-3.3	1.3	No odours, staining or ACM observed.
		3.4						End of hole at 3.4 m bgs. Refusal on very hard sandstone.
		3.6		Termination Depth at:3.400 m.				
		3.8						
		4						
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH110

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 28-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0		Concrete slab	D			No odours, staining or ACM observed.
PT		0.2		Sand, brown turning lighter at 0.8 m bgs and 1.5 m bgs, homogeneous, damp, medium sand, compacted, with traces of sandstone gravels and ash.	SM	BH110 0.1-0.2	0.3	
		0.4						No odours, staining or ACM observed.
		0.6				BH110 0.5-0.6	0.7	
		0.8						No odours, staining or ACM observed.
		1				BH110 1-1.1	0.5	
		1.2						Slight swampy odour, no staining or ACM observed.
		1.4						
		1.6						
SFA		1.8		Sandstone, light grey, damp turning moist at 2.0 m bgs, hard.	SM	BH110 1.7-1.8	0.8	
		2						
		2.2						
		2.4						
		2.6						
		2.8						End of hole at 3.0 m bgs. Refusal on very hard sandstone.
		3		Termination Depth at:3.000 m.				
		3.2						
		3.4						
		3.6						
		3.8						
		4						
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH111

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 28-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0		Concrete slab	D			No odours, staining or ACM observed.
PT		0.2		Sand, grey turning light brown at 0.2 m bgs, heterogeneous, damp, with inlcusions of gravels.	SM	BH111 0.1-0.2	0.6	
		0.4		Sandy clay, light brown, heterogeneous, damp, firm, low plasticity.	SM			
		0.6		Sandstone, light brown/red turning yellow at 1.0 m bgs, homogeneous, damp.	SM	BH111 0.6-0.7	0.2	No odours, staining or ACM observed.
		0.8						
		1						
		1.2						
		1.4						No odours, staining or ACM observed.
		1.6				BH111 1.5-1.6	0.5	
		1.8						End of hole at 2.0 m bgs. Refusal on hard sandstone.
		2		Termination Depth at:2.000 m.				
		2.2						
		2.4						
		2.6						
		2.8						
		3						
		3.2						
		3.4						
		3.6						
		3.8						
		4						
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH112

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, brown, homogeneous, damp, medium sand, loose.	SM	BH112 0-0.1	1.8	No odours, staining or ACM observed.
		0.4		Clayey sand, dark brown turning grey at 0.4 m bgs, heterogeneous, damp, medium sand, with traces of glass fragments, sandstone and ash.	SM	BH112 0.3-0.4	1.2	No odours, staining or ACM observed.
PT		0.6		Silty clay, brown turning grey at 1.1 m bgs, firm, medium plasticity, with inclusions of sandstone from 1.6 to 2.0 m bgs.	SM			
		0.8						
		1						
		1.2						
		1.4						
		1.6				BH112 1.5-1.6	1	No odours, staining or ACM observed.
		1.8						
		2						No odours, staining or ACM observed.
		2.2		Clayey sand, grey turning dark brown/black: wet, with inclusions of sandstone.	W	BH112 2-2.1	1.2	No odours, staining or ACM observed.
		2.4		Clayey sand, black, wet.	W	BH112 2.2-2.3	1.4	No odours, staining or ACM observed.
SFA		2.6		Sandstone, light grey, homogeneous, wet.	W			
		2.8						
		3						End of hole at 3.6 m bgs. Refusal on hard sandstone.
		3.2						
		3.4				BH112 3.4-3.5	0.9	No odours, staining or ACM observed.
		3.6						
		3.8		Termination Depth at:3.600 m.				
		4						
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH113

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, light brown/beige turning dark at 0.2 m bgs and then changes to light grey at 0.3 m bgs, heterogeneous, damp, coarse, with inclusions of rootlets, ash, glass fragments and sandstone.	SM	BH113 0.1-0.2	1.6	No odours, staining or ACM observed.
		0.4		Sandy silty clay, light grey turning grey /brown, heterogeneous, firm, medium plasticity, with inclusions of ash, sandstone cobbles in clusters and traces of small brick fragments.	SM	BH113 0.4-0.5	1.5	No odours, staining or ACM observed.
PT		0.6						
		0.8		Sandstone, red/orange, heterogeneous, dry, with inclusions of sand.	D			
		1		Sand, brown turning grey at 2.1 m bgs them changes to brown at 2.2 m bgs, moist, with inclusions of sandstone gravels and traces of ash.	M	BH113 1-1.1	1.1	No odours, staining or ACM observed.
		1.2						
		1.4						
		1.6						
		1.8						
		2						No odours, staining or ACM observed.
		2.2		Sand, grey, homogeneous, wet, medium dense.	W	BH113 2-2.1	0.8	
		2.4						
		2.6		Sandstone, light grey turning red then changes to light brown, homogeneous, wet.	W	BH113 2.6-2.7	1.2	No odours, staining or ACM observed.
SFA		2.8						
		3						
		3.2						
		3.4						
		3.6				BH113 3.5-3.6	1.1	No odours, staining or ACM observed.
		3.8						End of hole at 4.0 m bgs. Refusal on hard sandstone.
		4		Termination Depth at:4.000 m.				
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH114

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0		Sand, beige, homogeneous, damp, medium sand, medium dense, with inclusions of rootlets.	SM	BH114 0-0.1	1.6	No odours, staining or ACM observed.
		0.2		Sandy silty clay, dark brown, heterogeneous, damp, firm, medium plasticity, with traces of ash.	SM	BH114 0.2-0.3	1.5	No odours, staining or ACM observed.
		0.4		Clayey sand, brown, heterogeneous, damp, medium desne, with inclusions of ash and traces of sandstone.	SM	BH114 0.4-0.5	1.3	No odours, staining or ACM observed.
PT		0.6		Silty clay, red/brown/light grey, heterogeneous, damp, firm, medium plasticity, with inclusions of ash, sandstone and slag.	SM			
		0.8						
		1				BH114 1-1.1	0.8	No odours, staining or ACM observed.
		1.2						
		1.4						
		1.6		Crushed sandstone, grey/light brown/beige, heterogeneous, moist.	M			
		1.8						
		2				BH114 1.9-2	1.1	No odours, staining or ACM observed.
		2.2		Silty clay turning sandy at 2.1 m bgs, beige turning black at 2.1 m bgs, heterogeneous, moist.	M			
		2.4		Sand turning clayey at 2.8 m bgs then changes to sand at 3.0 m bgs, grey/beige turning black, heterogeneous, moist, coarse sand.	M			
		2.6				BH114 2.5-2.6	1.3	No odours, staining or ACM observed.
		2.8						
		3						
		3.2		Sand, beige turning grey at 3.2 m bgs, homogeneous, wet,	W	BH114 3-3.1	0.3	No odours, staining or ACM observed.
		3.4		Sandstone, light brown, homogeneous, wet, very hard.	W			
		3.6						
		3.8						
		4						
		4.2						
		4.4				BH114 4.4-4.5	0.8	No odours, staining or ACM observed.
		4.6		Termination Depth at:4.500 m.				End of hole at 4.5 m bgs. Refusal on hard sandstone.

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SOIL BOREHOLE BH115

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, beige, homogeneous, damp, medium sand, medium dense, with inclusions of rootlets.	SM			
				Sandy silty clay, dark brown, heterogeneous, damp, firm, medium plasticity, with traces of ash.	SM	BH115 0.2-0.3	1.1	No odours, staining or ACM observed.
PT		0.4						
		0.6		Sandy silty clay, brown, heterogeneous, damp, firm, medium plasticity, with inclusions of ash, slag and sandstone.	SM			
		0.8						No odours, staining or ACM observed.
		1				BH115 0.9-1	1.4	
		1.2		Crushed sandstone, light brown/yellow, homogeneous, damp.	SM			
		1.4						No odours, staining or ACM observed.
		1.6		Sand, grey turning brown then changes to dark brown, moist.	M	BH115 1.5-1.6	0.7	
		1.8						
		2						
		2.2		Sandy clay, dark grey/black, homogeneous, moist, firm, medium plasticity.	M			
		2.4						No odours, staining or ACM observed.
		2.6				BH115 2.5-2.6	0.3	
		2.8		Sandstone, light brown, homogeneous, wet, very hard.	W			
		3						
		3.2						
		3.4						
		3.6						
		3.8						
		4						
		4.2						
		4.4						End of hole at 4.6 m bgs. Refusal on hard sandstone.
		4.6		Termination Depth at:4.600 m.				

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SOIL BOREHOLE BH116

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, brown, homogeneous, damp, medium sand, loose.	SM	BH116 0-0.1	1.3	No odours, staining or ACM observed.
				Clayey sand, dark brown, heterogeneous, damp, medium sand, medium dense, with inclusions of ash.	SM			No odours, staining or ACM observed.
		0.4				BH116 0.3-0.4	1.7	
PT		0.6		Sandstone gravels, brown turning light grey/white at 1.2 m bgs then changes to grey, heterogeneous, damp, with inclusions of ash.	SM	BH116 0.5-0.6	0.9	No odours, staining or ACM observed.
		0.8						
		1						
		1.2						
		1.4		Clayey sand, light brown/orange turning grey at 2.0 m bgs, damp turning wet at 2.0 m bgs, with inclusions of ash at 2.0 to 2.1 m bgs.	SM	BH116 1.5-1.6	1.1	No odours, staining or ACM observed.
		1.6						
		1.8						
		2						
		2.2						
		2.4		Sand, grey, homogeneous, wet, medium dense.	W			
		2.6						
		2.8						Organic/swampy odour, no staining or ACM observed.
		3				BH116 2.9-3	0.8	
		3.2						
		3.4						
		3.6						
		3.8						End of hole at 3.9 m bgs. Refusal on hard sandstone.
		4		Termination Depth at:3.900 m.				
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH117

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, brown/beige, homogeneous, damp, medium sand, with inclusions of rootlets.	SM	BH117 0-0.1	0.5	No odours, staining or ACM observed.
		0.4		Clayey sand, dark brown, heterogeneous, damp, medium sand, medium dense.	SM	BH117 0.3-0.4	1.1	No odours, staining or ACM observed.
PT		0.6		Sandy silty clay, brown turning red/pink at 1.0 m bgs then changes to brown at 1.5 m bgs, heterogeneous, damp, low plasticity, with inclusions of sandstone and black coloured ash/slag at 0.7 to 0.8 m bgs.	SM	BH117 0.7-0.8	0.2	No odours, staining or ACM observed.
		0.8						
		1						
		1.2						
		1.4						
		1.6				BH117 1.5-1.6	0.9	No odours, staining or ACM observed.
		1.8						
		2						
		2.2						
		2.4		Sand, grey, homogeneous, wet, medium dense.	W			Swampy odour, no staining or ACM observed.
		2.6				BH117 2.5-2.6	1.6	
		2.8						
		3						
		3.2						End of hole at 3.3 m bgs. Refusal on hard sandstone.
		3.4		Termination Depth at:3.300 m.				
		3.6						
		3.8						
		4						
		4.2						
		4.4						
		4.6						

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SOIL BOREHOLE BH118

PROJECT NUMBER 58554	**DRILLING COMPANY** Terratest	**EASTING** N/A
PROJECT NAME DSI and HMS SGS Edgecliff Sp	**DRILLER**	**NORTHING** N/A
CLIENT Jattca Property Solutions	**DRILL RIG**	**COORD SYS** GDA94_MGA_zone_54
ADDRESS 11 Alma Street, Paddington, NSW	**DRILLING METHOD** Push Tube	**COORD SOURCE**
DRILLING DATE 27-May-20	**DIAMETER** 50 mm	**LOGGED BY** MN

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Description	Moisture	Samples	PID	Additional Observations
HA		0.2		Sand, brown, homogeneous, damp, medium sand, loose.	SM	BH118 0-0.1	2.1	No odours, staining or ACM observed.
		0.4		Clayey sand, dark brown, heterogeneous, damp, medium dense, with inclusions of sandstone and traces of ash.	SM	BH118 0.3-0.4	2.3	No odours, staining or ACM observed.
PT		0.6						
		0.8		Sandy clay turning silty clay at 1.3 m bgs, brown/grey turning brown/red/grey at 1.3 m bgs, heterogeneous, damp, firm, with inclusions of sandstone.	SM			
		1				BH118 1-1.1	1.8	No odours, staining or ACM observed.
		1.2						
		1.4						
		1.6				BH118 1.5-1.6	2	No odours, staining or ACM observed.
		1.8						
		2						
		2.2		Clayey sand, dark grey, homogeneous, moist, medium dense sand.	M	BH118 2.2-2.3	1.3	No odours, staining or ACM observed.
		2.4		Sand, dark grey, homogeneous, wet, medium sand.	W			Swampy odour, no staining or ACM observed.
		2.6				BH118 2.5-2.6	1.1	
		2.8						End of hole at 2.8 m bgs. Refusal on hard sandstone.
		3		Termination Depth at:2.800 m.				
		3.2						
		3.4						
		3.6						
		3.8						
		4						
		4.2						
		4.4						
		4.6						

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Appendix D Calibration / Decontamination Records

Field Equipment Calibration and Decontamination

PROJECT NAME:	Pudding ton	**PROJECT NO:**	58553
FIELD DATES:	27/3/20	**FIELD STAFF:**	MN

CALIBRATION SUMMARY	10 ~~RL 100ppm iso~~
EQUIPMENT:	PID
CALIBRATION STANDARD:	100 ppm isobutylene

DATE	TIME	READING (ppm$_v$)	COMMENTS
27/3/20	2:05	0	Zero Calibration
	7:06	100.2	100 ppm isobutylene
	7:07	100.1	bump test
30/3/20	7:00	0	Zero Calibration
	7:01	100.4	100 ppm isobutylene
	7:02	100.2	bump test

DECONTAMINATION SUMMARY

EQUIPMENT: Hand Auger

1. Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2. Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	NA
3. Was the equipment contaminated with grease, tar or similar material? If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y Y	(N) N	NA
4. Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5. Was the equipment rinsed with clean water?	(Y)	N	NA
6. Was the equipment then rinsed with deionised water?	(Y)	N	NA
7. Were all sample containers cleaned and acid or solvent washed prior to sample collection?	Y	N	(NA)

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS.

New pair of nitrile gloves used ~~for~~ every sample

Field Equipment Calibration and Decontamination

PROJECT NAME: Paddington	PROJECT NO: 58554
FIELD DATES: 3/4/20	FIELD STAFF: MN

CALIBRATION SUMMARY
EQUIPMENT:
CALIBRATION STANDARD:

DATE	TIME	READING (ppm$_v$)	COMMENTS

DECONTAMINATION SUMMARY ~~Interface~~
EQUIPMENT: Interface probe washes, rinsed, scrubbed, cleaned with Decon 90 prior to use at every well

1. Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2. Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	NA
3. Was the equipment contaminated with grease, tar or similar material? If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y Y	(N) N	NA
4. Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5. Was the equipment rinsed with clean water?	(Y)	N	NA
6. Was the equipment then rinsed with deionised water?	(Y)	N	NA
7. Were all sample containers cleaned and acid or solvent washed prior to sample collection?	Y	N	(NA)

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS.

New pair of nitrile gloves used for every sample & new tubings used for every well

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 09K100887

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		330738	pH 9.48
1. pH 7.00		pH 7.00		330737	pH 6.88
2. pH 4.00		pH 4.00		330734	pH 4.11
3. mV		231.8mV		346052/342074	232.8mV
4. EC		2.76mS		333787	2.74mS
5. D.O		0.00ppm		1904288592	0.00ppm
6. Temp		22.5°C		MultiTherm	22.3°C

Calibrated by: **Sarah Lian**

Calibration date: **2/04/2020**

Next calibration due: **2/05/2020**

Field Equipment Calibration and Decontamination

PROJECT NAME: SGS Paddington	**PROJECT NO:** 58554
FIELDWORK DATES: 27 - 28/5/20	**SAMPLERS:** MV
TYPE OF INVESTIGATION: Soil	**PROJECT MANAGER:** JC

CALIBRATION SUMMARY

EQUIPMENT: PID
CALIBRATION STANDARD: 100 ppm isobutylene

DATE	TIME	READING (ppm)	COMMENTS
27/5/20	7:30	0	Zero Calibration
	7:31	100.4	100 ppm isobutylene
	7:32	100.3	bump test
28/5/20	7:00	0	Zero Calibration
	7:01	100.2	100 ppm isobutylene
	7:02	100.4	bump test

DECONTAMINATION SUMMARY

EQUIPMENT: Hand Auger	

1	Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2	Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	NA
3	Was the equipment contaminated with grease, tar or similar material?	Y	(N)	NA
	If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y	N	NA
4	Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5	Was the equipment rinsed with clean water?	(Y)	N	NA
6	Was the equipment then rinsed with deionised water?	(Y)	N	NA
7	Were all sample containers cleaned and acid or solvent washed prior to sample collection?	Y	(N)	NA

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS

New pair of nitrile gloves used for every sample collected

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Appendix E Detailed Laboratory Results and Chain of Custody Documentation

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **711021-S**
Project name PADDINGTON
Project ID 58554
Received Date Mar 31, 2020

Client Sample ID			**MW1_0.5-0.6**	**MW1_3.5-3.6**	**MW1_4.5-4.6**	**MW1_5.3-5.4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Ma47835**	**S20-Ma47836**	**S20-Ma47837**	**S20-Ma47838**
Date Sampled			**Mar 27, 2020**	**Mar 27, 2020**	**Mar 27, 2020**	**Mar 27, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	300	< 50	-	-
TRH C29-C36	50	mg/kg	130	< 50	-	-
TRH C10-C36 (Total)	50	mg/kg	430	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	108	99	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	1.2	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	410	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	410	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	11	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	11	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	11	1.2	-	-
Acenaphthene	0.5	mg/kg	0.8	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	0.6	< 0.5	-	-
Anthracene	0.5	mg/kg	3.8	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	9.0	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	7.0	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	5.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	4.7	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	6.3	< 0.5	-	-
Chrysene	0.5	mg/kg	7.0	< 0.5	-	-

Client Sample ID			MW1_0.5-0.6	MW1_3.5-3.6	MW1_4.5-4.6	MW1_5.3-5.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47835	S20-Ma47836	S20-Ma47837	S20-Ma47838
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	1.7	< 0.5	-	-
Fluoranthene	0.5	mg/kg	18	< 0.5	-	-
Fluorene	0.5	mg/kg	0.9	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	4.1	< 0.5	-	-
Naphthalene	0.5	mg/kg	1.6	< 0.5	-	-
Phenanthrene	0.5	mg/kg	13	< 0.5	-	-
Pyrene	0.5	mg/kg	17	< 0.5	-	-
Total PAH*	0.5	mg/kg	101	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	75	86	-	-
p-Terphenyl-d14 (surr.)	1	%	78	91	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-	-
Toxaphene	1	mg/kg	< 1	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	105	85	-	-
Tetrachloro-m-xylene (surr.)	1	%	74	76	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	105	85	-	-
Tetrachloro-m-xylene (surr.)	1	%	74	76	-	-

Client Sample ID			MW1_0.5-0.6	MW1_3.5-3.6	MW1_4.5-4.6	MW1_5.3-5.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47835	S20-Ma47836	S20-Ma47837	S20-Ma47838
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
% Clay	1	%	8.2	-	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	150	-	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	7.3	-	-	-
Total Organic Carbon	0.1	%	1.0	-	-	-
% Moisture	1	%	14	27	17	16
Heavy Metals						
Arsenic	2	mg/kg	8.5	15	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	14	53	-	-
Copper	5	mg/kg	36	7.3	-	-
Lead	5	mg/kg	180	55	-	-
Mercury	0.1	mg/kg	1.0	0.3	-	-
Nickel	5	mg/kg	6.4	6.1	-	-
Zinc	5	mg/kg	110	27	-	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	15	-	-	-
SPOCAS Suite						
pH-KCL	0.1	pH Units	-	6.7	6.6	6.5
pH-OX	0.1	pH Units	-	4.3	4.1	4.0
Acid trail - Titratable Actual Acidity	2	mol H+/t	-	< 2	< 2	< 2
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	-	9.0	5.0	36
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	-	9.0	5.0	36
sulfidic - TAA equiv. S% pyrite	0.003	% pyrite S	-	< 0.003	< 0.003	< 0.003
sulfidic - TPA equiv. S% pyrite	0.02	% pyrite S	-	0.02	< 0.02	0.06
sulfidic - TSA equiv. S% pyrite	0.02	% pyrite S	-	< 0.02	< 0.02	0.06
Sulfur - KCl Extractable	0.02	% S	-	< 0.02	< 0.02	< 0.02
Sulfur - Peroxide	0.02	% S	-	0.07	0.10	0.05
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	-	0.07	0.09	0.05
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	-	40	56	33
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	2.0	2.0
HCl Extractable Sulfur	0.02	% S	-	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	-	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	-	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	-	n/a	n/a	n/a
Calcium - KCl Extractable	0.02	% Ca	-	0.09	0.15	0.07
Calcium - Peroxide	0.02	% Ca	-	0.11	0.18	0.08
Acid Reacted Calcium	0.02	% Ca	-	< 0.02	0.02	< 0.02
acidity - Acid Reacted Calcium	10	mol H+/t	-	< 10	12	< 10
sulfidic - Acid Reacted Ca equiv. S% pyrite	0.02	% S	-	< 0.02	< 0.02	< 0.02
Magnesium - KCl Extractable	0.02	% Mg	-	< 0.02	< 0.02	< 0.02
Magnesium - Peroxide	0.02	% Mg	-	< 0.02	< 0.02	< 0.02
Acid Reacted Magnesium	0.02	% Mg	-	< 0.02	< 0.02	< 0.02
acidity - Acid Reacted Magnesium	10	mol H+/t	-	< 10	< 10	< 10
sulfidic - Acid Reacted Mg equiv. S% pyrite	0.02	% S	-	< 0.02	< 0.02	< 0.02
Acid Neutralising Capacity (ANCE)	0.02	% CaCO3	-	n/a	n/a	n/a
Acid Neutralising Capacity - Acidity units (a-ANCE)	10	mol H+/t	-	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite(s-ANCE)	0.02	% S	-	n/a	n/a	n/a
ANC Fineness Factor		factor	-	1.5	1.5	1.5

Client Sample ID			MW1_0.5-0.6	MW1_3.5-3.6	MW1_4.5-4.6	MW1_5.3-5.4
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Ma47835**	**S20-Ma47836**	**S20-Ma47837**	**S20-Ma47838**
Date Sampled			**Mar 27, 2020**	**Mar 27, 2020**	**Mar 27, 2020**	**Mar 27, 2020**
Test/Reference	LOR	Unit				
SPOCAS Suite						
SPOCAS - Net Acidity (Sulfur Units)	0.02	% S	-	0.03	0.04	0.05
SPOCAS - Net Acidity (Acidity Units)	10	mol H+/t	-	20	22	33
SPOCAS - Liming rate	1	kg CaCO3/t	-	1.0	2.0	2.0
Extraneous Material						
<2mm Fraction	0.005	g	-	230	230	290
>2mm Fraction	0.005	g	-	5.4	13	6.9
Analysed Material	0.1	%	-	98	95	98
Extraneous Material	0.1	%	-	2.3	5.3	2.3

Client Sample ID			MW2_0.2-0.3	MW2_0.9-1.0	MW2_2.0-2.1	MW2_4.0-4.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Ma47839**	**S20-Ma47840**	**S20-Ma47841**	**S20-Ma47842**
Date Sampled			**Mar 27, 2020**	**Mar 30, 2020**	**Mar 30, 2020**	**Mar 30, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	78	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-C36 (Total)	50	mg/kg	78	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	104	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	110	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	110	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	2.6	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	2.9	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.1	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	1.9	-	-	-
Benzo(a)pyrene	0.5	mg/kg	2.0	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.4	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	1.2	-	-	-

Client Sample ID			MW2_0.2-0.3	MW2_0.9-1.0	MW2_2.0-2.1	MW2_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47839	S20-Ma47840	S20-Ma47841	S20-Ma47842
Date Sampled			Mar 27, 2020	Mar 30, 2020	Mar 30, 2020	Mar 30, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(k)fluoranthene	0.5	mg/kg	1.5	-	-	-
Chrysene	0.5	mg/kg	1.7	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	3.2	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.0	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	1.3	-	-	-
Pyrene	0.5	mg/kg	3.4	-	-	-
Total PAH*	0.5	mg/kg	18.6	-	-	-
2-Fluorobiphenyl (surr.)	1	%	74	-	-	-
p-Terphenyl-d14 (surr.)	1	%	77	-	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-	-
Toxaphene	1	mg/kg	< 1	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	-	-
Dibutylchlorendate (surr.)	1	%	118	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	133	-	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	-
Total PCB*	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			MW2_0.2-0.3	MW2_0.9-1.0	MW2_2.0-2.1	MW2_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47839	S20-Ma47840	S20-Ma47841	S20-Ma47842
Date Sampled			Mar 27, 2020	Mar 30, 2020	Mar 30, 2020	Mar 30, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Dibutylchlorendate (surr.)	1	%	118	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	133	-	-	-
% Moisture	1	%	24	11	24	22
Heavy Metals						
Arsenic	2	mg/kg	3.4	-	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-	-
Chromium	5	mg/kg	8.0	-	-	-
Copper	5	mg/kg	17	-	-	-
Lead	5	mg/kg	110	-	-	-
Mercury	0.1	mg/kg	0.3	-	-	-
Nickel	5	mg/kg	< 5	-	-	-
Zinc	5	mg/kg	47	-	-	-
SPOCAS Suite						
pH-KCL	0.1	pH Units	-	6.5	6.6	6.4
pH-OX	0.1	pH Units	-	5.1	3.5	3.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	-	< 2	< 2	< 2
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	-	7.0	< 2	45
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	-	7.0	< 2	45
sulfidic - TAA equiv. S% pyrite	0.003	% pyrite S	-	< 0.003	< 0.003	< 0.003
sulfidic - TPA equiv. S% pyrite	0.02	% pyrite S	-	< 0.02	< 0.02	0.07
sulfidic - TSA equiv. S% pyrite	0.02	% pyrite S	-	< 0.02	< 0.02	0.07
Sulfur - KCl Extractable	0.02	% S	-	< 0.02	< 0.02	< 0.02
Sulfur - Peroxide	0.02	% S	-	< 0.02	0.07	0.03
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	-	< 0.02	0.07	0.03
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	-	< 10	46	17
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	2.0	2.0
HCl Extractable Sulfur	0.02	% S	-	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	-	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	-	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	-	n/a	n/a	n/a
Calcium - KCl Extractable	0.02	% Ca	-	0.10	0.37	0.03
Calcium - Peroxide	0.02	% Ca	-	0.12	0.53	0.04
Acid Reacted Calcium	0.02	% Ca	-	< 0.02	0.16	< 0.02
acidity - Acid Reacted Calcium	10	mol H+/t	-	< 10	78	< 10
sulfidic - Acid Reacted Ca equiv. S% pyrite	0.02	% S	-	< 0.02	0.13	< 0.02
Magnesium - KCl Extractable	0.02	% Mg	-	< 0.02	0.03	< 0.02
Magnesium - Peroxide	0.02	% Mg	-	< 0.02	0.03	< 0.02
Acid Reacted Magnesium	0.02	% Mg	-	< 0.02	< 0.02	< 0.02
acidity - Acid Reacted Magnesium	10	mol H+/t	-	< 10	< 10	< 10
sulfidic - Acid Reacted Mg equiv. S% pyrite	0.02	% S	-	< 0.02	< 0.02	< 0.02
Acid Neutralising Capacity (ANCE)	0.02	% CaCO3	-	n/a	n/a	n/a
Acid Neutralising Capacity - Acidity units (a-ANCE)	10	mol H+/t	-	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite(s-ANCE)	0.02	% S	-	n/a	n/a	n/a
ANC Fineness Factor		factor	-	1.5	1.5	1.5
SPOCAS - Net Acidity (Sulfur Units)	0.02	% S	-	< 0.02	0.03	0.03
SPOCAS - Net Acidity (Acidity Units)	10	mol H+/t	-	< 10	15	17
SPOCAS - Liming rate	1	kg CaCO3/t	-	< 1	1.0	1.0

Client Sample ID			MW2_0.2-0.3	MW2_0.9-1.0	MW2_2.0-2.1	MW2_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47839	S20-Ma47840	S20-Ma47841	S20-Ma47842
Date Sampled			Mar 27, 2020	Mar 30, 2020	Mar 30, 2020	Mar 30, 2020
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	82	70	180
>2mm Fraction	0.005	g	-	230	13	< 0.005
Analysed Material	0.1	%	-	26	84	100
Extraneous Material	0.1	%	-	74	16	< 0.1

Client Sample ID			MW3_1.0-1.1	MW3_1.4-1.5	MW3_3.0-3.1	MW3_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47843	S20-Ma47844	S20-Ma47845	S20-Ma47846
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	240	-	-
TRH C29-C36	50	mg/kg	< 50	180	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	420	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	106	100	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	400	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	400	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	9.4	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	9.4	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	9.4	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	0.8	-	-
Anthracene	0.5	mg/kg	< 0.5	1.1	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	6.0	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	6.0	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	4.4	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	4.1	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	5.6	-	-
Chrysene	0.5	mg/kg	< 0.5	5.8	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	1.4	-	-
Fluoranthene	0.5	mg/kg	0.6	11	-	-

Client Sample ID			MW3_1.0-1.1	MW3_1.4-1.5	MW3_3.0-3.1	MW3_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47843	S20-Ma47844	S20-Ma47845	S20-Ma47846
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	3.4	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	0.5	4.7	-	-
Pyrene	0.5	mg/kg	0.7	12	-	-
Total PAH*	0.5	mg/kg	1.8	66.3	-	-
2-Fluorobiphenyl (surr.)	1	%	74	89	-	-
p-Terphenyl-d14 (surr.)	1	%	81	91	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-	-
Toxaphene	1	mg/kg	< 1	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	120	129	-	-
Tetrachloro-m-xylene (surr.)	1	%	112	137	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	120	129	-	-
Tetrachloro-m-xylene (surr.)	1	%	112	137	-	-
% Moisture	1	%	19	17	22	19

Client Sample ID			MW3_1.0-1.1	MW3_1.4-1.5	MW3_3.0-3.1	MW3_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47843	S20-Ma47844	S20-Ma47845	S20-Ma47846
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.3	4.8	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	20	18	-	-
Copper	5	mg/kg	6.2	34	-	-
Lead	5	mg/kg	12	100	-	-
Mercury	0.1	mg/kg	< 0.1	0.6	-	-
Nickel	5	mg/kg	< 5	< 5	-	-
Zinc	5	mg/kg	< 5	120	-	-
SPOCAS Suite						
pH-KCL	0.1	pH Units	-	-	6.9	8.0
pH-OX	0.1	pH Units	-	-	3.6	4.6
Acid trail - Titratable Actual Acidity	2	mol H+/t	-	-	< 2	< 2
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	-	-	57	8.0
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	-	-	57	8.0
sulfidic - TAA equiv. S% pyrite	0.003	% pyrite S	-	-	< 0.003	< 0.003
sulfidic - TPA equiv. S% pyrite	0.02	% pyrite S	-	-	0.09	< 0.02
sulfidic - TSA equiv. S% pyrite	0.02	% pyrite S	-	-	0.09	< 0.02
Sulfur - KCl Extractable	0.02	% S	-	-	< 0.02	< 0.02
Sulfur - Peroxide	0.02	% S	-	-	0.09	0.06
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	-	-	0.09	0.06
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	-	-	56	39
HCl Extractable Sulfur Correction Factor	1	factor	-	-	2.0	2.0
HCl Extractable Sulfur	0.02	% S	-	-	n/a	n/a
Net Acid soluble sulfur	0.02	% S	-	-	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	-	-	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	-	-	n/a	n/a
Calcium - KCl Extractable	0.02	% Ca	-	-	0.09	0.11
Calcium - Peroxide	0.02	% Ca	-	-	0.12	0.13
Acid Reacted Calcium	0.02	% Ca	-	-	0.03	0.02
acidity - Acid Reacted Calcium	10	mol H+/t	-	-	15	10
sulfidic - Acid Reacted Ca equiv. S% pyrite	0.02	% S	-	-	0.02	< 0.02
Magnesium - KCl Extractable	0.02	% Mg	-	-	< 0.02	< 0.02
Magnesium - Peroxide	0.02	% Mg	-	-	< 0.02	< 0.02
Acid Reacted Magnesium	0.02	% Mg	-	-	< 0.02	< 0.02
acidity - Acid Reacted Magnesium	10	mol H+/t	-	-	< 10	< 10
sulfidic - Acid Reacted Mg equiv. S% pyrite	0.02	% S	-	-	< 0.02	< 0.02
Acid Neutralising Capacity (ANCE)	0.02	% CaCO3	-	-	n/a	n/a
Acid Neutralising Capacity - Acidity units (a-ANCE)	10	mol H+/t	-	-	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite(s-ANCE)	0.02	% S	-	-	n/a	n/a
ANC Fineness Factor		factor	-	-	1.5	1.5
SPOCAS - Net Acidity (Sulfur Units)	0.02	% S	-	-	0.09	0.03
SPOCAS - Net Acidity (Acidity Units)	10	mol H+/t	-	-	56	18
SPOCAS - Liming rate	1	kg CaCO3/t	-	-	4.0	1.0
Extraneous Material						
<2mm Fraction	0.005	g	-	-	160	190
>2mm Fraction	0.005	g	-	-	< 0.005	< 0.005
Analysed Material	0.1	%	-	-	100	100
Extraneous Material	0.1	%	-	-	< 0.1	< 0.1

Client Sample ID			BH101_0.2-0.3	BH102_0.2-0.3	[G01]BH102_0.7-0.8	[G01]BH103_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47848	S20-Ma47849	S20-Ma47850	S20-Ma47851
Date Sampled			Mar 30, 2020	Mar 30, 2020	Mar 30, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	98	140	160	53
TRH C29-C36	50	mg/kg	60	92	95	220
TRH C10-C36 (Total)	50	mg/kg	158	232	255	273
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	95	97	125	125
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	140	200	220	180
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	440
TRH >C10-C40 (total)*	100	mg/kg	140	200	220	620
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	2.9	6.6	4.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.2	6.6	4.7	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.4	6.6	5.0	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	0.8	0.7	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.4	5.0	3.9	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.2	4.5	3.3	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.5	3.3	2.1	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.4	2.7	2.0	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.8	3.8	2.7	< 0.5
Chrysene	0.5	mg/kg	2.0	3.4	3.6	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	4.2	7.3	5.2	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.2	3.2	2.3	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.7	4.4	3.0	0.6
Pyrene	0.5	mg/kg	4.3	7.3	5.4	< 0.5
Total PAH*	0.5	mg/kg	22.7	47.3	34.2	0.6
2-Fluorobiphenyl (surr.)	1	%	74	95	78	70
p-Terphenyl-d14 (surr.)	1	%	77	79	78	71

Client Sample ID			BH101_0.2-0.3	BH102_0.2-0.3	[G01]BH102_0.7-0.8	[G01]BH103_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47848	S20-Ma47849	S20-Ma47850	S20-Ma47851
Date Sampled			Mar 30, 2020	Mar 30, 2020	Mar 30, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.2	< 0.2
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
4.4'-DDE	0.05	mg/kg	0.09	0.08	< 0.1	< 0.1
4.4'-DDT	0.05	mg/kg	< 0.05	0.07	< 0.1	< 0.1
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 10	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
DDT + DDE + DDD (Total)*	0.05	mg/kg	0.09	0.15	< 0.1	< 0.1
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	131	114	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	128	85	80	70
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	131	114	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	128	85	80	70
% Clay	1	%	-	8.1	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	59	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	6.9	-	-
Total Organic Carbon	0.1	%	-	4.3	-	-
% Moisture	1	%	10	11	13	4.9
Heavy Metals						
Arsenic	2	mg/kg	7.1	7.5	2.8	< 2
Cadmium	0.4	mg/kg	< 0.4	0.5	< 0.4	< 0.4
Chromium	5	mg/kg	9.2	11	10	72
Copper	5	mg/kg	18	46	31	46

Client Sample ID			BH101_0.2-0.3	BH102_0.2-0.3	[G01]BH102_0.7-0.8	[G01]BH103_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47848	S20-Ma47849	S20-Ma47850	S20-Ma47851
Date Sampled			Mar 30, 2020	Mar 30, 2020	Mar 30, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	160	270	290	5.4
Mercury	0.1	mg/kg	1.0	1.4	0.3	< 0.1
Nickel	5	mg/kg	5.1	7.2	32	85
Zinc	5	mg/kg	98	260	110	65
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	11	-	-

Client Sample ID			BH103_0.9-1.0	BH104_0.3-0.4	[G01]BH107_0-0.1	[G01]BH107_0.9-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47852	S20-Ma47853	S20-Ma47854	S20-Ma47855
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	500
TRH C29-C36	50	mg/kg	< 50	< 50	64	170
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	64	670
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	101	141	104	118
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	56
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	56
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	570
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	110
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	736
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	9.3
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	9.3
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	9.3
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.9
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	4.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	7.8
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	6.3
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.4
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.6
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	5.3

Client Sample ID			BH103_0.9-1.0	BH104_0.3-0.4	[G01]BH107_0-0.1	[G01]BH107_0.9-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47852	S20-Ma47853	S20-Ma47854	S20-Ma47855
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	7.2
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.8
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.6	16
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	4.4
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.4
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	27
Pyrene	0.5	mg/kg	< 0.5	< 0.5	0.7	16
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	1.3	110.6
2-Fluorobiphenyl (surr.)	1	%	74	73	73	85
p-Terphenyl-d14 (surr.)	1	%	80	73	75	83
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.2
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.2	< 0.1
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.1	< 0.1
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.1
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.2	< 0.1
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	143	148	149	INT
Tetrachloro-m-xylene (surr.)	1	%	129	142	134	83
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	143	148	149	INT
Tetrachloro-m-xylene (surr.)	1	%	129	142	134	83

Client Sample ID			BH103_0.9-1.0	BH104_0.3-0.4	[G01]BH107_0-0.1	[G01]BH107_0.9-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma47852	S20-Ma47853	S20-Ma47854	S20-Ma47855
Date Sampled			Mar 27, 2020	Mar 27, 2020	Mar 27, 2020	Mar 27, 2020
Test/Reference	LOR	Unit				
% Moisture	1	%	15	8.8	12	12
Heavy Metals						
Arsenic	2	mg/kg	10	3.0	3.7	4.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	27	8.5	20
Copper	5	mg/kg	16	< 5	17	29
Lead	5	mg/kg	43	40	61	140
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.3	0.6
Nickel	5	mg/kg	< 5	5.9	5.2	16
Zinc	5	mg/kg	< 5	16	55	180

Client Sample ID			QC01
Sample Matrix			Soil
Eurofins Sample No.			S20-Ma47856
Date Sampled			Mar 27, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	120
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.0
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.3
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.6
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	0.6
Benz(a)anthracene	0.5	mg/kg	1.1

Client Sample ID			QC01
Sample Matrix			Soil
Eurofins Sample No.			S20-Ma47856
Date Sampled			Mar 27, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene	0.5	mg/kg	0.8
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.8
Chrysene	0.5	mg/kg	0.9
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	2.3
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	2.3
Pyrene	0.5	mg/kg	2.4
Total PAH*	0.5	mg/kg	11.2
2-Fluorobiphenyl (surr.)	1	%	79
p-Terphenyl-d14 (surr.)	1	%	78
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2
Dibutylchlorendate (surr.)	1	%	78
Tetrachloro-m-xylene (surr.)	1	%	75
Polychlorinated Biphenyls			
Aroclor-1016	0.5	mg/kg	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5

Client Sample ID			QC01
Sample Matrix			Soil
Eurofins Sample No.			S20-Ma47856
Date Sampled			Mar 27, 2020
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Aroclor-1254	0.5	mg/kg	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5
Total PCB*	0.5	mg/kg	< 0.5
Dibutylchlorendate (surr.)	1	%	78
Tetrachloro-m-xylene (surr.)	1	%	75
% Moisture	1	%	21
Heavy Metals			
Arsenic	2	mg/kg	12
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	43
Copper	5	mg/kg	6.5
Lead	5	mg/kg	29
Mercury	0.1	mg/kg	0.2
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	6.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
JBS&G Suite 2			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Apr 03, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Apr 03, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 03, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 03, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 03, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Apr 03, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Apr 03, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Apr 03, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Clay	Brisbane	Apr 06, 2020	0 Days
- Method: LTM-GEN-7040			
pH (1:5 Aqueous extract at 25°C as rec.)	Sydney	Apr 03, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Total Organic Carbon	Melbourne	Apr 06, 2020	28 Days
- Method: LTM-INO-4060 Total Organic Carbon in water and soil			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Melbourne	Apr 06, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	Apr 06, 2020	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
% Moisture	Brisbane	Apr 06, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
SPOCAS Suite			
SPOCAS Suite	Brisbane	Apr 03, 2020	6 Week
- Method: LTM-GEN-7050			
Extraneous Material	Brisbane	Apr 03, 2020	6 Week
- Method: LTM-GEN-7050/7070			

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NATA # 1261 Site # 20794

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IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 711021
Phone: 02 8245 0300
Fax:

Received: Mar 31, 2020 12:46 PM
Due: Apr 7, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	MW1_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47835	X	X				X	X				X	X	X
2	MW1_3.5-3.6	Mar 27, 2020		Soil	S20-Ma47836									X		X		X
3	MW1_4.5-4.6	Mar 27, 2020		Soil	S20-Ma47837									X	X			
4	MW1_5.3-5.4	Mar 27, 2020		Soil	S20-Ma47838									X	X			
5	MW2_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47839		X									X		X
6	MW2_0.9-1.0	Mar 30, 2020		Soil	S20-Ma47840									X	X			
7	MW2_2.0-2.1	Mar 30, 2020		Soil	S20-Ma47841									X	X			
8	MW2_4.0-4.1	Mar 30, 2020		Soil	S20-Ma47842									X	X			
9	MW3_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47843		X									X		X
10	MW3_1.4-1.5	Mar 27, 2020		Soil	S20-Ma47844											X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
11	MW3_3.0-3.1	Mar 27, 2020		Soil	S20-Ma47845									X	X			
12	MW3_4.0-4.1	Mar 27, 2020		Soil	S20-Ma47846									X	X			
13	MW3_4.9-5.0	Mar 27, 2020		Soil	S20-Ma47847			X										
14	BH101_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47848		X									X		X
15	BH102_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47849	X	X				X	X				X	X	X
16	BH102_0.7-0.8	Mar 30, 2020		Soil	S20-Ma47850											X		X
17	BH103_0-0.1	Mar 27, 2020		Soil	S20-Ma47851		X									X		X
18	BH103_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47852											X		X
19	BH104_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47853		X									X		X
20	BH107_0-0.1	Mar 27, 2020		Soil	S20-Ma47854		X									X		X
21	BH107_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47855											X		X
22	QC01	Mar 27, 2020		Soil	S20-Ma47856		X									X		X
23	RINSATE	Mar 30, 2020		Water	S20-Ma47857													X

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Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
24	TS	Mar 30, 2020		Water	S20-Ma47858								X					
25	TB	Mar 30, 2020		Water	S20-Ma47859								X					
26	MW1_0.05-0.1	Mar 27, 2020		Soil	S20-Ma47860					X								
27	MW1_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47861					X								
28	MW1_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47862					X								
29	MW1_2.0-2.1	Mar 27, 2020		Soil	S20-Ma47863					X								
30	MW1_2.9-3.0	Mar 27, 2020		Soil	S20-Ma47864					X								
31	MW2_0-0.1	Mar 30, 2020		Soil	S20-Ma47865					X								
32	MW2_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47866					X								
33	MW2_2.5-2.6	Mar 30, 2020		Soil	S20-Ma47867					X								
34	MW2_3.0-3.1	Mar 30, 2020		Soil	S20-Ma47868					X								
35	MW3_0-0.1	Mar 27, 2020		Soil	S20-Ma47869					X								
36	MW3_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47870					X								

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Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
37	MW3_0.4-0.5	Mar 27, 2020		Soil	S20-Ma47871					X								
38	MW3_1.9-2.0	Mar 27, 2020		Soil	S20-Ma47872					X								
39	MW3_2.4-2.5	Mar 27, 2020		Soil	S20-Ma47873					X								
40	BH101_0-0.1	Mar 30, 2020		Soil	S20-Ma47874					X								
41	BH101_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47875					X								
42	BH102_0-0.1	Mar 30, 2020		Soil	S20-Ma47876					X								
43	BH102_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47877					X								
44	BH104_0-0.1	Mar 27, 2020		Soil	S20-Ma47878					X								
45	BH107_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47879					X								
46	BH107_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47880					X								
47	QC01	Mar 27, 2020		Soil	S20-Ma47881				X									
48	QC02	Mar 30, 2020		Soil	S20-Ma47882					X								
Test Counts						2	9	1	23	23	2	2	2	8	21	21	2	15

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
% Clay	%	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
Total Organic Carbon	%	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Cation Exchange Capacity							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	89			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	93			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	102			70-130	Pass	
o-Xylene	%	101			70-130	Pass	
Xylenes - Total*	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	95			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	88			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	88			70-130	Pass	
Acenaphthylene	%	113			70-130	Pass	
Anthracene	%	104			70-130	Pass	
Benz(a)anthracene	%	93			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	93			70-130	Pass	
Benzo(g.h.i)perylene	%	91			70-130	Pass	
Benzo(k)fluoranthene	%	93			70-130	Pass	
Chrysene	%	96			70-130	Pass	
Dibenz(a.h)anthracene	%	94			70-130	Pass	
Fluoranthene	%	104			70-130	Pass	
Fluorene	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	102			70-130	Pass	
Naphthalene	%	97			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	103			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	119			70-130	Pass	
4.4'-DDD	%	127			70-130	Pass	
4.4'-DDE	%	120			70-130	Pass	
4.4'-DDT	%	113			70-130	Pass	
a-BHC	%	111			70-130	Pass	
Aldrin	%	122			70-130	Pass	
b-BHC	%	108			70-130	Pass	
d-BHC	%	111			70-130	Pass	
Dieldrin	%	120			70-130	Pass	
Endosulfan I	%	118			70-130	Pass	
Endosulfan II	%	106			70-130	Pass	
Endosulfan sulphate	%	124			70-130	Pass	
Endrin	%	126			70-130	Pass	
Endrin aldehyde	%	121			70-130	Pass	
Endrin ketone	%	103			70-130	Pass	
g-BHC (Lindane)	%	116			70-130	Pass	
Heptachlor	%	114			70-130	Pass	
Heptachlor epoxide	%	115			70-130	Pass	
Hexachlorobenzene	%	113			70-130	Pass	
Methoxychlor	%	126			70-130	Pass	
Toxaphene	%	111			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	115			70-130	Pass	
Aroclor-1260	%	88			70-130	Pass	
LCS - % Recovery							
% Clay	%	88			70-130	Pass	
Total Organic Carbon	%	89			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	98			70-130	Pass	
Cadmium	%	104			70-130	Pass	
Chromium	%	105			70-130	Pass	
Copper	%	105			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead			%	104			70-130	Pass	
Mercury			%	96			70-130	Pass	
Nickel			%	103			70-130	Pass	
Zinc			%	105			70-130	Pass	
LCS - % Recovery									
SPOCAS Suite									
pH-KCL			%	99			80-120	Pass	
Acid trail - Titratable Actual Acidity			%	100			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Ma48079	NCP	%	118			70-130	Pass	
TRH C10-C14	S20-Ap03531	NCP	%	88			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Ma48079	NCP	%	103			70-130	Pass	
Toluene	S20-Ma48079	NCP	%	121			70-130	Pass	
Ethylbenzene	S20-Ma48079	NCP	%	124			70-130	Pass	
m&p-Xylenes	S20-Ma48079	NCP	%	126			70-130	Pass	
o-Xylene	S20-Ma48079	NCP	%	125			70-130	Pass	
Xylenes - Total*	S20-Ma48079	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Ma48079	NCP	%	110			70-130	Pass	
TRH C6-C10	S20-Ma48079	NCP	%	119			70-130	Pass	
TRH >C10-C16	S20-Ap03531	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Ma45350	NCP	%	92			70-130	Pass	
Acenaphthylene	S20-Ma45350	NCP	%	90			70-130	Pass	
Anthracene	S20-Ma45350	NCP	%	93			70-130	Pass	
Benz(a)anthracene	S20-Ma45350	NCP	%	93			70-130	Pass	
Benzo(a)pyrene	S20-Ma45350	NCP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Ma45350	NCP	%	77			70-130	Pass	
Benzo(g.h.i)perylene	S20-Ma45350	NCP	%	81			70-130	Pass	
Benzo(k)fluoranthene	S20-Ma45350	NCP	%	96			70-130	Pass	
Chrysene	S20-Ma45350	NCP	%	90			70-130	Pass	
Dibenz(a.h)anthracene	S20-Ma45350	NCP	%	80			70-130	Pass	
Fluoranthene	S20-Ma45350	NCP	%	94			70-130	Pass	
Fluorene	S20-Ma45350	NCP	%	93			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ma45350	NCP	%	82			70-130	Pass	
Naphthalene	S20-Ma45350	NCP	%	97			70-130	Pass	
Phenanthrene	S20-Ma45350	NCP	%	93			70-130	Pass	
Pyrene	S20-Ma45350	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Ma47587	NCP	%	97			70-130	Pass	
Cadmium	S20-Ma47587	NCP	%	91			70-130	Pass	
Chromium	S20-Ma47587	NCP	%	95			70-130	Pass	
Copper	S20-Ap03971	NCP	%	94			70-130	Pass	
Lead	S20-Ma47587	NCP	%	89			70-130	Pass	
Mercury	S20-Ma47587	NCP	%	102			70-130	Pass	
Nickel	S20-Ma47587	NCP	%	82			70-130	Pass	
Zinc	S20-Ma47587	NCP	%	96			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Ma44190	NCP	%	102			70-130	Pass	
4.4'-DDD	S20-Ma44190	NCP	%	110			70-130	Pass	
4.4'-DDE	S20-Ma44190	NCP	%	97			70-130	Pass	
4.4'-DDT	S20-Ma44190	NCP	%	72			70-130	Pass	
a-BHC	S20-Ma44190	NCP	%	98			70-130	Pass	
Aldrin	S20-Ma44190	NCP	%	112			70-130	Pass	
b-BHC	S20-Ma44190	NCP	%	94			70-130	Pass	
d-BHC	S20-Ma44190	NCP	%	124			70-130	Pass	
Dieldrin	S20-Ma44070	NCP	%	144			70-130	Fail	Q08
Endosulfan I	S20-Ma44190	NCP	%	100			70-130	Pass	
Endosulfan II	S20-Ma44190	NCP	%	101			70-130	Pass	
Endosulfan sulphate	S20-Ma44190	NCP	%	111			70-130	Pass	
Endrin	S20-Ma44190	NCP	%	88			70-130	Pass	
Endrin aldehyde	S20-Ma44190	NCP	%	101			70-130	Pass	
Endrin ketone	S20-Ma44190	NCP	%	108			70-130	Pass	
g-BHC (Lindane)	S20-Ma44190	NCP	%	98			70-130	Pass	
Heptachlor	S20-Ma44190	NCP	%	94			70-130	Pass	
Heptachlor epoxide	S20-Ma44190	NCP	%	97			70-130	Pass	
Hexachlorobenzene	S20-Ma44190	NCP	%	98			70-130	Pass	
Methoxychlor	S20-Ma44190	NCP	%	79			70-130	Pass	
Toxaphene	S20-Ma44070	NCP	%	165			70-130	Fail	Q08
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S20-Ma47577	NCP	%	89			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ap03530	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-Ap03530	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Ap03530	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Ap03530	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ap03530	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Ap03530	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Ap03530	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Ap03530	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Ap03530	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Ap03530	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ap03530	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Ap03530	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S20-Ap03530	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(g.h.i)perylene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Ma45364	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Clay	M20-Ma10469	NCP	%	12	13	5.0	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	M20-Ap08142	NCP	uS/cm	190	190	1.7	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S20-Ma47835	CP	pH Units	7.3	7.1	Pass	30%	Pass	
Total Organic Carbon	S20-Ma47673	NCP	%	0.1	0.1	36	30%	Fail	Q15
% Moisture	S20-Ma47835	CP	%	14	14	1.0	30%	Pass	
Duplicate									
SPOCAS Suite				Result 1	Result 2	RPD			
pH-KCL	S20-Ma47836	CP	pH Units	6.7	6.7	<1	30%	Pass	
pH-OX	S20-Ma47836	CP	pH Units	4.3	4.4	1.0	30%	Pass	
Acid trail - Titratable Actual Acidity	S20-Ma47836	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
Acid trail - Titratable Peroxide Acidity	S20-Ma47836	CP	mol H+/t	9.0	9.0	8.0	30%	Pass	
Acid trail - Titratable Sulfidic Acidity	S20-Ma47836	CP	mol H+/t	9.0	9.0	8.0	30%	Pass	
sulfidic - TAA equiv. S% pyrite	S20-Ma47836	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass	
sulfidic - TPA equiv. S% pyrite	S20-Ma47836	CP	% pyrite S	0.02	< 0.02	8.0	30%	Pass	
sulfidic - TSA equiv. S% pyrite	S20-Ma47836	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Sulfur - KCl Extractable	S20-Ma47836	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Sulfur - Peroxide	S20-Ma47836	CP	% S	0.07	0.07	<1	30%	Pass	
Sulfur - Peroxide Oxidisable Sulfur	S20-Ma47836	CP	% S	0.07	0.07	<1	30%	Pass	
acidity - Peroxide Oxidisable Sulfur	S20-Ma47836	CP	mol H+/t	40	40	<1	30%	Pass	
HCl Extractable Sulfur	S20-Ma47836	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	S20-Ma47836	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	S20-Ma47836	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	S20-Ma47836	CP	% S	n/a	n/a	n/a	30%	Pass	
Calcium - KCl Extractable	S20-Ma47836	CP	% Ca	0.09	0.09	<1	30%	Pass	
Calcium - Peroxide	S20-Ma47836	CP	% Ca	0.11	0.11	2.0	30%	Pass	
Acid Reacted Calcium	S20-Ma47836	CP	% Ca	< 0.02	< 0.02	<1	30%	Pass	
acidity - Acid Reacted Calcium	S20-Ma47836	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
sulfidic - Acid Reacted Ca equiv. S% pyrite	S20-Ma47836	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Magnesium - KCl Extractable	S20-Ma47836	CP	% Mg	< 0.02	< 0.02	<1	30%	Pass	
Magnesium - Peroxide	S20-Ma47836	CP	% Mg	< 0.02	< 0.02	<1	30%	Pass	
Acid Reacted Magnesium	S20-Ma47836	CP	% Mg	< 0.02	< 0.02	<1	30%	Pass	
acidity - Acid Reacted Magnesium	S20-Ma47836	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
sulfidic - Acid Reacted Mg equiv. S% pyrite	S20-Ma47836	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Acid Neutralising Capacity (ANCE)	S20-Ma47836	CP	% CaCO3	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity - Acidity units (a-ANCE)	S20-Ma47836	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
ANC Fineness Factor	S20-Ma47836	CP	factor	1.5	1.5	<1	30%	Pass	
SPOCAS - Liming rate	S20-Ma47836	CP	kg CaCO3/t	1.0	1.0	3.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ma47839	CP	mg/kg	3.4	3.3	2.0	30%	Pass	
Cadmium	S20-Ma47839	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Ma47839	CP	mg/kg	8.0	6.0	29	30%	Pass	
Copper	S20-Ma47839	CP	mg/kg	17	15	9.0	30%	Pass	
Lead	S20-Ma47839	CP	mg/kg	110	180	49	30%	Fail	Q15
Mercury	S20-Ma47839	CP	mg/kg	0.3	0.2	25	30%	Pass	
Nickel	S20-Ma47839	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S20-Ma47839	CP	mg/kg	47	44	8.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Ma47852	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-Ma47852	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-Ma47852	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S20-Ma47852	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Ma47852	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Ma47852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Ma47853	CP	%	8.8	9.5	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ma47854	CP	mg/kg	3.7	3.6	2.0	30%	Pass	
Cadmium	S20-Ma47854	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Ma47854	CP	mg/kg	8.5	9.0	6.0	30%	Pass	
Copper	S20-Ma47854	CP	mg/kg	17	18	7.0	30%	Pass	
Lead	S20-Ma47854	CP	mg/kg	61	64	5.0	30%	Pass	
Mercury	S20-Ma47854	CP	mg/kg	0.3	0.3	4.0	30%	Pass	
Nickel	S20-Ma47854	CP	mg/kg	5.2	5.3	2.0	30%	Pass	
Zinc	S20-Ma47854	CP	mg/kg	55	59	7.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Myles Clark	Senior Analyst-SPOCAS (QLD)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Scott Beddoes	Senior Analyst-Inorganic (VIC)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention:	Sahani Gunatunge
Report	711021-AID
Project Name	PADDINGTON
Project ID	58554
Received Date	Mar 31, 2020
Date Reported	Apr 07, 2020

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name PADDINGTON
Project ID 58554
Date Sampled Mar 27, 2020 to Mar 30, 2020
Report 711021-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
MW1_0.5-0.6	20-Ma47835	Mar 27, 2020	Approximate Sample 555g Sample consisted of: Brown fine-grained sandy soil, brick, bitumen, glass and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
MW2_0.2-0.3	20-Ma47839	Mar 27, 2020	Approximate Sample 559g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
MW3_1.0-1.1	20-Ma47843	Mar 27, 2020	Approximate Sample 512g Sample consisted of: Brown coarse-grained clayey soil, coal and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH101_0.2-0.3	20-Ma47848	Mar 30, 2020	Approximate Sample 500g Sample consisted of: Brown fine-grained sandy soil, coal and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH102_0.2-0.3	20-Ma47849	Mar 30, 2020	Approximate Sample 487g Sample consisted of: Brown fine-grained sandy soil, coal and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH103_0-0.1	20-Ma47851	Mar 27, 2020	Approximate Sample 461g Sample consisted of: Brown coarse-grained soil, coal, bitumen, glass, rocks and organic debris	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH104_0.3-0.4	20-Ma47853	Mar 27, 2020	Approximate Sample 565g Sample consisted of: Brown coarse-grained soil, bitumen and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH107_0-0.1	20-Ma47854	Mar 27, 2020	Approximate Sample 549g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
QC01	20-Ma47856	Mar 27, 2020	Approximate Sample 455g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Mar 31, 2020	Indefinite

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Company Name: JBS & G Australia (NSW) P/L
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Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 711021
Phone: 02 8245 0300
Fax:

Received: Mar 31, 2020 12:46 PM
Due: Apr 7, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	MW1_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47835	X	X				X	X				X	X	X
2	MW1_3.5-3.6	Mar 27, 2020		Soil	S20-Ma47836									X		X		X
3	MW1_4.5-4.6	Mar 27, 2020		Soil	S20-Ma47837									X	X			
4	MW1_5.3-5.4	Mar 27, 2020		Soil	S20-Ma47838									X	X			
5	MW2_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47839		X									X		X
6	MW2_0.9-1.0	Mar 30, 2020		Soil	S20-Ma47840									X	X			
7	MW2_2.0-2.1	Mar 30, 2020		Soil	S20-Ma47841									X	X			
8	MW2_4.0-4.1	Mar 30, 2020		Soil	S20-Ma47842									X	X			
9	MW3_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47843		X									X		X
10	MW3_1.4-1.5	Mar 27, 2020		Soil	S20-Ma47844											X		X

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Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 711021
Phone: 02 8245 0300
Fax:

Received: Mar 31, 2020 12:46 PM
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Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
11	MW3_3.0-3.1	Mar 27, 2020		Soil	S20-Ma47845									X	X			
12	MW3_4.0-4.1	Mar 27, 2020		Soil	S20-Ma47846									X	X			
13	MW3_4.9-5.0	Mar 27, 2020		Soil	S20-Ma47847			X										
14	BH101_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47848		X									X		X
15	BH102_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47849	X	X				X	X				X	X	X
16	BH102_0.7-0.8	Mar 30, 2020		Soil	S20-Ma47850											X		X
17	BH103_0-0.1	Mar 27, 2020		Soil	S20-Ma47851		X									X		X
18	BH103_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47852											X		X
19	BH104_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47853		X									X		X
20	BH107_0-0.1	Mar 27, 2020		Soil	S20-Ma47854		X									X		X
21	BH107_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47855											X		X
22	QC01	Mar 27, 2020		Soil	S20-Ma47856		X									X		X
23	RINSATE	Mar 30, 2020		Water	S20-Ma47857													X

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Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
24	TS	Mar 30, 2020		Water	S20-Ma47858								X					
25	TB	Mar 30, 2020		Water	S20-Ma47859								X					
26	MW1_0.05-0.1	Mar 27, 2020		Soil	S20-Ma47860					X								
27	MW1_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47861					X								
28	MW1_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47862					X								
29	MW1_2.0-2.1	Mar 27, 2020		Soil	S20-Ma47863					X								
30	MW1_2.9-3.0	Mar 27, 2020		Soil	S20-Ma47864					X								
31	MW2_0-0.1	Mar 30, 2020		Soil	S20-Ma47865					X								
32	MW2_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47866					X								
33	MW2_2.5-2.6	Mar 30, 2020		Soil	S20-Ma47867					X								
34	MW2_3.0-3.1	Mar 30, 2020		Soil	S20-Ma47868					X								
35	MW3_0-0.1	Mar 27, 2020		Soil	S20-Ma47869					X								
36	MW3_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47870					X								

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Received: Mar 31, 2020 12:46 PM
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Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
37	MW3_0.4-0.5	Mar 27, 2020		Soil	S20-Ma47871					X								
38	MW3_1.9-2.0	Mar 27, 2020		Soil	S20-Ma47872					X								
39	MW3_2.4-2.5	Mar 27, 2020		Soil	S20-Ma47873					X								
40	BH101_0-0.1	Mar 30, 2020		Soil	S20-Ma47874					X								
41	BH101_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47875					X								
42	BH102_0-0.1	Mar 30, 2020		Soil	S20-Ma47876					X								
43	BH102_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47877					X								
44	BH104_0-0.1	Mar 27, 2020		Soil	S20-Ma47878					X								
45	BH107_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47879					X								
46	BH107_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47880					X								
47	QC01	Mar 27, 2020		Soil	S20-Ma47881				X									
48	QC02	Mar 30, 2020		Soil	S20-Ma47882					X								
Test Counts						2	9	1	23	23	2	2	2	8	21	21	2	15

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

Units

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

Terms

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

Comments

S20-Ma47849, S20-Ma47851, S20-Ma47856: Samples received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **711021-W**
Project name PADDINGTON
Project ID 58554
Received Date Mar 31, 2020

Client Sample ID			**RINSATE**	[R20]**TS**	**TB**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Ma47857**	**S20-Ma47858**	**S20-Ma47859**
Date Sampled			**Mar 30, 2020**	**Mar 30, 2020**	**Mar 30, 2020**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	-	-
BTEX					
Benzene	0.001	mg/L	< 0.001	120	< 0.001
Toluene	0.001	mg/L	< 0.001	110	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	110	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	110	< 0.002
o-Xylene	0.001	mg/L	< 0.001	110	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	110	< 0.003
4-Bromofluorobenzene (surr.)	1	%	112	105	114
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	-
TRH >C10-C16	0.05	mg/L	< 0.05	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	-	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	-	-
Acenaphthylene	0.001	mg/L	< 0.001	-	-
Anthracene	0.001	mg/L	< 0.001	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-	-
Chrysene	0.001	mg/L	< 0.001	-	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	-	-
Fluoranthene	0.001	mg/L	< 0.001	-	-
Fluorene	0.001	mg/L	< 0.001	-	-

Client Sample ID			RINSATE	R20TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ma47857	S20-Ma47858	S20-Ma47859
Date Sampled			Mar 30, 2020	Mar 30, 2020	Mar 30, 2020
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	-	-
Naphthalene	0.001	mg/L	< 0.001	-	-
Phenanthrene	0.001	mg/L	< 0.001	-	-
Pyrene	0.001	mg/L	< 0.001	-	-
Total PAH*	0.001	mg/L	< 0.001	-	-
2-Fluorobiphenyl (surr.)	1	%	50	-	-
p-Terphenyl-d14 (surr.)	1	%	52	-	-
Organochlorine Pesticides					
Chlordanes - Total	0.001	mg/L	< 0.001	-	-
4.4'-DDD	0.0001	mg/L	< 0.0001	-	-
4.4'-DDE	0.0001	mg/L	< 0.0001	-	-
4.4'-DDT	0.0001	mg/L	< 0.0001	-	-
a-BHC	0.0001	mg/L	< 0.0001	-	-
Aldrin	0.0001	mg/L	< 0.0001	-	-
b-BHC	0.0001	mg/L	< 0.0001	-	-
d-BHC	0.0001	mg/L	< 0.0001	-	-
Dieldrin	0.0001	mg/L	< 0.0001	-	-
Endosulfan I	0.0001	mg/L	< 0.0001	-	-
Endosulfan II	0.0001	mg/L	< 0.0001	-	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	-	-
Endrin	0.0001	mg/L	< 0.0001	-	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	-	-
Endrin ketone	0.0001	mg/L	< 0.0001	-	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	-	-
Heptachlor	0.0001	mg/L	< 0.0001	-	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	-	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	-	-
Methoxychlor	0.0001	mg/L	< 0.0001	-	-
Toxaphene	0.01	mg/L	< 0.01	-	-
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	-	-
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	-	-
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	-	-
Dibutylchlorendate (surr.)	1	%	51	-	-
Tetrachloro-m-xylene (surr.)	1	%	51	-	-
Polychlorinated Biphenyls					
Aroclor-1016	0.005	mg/L	< 0.005	-	-
Aroclor-1221	0.001	mg/L	< 0.001	-	-
Aroclor-1232	0.005	mg/L	< 0.005	-	-
Aroclor-1242	0.005	mg/L	< 0.005	-	-
Aroclor-1248	0.005	mg/L	< 0.005	-	-
Aroclor-1254	0.005	mg/L	< 0.005	-	-
Aroclor-1260	0.005	mg/L	< 0.005	-	-
Total PCB*	0.001	mg/L	< 0.001	-	-
Dibutylchlorendate (surr.)	1	%	51	-	-
Tetrachloro-m-xylene (surr.)	1	%	51	-	-

Client Sample ID			RINSATE	R20TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ma47857	S20-Ma47858	S20-Ma47859
Date Sampled			Mar 30, 2020	Mar 30, 2020	Mar 30, 2020
Test/Reference	LOR	Unit			
Heavy Metals					
Arsenic	0.001	mg/L	< 0.001	-	-
Cadmium	0.0002	mg/L	< 0.0002	-	-
Chromium	0.001	mg/L	< 0.001	-	-
Copper	0.001	mg/L	< 0.001	-	-
Lead	0.001	mg/L	< 0.001	-	-
Mercury	0.0001	mg/L	< 0.0001	-	-
Nickel	0.001	mg/L	< 0.001	-	-
Zinc	0.005	mg/L	< 0.005	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
JBS&G Suite 2			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 31, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 31, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 31, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 31, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Mar 31, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Mar 31, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Apr 07, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 711021
Phone: 02 8245 0300
Fax:

Received: Mar 31, 2020 12:46 PM
Due: Apr 7, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	MW1_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47835	X	X				X	X				X	X	X
2	MW1_3.5-3.6	Mar 27, 2020		Soil	S20-Ma47836									X		X		X
3	MW1_4.5-4.6	Mar 27, 2020		Soil	S20-Ma47837									X	X			
4	MW1_5.3-5.4	Mar 27, 2020		Soil	S20-Ma47838									X	X			
5	MW2_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47839		X									X		X
6	MW2_0.9-1.0	Mar 30, 2020		Soil	S20-Ma47840									X	X			
7	MW2_2.0-2.1	Mar 30, 2020		Soil	S20-Ma47841									X	X			
8	MW2_4.0-4.1	Mar 30, 2020		Soil	S20-Ma47842									X	X			
9	MW3_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47843		X									X		X
10	MW3_1.4-1.5	Mar 27, 2020		Soil	S20-Ma47844											X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
11	MW3_3.0-3.1	Mar 27, 2020		Soil	S20-Ma47845									X	X			
12	MW3_4.0-4.1	Mar 27, 2020		Soil	S20-Ma47846									X	X			
13	MW3_4.9-5.0	Mar 27, 2020		Soil	S20-Ma47847			X										
14	BH101_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47848		X									X		X
15	BH102_0.2-0.3	Mar 30, 2020		Soil	S20-Ma47849	X	X				X	X				X	X	X
16	BH102_0.7-0.8	Mar 30, 2020		Soil	S20-Ma47850											X		X
17	BH103_0-0.1	Mar 27, 2020		Soil	S20-Ma47851		X									X		X
18	BH103_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47852											X		X
19	BH104_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47853		X									X		X
20	BH107_0-0.1	Mar 27, 2020		Soil	S20-Ma47854		X									X		X
21	BH107_0.9-1.0	Mar 27, 2020		Soil	S20-Ma47855											X		X
22	QC01	Mar 27, 2020		Soil	S20-Ma47856		X									X		X
23	RINSATE	Mar 30, 2020		Water	S20-Ma47857													X

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Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
24	TS	Mar 30, 2020		Water	S20-Ma47858								X					
25	TB	Mar 30, 2020		Water	S20-Ma47859								X					
26	MW1_0.05-0.1	Mar 27, 2020		Soil	S20-Ma47860					X								
27	MW1_0.3-0.4	Mar 27, 2020		Soil	S20-Ma47861					X								
28	MW1_1.0-1.1	Mar 27, 2020		Soil	S20-Ma47862					X								
29	MW1_2.0-2.1	Mar 27, 2020		Soil	S20-Ma47863					X								
30	MW1_2.9-3.0	Mar 27, 2020		Soil	S20-Ma47864					X								
31	MW2_0-0.1	Mar 30, 2020		Soil	S20-Ma47865					X								
32	MW2_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47866					X								
33	MW2_2.5-2.6	Mar 30, 2020		Soil	S20-Ma47867					X								
34	MW2_3.0-3.1	Mar 30, 2020		Soil	S20-Ma47868					X								
35	MW3_0-0.1	Mar 27, 2020		Soil	S20-Ma47869					X								
36	MW3_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47870					X								

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Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Total Organic Carbon	BTEX	SPOCAS Suite	Moisture Set	Moisture Set	Cation Exchange Capacity	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271												X					X	
Sydney Laboratory - NATA Site # 18217							X	X		X	X		X		X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X			X					X	X	X	X	
Perth Laboratory - NATA Site # 23736																		
37	MW3_0.4-0.5	Mar 27, 2020		Soil	S20-Ma47871					X								
38	MW3_1.9-2.0	Mar 27, 2020		Soil	S20-Ma47872					X								
39	MW3_2.4-2.5	Mar 27, 2020		Soil	S20-Ma47873					X								
40	BH101_0-0.1	Mar 30, 2020		Soil	S20-Ma47874					X								
41	BH101_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47875					X								
42	BH102_0-0.1	Mar 30, 2020		Soil	S20-Ma47876					X								
43	BH102_0.5-0.6	Mar 30, 2020		Soil	S20-Ma47877					X								
44	BH104_0-0.1	Mar 27, 2020		Soil	S20-Ma47878					X								
45	BH107_0.2-0.3	Mar 27, 2020		Soil	S20-Ma47879					X								
46	BH107_0.5-0.6	Mar 27, 2020		Soil	S20-Ma47880					X								
47	QC01	Mar 27, 2020		Soil	S20-Ma47881				X									
48	QC02	Mar 30, 2020		Soil	S20-Ma47882					X								
Test Counts						2	9	1	23	23	2	2	2	8	21	21	2	15

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4.4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	91			70-130	Pass	
TRH C10-C14	%	94			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	88			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	89			70-130	Pass	
o-Xylene	%	90			70-130	Pass	
Xylenes - Total*	%	90			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	87			70-130	Pass	
TRH C6-C10	%	92			70-130	Pass	
TRH >C10-C16	%	89			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	73			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	99			70-130	Pass	
Benzo(a)pyrene	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	%	92			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	%	91			70-130	Pass	
Benzo(k)fluoranthene	%	94			70-130	Pass	
Chrysene	%	98			70-130	Pass	
Dibenz(a.h)anthracene	%	94			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	83			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	99			70-130	Pass	
Phenanthrene	%	87			70-130	Pass	
Pyrene	%	85			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	82			70-130	Pass	
4.4'-DDD	%	84			70-130	Pass	
4.4'-DDE	%	74			70-130	Pass	
4.4'-DDT	%	80			70-130	Pass	
a-BHC	%	75			70-130	Pass	
Aldrin	%	82			70-130	Pass	
Dieldrin	%	70			70-130	Pass	
Endosulfan I	%	74			70-130	Pass	
Endosulfan II	%	80			70-130	Pass	
Endosulfan sulphate	%	94			70-130	Pass	
Endrin	%	87			70-130	Pass	
Endrin aldehyde	%	89			70-130	Pass	
Endrin ketone	%	91			70-130	Pass	
g-BHC (Lindane)	%	72			70-130	Pass	
Heptachlor	%	88			70-130	Pass	
Heptachlor epoxide	%	88			70-130	Pass	
Methoxychlor	%	110			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	78			70-130	Pass	
Aroclor-1260	%	104			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	95			70-130	Pass	
Cadmium	%	94			70-130	Pass	
Chromium	%	90			70-130	Pass	
Copper	%	85			70-130	Pass	
Lead	%	96			70-130	Pass	
Mercury	%	92			70-130	Pass	
Nickel	%	86			70-130	Pass	
Zinc	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	S20-Ma48388	NCP	%	98			70-130	Pass	
Chromium	S20-Ma48388	NCP	%	78			70-130	Pass	
Lead	S20-Ma48388	NCP	%	82			70-130	Pass	
Mercury	S20-Ma48388	NCP	%	82			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ma48966	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ma48966	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Ma48966	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Ma48966	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Ma48966	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Ma48966	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-Ma48966	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ma48966	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Ma48966	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ap00834	NCP	mg/L	0.013	0.013	5.0	30%	Pass	
Cadmium	S20-Ap00834	NCP	mg/L	0.0010	0.0010	2.0	30%	Pass	
Chromium	S20-Ap00834	NCP	mg/L	0.004	0.004	6.0	30%	Pass	
Copper	S20-Ap00834	NCP	mg/L	0.011	0.011	<1	30%	Pass	
Lead	S20-Ap00834	NCP	mg/L	0.004	0.004	7.0	30%	Pass	
Mercury	S20-Ap00834	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S20-Ap00834	NCP	mg/L	0.18	0.19	6.0	30%	Pass	
Zinc	S20-Ap00834	NCP	mg/L	1.6	1.6	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**JBS & G Australia (NSW) P/L**
Contact name:	Sahani Gunatunge
Project name:	PADDINGTON
Project ID:	58554
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Mar 31, 2020 12:46 PM
Eurofins reference:	**711021**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 10.7 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☑ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QA01 & QA02 sent to Envirolab for analysis. AssPH bag not received for sample MW2_2.5-2.6. Sample not received for MW3_4.9-5.0, analysis cancelled

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Sahani Gunatunge - sgunatunge@jbsg.com.au.

Eurofins 1052 21112

CHAIN OF CUSTODY

JBS&G

PROJECT NO 58554
PROJECT NAME Paddington
DATE NEEDED BY
PHONE Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688
SEND REPORT & INVOICE TO (1) adminnsw@jbsg.com.au; (2) ...Shannon.....@jbsg.com.au; (3) .....Mavis.....@jbsg.com.au

LABORATORY BATCH NO. 711021
SAMPLERS MN
QC LEVEL NEPM (2013)

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB2A	JB2	pH, %clay CEC, TOC	SPOCAS	NOTES
MW1_C05-C1	Soil	27/03/20		J+B+ice						
" -03-04										
" -05-06						X	X			X
" -10-11										
" -20-21				J+B+ASS+ice						
" -29-30				J+B+ice						
" -35-36				J+B+ASS+ice		X		X		
" -45-46				J+B+ASS+ice				X		
" -53-54				J+ASS+ice				X		
MW2-0-01		26/03/20		J+B+ice						
" -01-03						X				X
" -05-06										
" -09-10				J+B+ASS+ice				X		
" -20-21				J+B+ice+ASS				X		
" -25-26										
" -30-31				J+ice						
" -40-41				J+ice+ASS				X		
MW3-0-01		27/03/20		J+B+ice						
" -02-03										

RELINQUISHED BY	METHOD OF SHIPMENT	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME [illegible] DATE 27/3/20	CONSIGNMENT NOTE NO	NAME Elvis D	COOLER SEAL – Yes No Intact Broken
OF JBS&G	TRANSPORT CO	DATE 31/3/20	COOLER TEMP 10.66 deg C
NAME DATE	CONSIGNMENT NOTE NO	NAME DATE	COOLER SEAL – Yes No Intact Broken
OF	TRANSPORT CO	OF	COOLER TEMP deg C

Container & Preservative Codes: P = Plastic, J = Soil Jar, B = Glass Bottle, N = Nitric Acid Preserved, S = Sodium Hydroxide Preserved, VC = Hydrochloric Acid Preserved Vial, VS = Sulfuric Acid Preserved Vial, A = Sulfuric Acid Preserved Amber, Z = Zinc Preserved, E = EDTA Preserved, ST = Sterile Bottle, O = Other

Eurofins 1 of 2

21113

CHAIN OF CUSTODY

JBS&G

PROJECT NO. 58554
PROJECT NAME. Paddington
DATE NEEDED BY:

LABORATORY BATCH NO.: 71021
SAMPLERS: MW
QC LEVEL. NEPM (2013)

PHONE. Sydney: 02 8245 0300 | Perth 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO. (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB2A	JB2	pH, %clay CEC, TOC	SPOCAS	1999 OC Aldrin / Dieldrin ANALYSIS	NOTES
MW3_04-05	Soil	27/03/20		J + B + ice							
" -1.0-1.1				J+B, +ice		X				X	
" -1.4-1.5				J + AGS + ice			X				
" -1.9-2.0				J + AGS + ice							
" -2.4-2.5				J + B + ice							
" -3.0-3.1				J + AGS + ice					X		
" -4.0-4.1									X		
" -4.9-5.0									X		
BH101_0-0.1		30/3/20		J + B + ice							
" -0.2-0.3						X				X	
" -0.5-0.6											
BH102-0-0.1											
" -0.2-0.3						X	X			X	
" -0.5-0.6											
" -0.7-0.8							X				
BH103_0-0.1		27/3/20				X				X	
" -0.9-1.0							X				
BH104_0-0.1											
-0.3-0.4						X				X	

RELINQUISHED BY	METHOD OF SHIPMENT	RECEIVED BY	FOR RECEIVING LAB USE ONLY:
NAME: [illegible] DATE: 31.3.20	CONSIGNMENT NOTE NO.	NAME Elvis D	COOLER SEAL – Yes No Intact Broken
OF: JBS&G	TRANSPORT CO	DATE 31/3/20	16.66
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes No Intact Broken
OF	TRANSPORT CO	OF:	COOLER TEMP deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSG Forms\013 = Chain of Custody - Generic

CHAIN OF CUSTODY

Eurofins 21114

JBS&G

PROJECT NO 53557

PROJECT NAME [illegible]

DATE NEEDED BY

LABORATORY BATCH NO. 71102

SAMPLERS MN

QC LEVEL NEPM (2013)

PHONE Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688

SEND REPORT & INVOICE TO (1) adminnsw@jbsg.com.au, (2) [illegible]@jbsg.com.au, (3) [illegible]@jbsg.com.au

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB2A	JB2	pH, Clay, CEC, TOC	BTEX	TYPE OF CONTAINERS		NOTES
BH07-C-C1	Soil	27/3/20		J+B + ICE		X					X	
-C2-C3				↓								
-C5-C6												
-C7-C				J+B-ASS+ICE			X					
QAC1				J, B, + ICE				SEND to Eurofins				
QC1				↓		X						
QA2				ASS + ICE				SEND to Eurofins				
QC2				↓								
QA3		27/3/20		J+B + ICE				SEND to Eurofins				
QC3				↓								
[illegible]				[illegible]		X						
[illegible]				[illegible]			X					
[illegible]				↓			X					

RELINQUISHED BY	METHOD OF SHIPMENT	RECEIVED BY	FOR RECEIVING LAB USE ONLY:
NAME [illegible] DATE 27/3/20	CONSIGNMENT NOTE NO.	NAME Elvis	COOLER SEAL – Yes ___ No ___ Intact ___ Broken ___
OF JBS&G	TRANSPORT CO	DATE 31/3/20	
NAME DATE	CONSIGNMENT NOTE NO.	OF Eurofins	COOLER TEMP ___ deg C
OF	TRANSPORT CO	NAME DATE	COOLER SEAL – Yes ___ No ___ Intact ___ Broken ___
		OF	COOLER TEMP ___ deg C

Container & Preservative Codes: P = Plastic; J = Jar; B = Glass Bottle; N = Nitric Acid Prsvd; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

[illegible] Chain of Custody Centre

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Milad Noujaim**

Report **712063-W**
Project name PADDINGTON
Project ID 58554
Received Date Apr 03, 2020

Client Sample ID			**MW1**	**MW2**	**MW3**	**QC**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Ap06356**	**S20-Ap06357**	**S20-Ap06358**	**S20-Ap06359**
Date Sampled			**Apr 03, 2020**	**Apr 03, 2020**	**Apr 03, 2020**	**Apr 03, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	124	116	116	118
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Propanone (Acetone)	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW1	MW2	MW3	QC
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Ap06356	S20-Ap06357	S20-Ap06358	S20-Ap06359
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Styrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total MAH*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
4-Bromofluorobenzene (surr.)	1	%	124	116	116	118
Toluene-d8 (surr.)	1	%	104	97	98	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			MW1	MW2	MW3	QC
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Ap06356	S20-Ap06357	S20-Ap06358	S20-Ap06359
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons (Trace level)						
Acenaphthene	0.00001	mg/L	0.00002	0.00035	0.0011	0.00059
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001	0.00029	0.00014
Anthracene	0.00001	mg/L	< 0.00001	0.00011	0.00032	0.00016
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001	0.00005	0.00010	0.00006
Fluorene	0.00001	mg/L	< 0.00001	0.00015	0.00084	0.00039
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	0.00004	0.00031	0.00053	0.00030
Phenanthrene	0.00001	mg/L	0.00002	0.00024	0.00074	0.00038
Pyrene	0.00001	mg/L	< 0.00001	0.00004	0.00008	0.00004
Total PAH*	0.00001	mg/L	0.00008	0.00125	0.004	0.00206
2-Fluorobiphenyl (surr.)	1	%	84	54	134	82
p-Terphenyl-d14 (surr.)	1	%	88	65	98	81
Conductivity (at 25°C)	10	uS/cm	660	490	710	710
pH (at 25°C)	0.1	pH Units	6.8	6.9	7.1	7.3
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	390	330	400	390
Total Suspended Solids Dried at 103–105°C	1	mg/L	140	120	61	52
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.009	0.022
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	0.007

Client Sample ID			RINSATE	R20TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ap06360	S20-Ap06361	S20-Ap06362
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	-	-

Client Sample ID			RINSATE	R20TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ap06360	S20-Ap06361	S20-Ap06362
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit			
BTEX					
Benzene	0.001	mg/L	< 0.001	94	< 0.001
Toluene	0.001	mg/L	< 0.001	97	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	93	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	110	< 0.002
o-Xylene	0.001	mg/L	< 0.001	97	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	110	< 0.003
4-Bromofluorobenzene (surr.)	1	%	114	107	102
Volatile Organics					
1.1-Dichloroethane	0.001	mg/L	< 0.001	-	-
1.1-Dichloroethene	0.001	mg/L	< 0.001	-	-
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	-	-
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	-	-
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-
1.2-Dibromoethane	0.001	mg/L	< 0.001	-	-
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
1.2-Dichloroethane	0.001	mg/L	< 0.001	-	-
1.2-Dichloropropane	0.001	mg/L	< 0.001	-	-
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	-	-
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	-	-
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
1.3-Dichloropropane	0.001	mg/L	< 0.001	-	-
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	-	-
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
2-Butanone (MEK)	0.001	mg/L	< 0.001	-	-
2-Propanone (Acetone)	0.001	mg/L	< 0.001	-	-
4-Chlorotoluene	0.001	mg/L	< 0.001	-	-
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	-	-
Allyl chloride	0.001	mg/L	< 0.001	-	-
Benzene	0.001	mg/L	< 0.001	-	-
Bromobenzene	0.001	mg/L	< 0.001	-	-
Bromochloromethane	0.001	mg/L	< 0.001	-	-
Bromodichloromethane	0.001	mg/L	< 0.001	-	-
Bromoform	0.001	mg/L	< 0.001	-	-
Bromomethane	0.001	mg/L	< 0.001	-	-
Carbon disulfide	0.001	mg/L	< 0.001	-	-
Carbon Tetrachloride	0.001	mg/L	< 0.001	-	-
Chlorobenzene	0.001	mg/L	< 0.001	-	-
Chloroethane	0.001	mg/L	< 0.001	-	-
Chloroform	0.005	mg/L	< 0.005	-	-
Chloromethane	0.001	mg/L	< 0.001	-	-
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-
Dibromochloromethane	0.001	mg/L	< 0.001	-	-
Dibromomethane	0.001	mg/L	< 0.001	-	-
Dichlorodifluoromethane	0.001	mg/L	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-
Iodomethane	0.001	mg/L	< 0.001	-	-
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	-	-

Client Sample ID			RINSATE	[R20]TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ap06360	S20-Ap06361	S20-Ap06362
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit			
Volatile Organics					
m&p-Xylenes	0.002	mg/L	< 0.002	-	-
Methylene Chloride	0.001	mg/L	< 0.001	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-
Styrene	0.001	mg/L	< 0.001	-	-
Tetrachloroethene	0.001	mg/L	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	-	-
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-
Trichloroethene	0.001	mg/L	< 0.001	-	-
Trichlorofluoromethane	0.001	mg/L	< 0.001	-	-
Vinyl chloride	0.001	mg/L	< 0.001	-	-
Xylenes - Total*	0.003	mg/L	< 0.003	-	-
Total MAH*	0.003	mg/L	< 0.003	-	-
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	-	-
4-Bromofluorobenzene (surr.)	1	%	114	-	-
Toluene-d8 (surr.)	1	%	96	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	-
TRH >C10-C16	0.05	mg/L	< 0.05	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	-	-
Polycyclic Aromatic Hydrocarbons (Trace level)					
Acenaphthene	0.00001	mg/L	< 0.00001	-	-
Acenaphthylene	0.00001	mg/L	< 0.00001	-	-
Anthracene	0.00001	mg/L	< 0.00001	-	-
Benz(a)anthracene	0.00001	mg/L	< 0.00001	-	-
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	-	-
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	-	-
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	-	-
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	-	-
Chrysene	0.00001	mg/L	< 0.00001	-	-
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	-	-
Fluoranthene	0.00001	mg/L	< 0.00001	-	-
Fluorene	0.00001	mg/L	< 0.00001	-	-
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	-	-
Naphthalene	0.00001	mg/L	< 0.00001	-	-
Phenanthrene	0.00001	mg/L	< 0.00001	-	-
Pyrene	0.00001	mg/L	< 0.00001	-	-
Total PAH*	0.00001	mg/L	< 0.00001	-	-
2-Fluorobiphenyl (surr.)	1	%	90	-	-
p-Terphenyl-d14 (surr.)	1	%	133	-	-

Client Sample ID			RINSATE	R20TS	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-Ap06360	S20-Ap06361	S20-Ap06362
Date Sampled			Apr 03, 2020	Apr 03, 2020	Apr 03, 2020
Test/Reference	LOR	Unit			
Conductivity (at 25°C)	10	uS/cm	< 10	-	-
pH (at 25°C)	0.1	pH Units	6.2	-	-
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	< 10	-	-
Total Suspended Solids Dried at 103–105°C	1	mg/L	< 1	-	-
Heavy Metals					
Arsenic	0.001	mg/L	< 0.001	-	-
Cadmium	0.0002	mg/L	< 0.0002	-	-
Chromium	0.001	mg/L	< 0.001	-	-
Copper	0.001	mg/L	< 0.001	-	-
Lead	0.001	mg/L	< 0.001	-	-
Mercury	0.0001	mg/L	< 0.0001	-	-
Nickel	0.001	mg/L	< 0.001	-	-
Zinc	0.005	mg/L	< 0.005	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 07, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Apr 07, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Volatile Organics	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Polycyclic Aromatic Hydrocarbons (Trace level)	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water (trace)			
Conductivity (at 25°C)	Melbourne	Apr 07, 2020	28 Days
- Method: LTM-INO-4030 Conductivity			
pH (at 25°C)	Melbourne	Apr 07, 2020	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Total Suspended Solids Dried at 103–105°C	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Metals M8	Melbourne	Apr 07, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 filtered	Melbourne	Apr 07, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180°C ± 2°C	Melbourne	Apr 07, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

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Order No.:
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Fax:

Received: Apr 3, 2020 4:56 PM
Due: Apr 14, 2020
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Sample Detail						Conductivity (at 25°C)	pH (at 25°C)	Total Suspended Solids Dried at 103–105°C	Metals M8	Metals M8 filtered	BTEX	Volatile Organics	Total Recoverable Hydrocarbons	Polycyclic Aromatic Hydrocarbons (Trace level)	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217															
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	MW1	Apr 03, 2020		Water	S20-Ap06356	X	X	X		X	X	X	X	X	X
2	MW2	Apr 03, 2020		Water	S20-Ap06357	X	X	X		X	X	X	X	X	X
3	MW3	Apr 03, 2020		Water	S20-Ap06358	X	X	X		X	X	X	X	X	X
4	QC	Apr 03, 2020		Water	S20-Ap06359	X	X	X		X	X	X	X	X	X
5	RINSATE	Apr 03, 2020		Water	S20-Ap06360	X	X	X	X		X	X	X	X	X
6	TS	Apr 03, 2020		Water	S20-Ap06361						X				
7	TB	Apr 03, 2020		Water	S20-Ap06362						X				
Test Counts						5	5	5	1	4	7	5	5	5	5

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	mg/L	< 0.00001			0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001			0.00001	Pass	
Anthracene	mg/L	< 0.00001			0.00001	Pass	
Benz(a)anthracene	mg/L	< 0.00001			0.00001	Pass	
Benzo(a)pyrene	mg/L	< 0.00001			0.00001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.00001			0.00001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Chrysene	mg/L	< 0.00001			0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001			0.00001	Pass	
Fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Fluorene	mg/L	< 0.00001			0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001			0.00001	Pass	
Naphthalene	mg/L	< 0.00001			0.00001	Pass	
Phenanthrene	mg/L	< 0.00001			0.00001	Pass	
Pyrene	mg/L	< 0.00001			0.00001	Pass	
Total PAH*	mg/L	< 0.00001			0.00001	Pass	
Method Blank							
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 1			1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	87			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	98			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	117			70-130	Pass	
m&p-Xylenes	%	111			70-130	Pass	
Xylenes - Total*	%	109			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	89			70-130	Pass	
1.1.1-Trichloroethane	%	80			70-130	Pass	
1.2-Dichlorobenzene	%	107			70-130	Pass	
1.2-Dichloroethane	%	91			70-130	Pass	
Trichloroethene	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	87			70-130	Pass	
TRH C6-C10	%	97			70-130	Pass	
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	%	126			70-130	Pass	
Acenaphthylene	%	108			70-130	Pass	
Anthracene	%	85			70-130	Pass	
Benz(a)anthracene	%	125			70-130	Pass	
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	%	122			70-130	Pass	
Benzo(g.h.i)perylene	%	77			70-130	Pass	
Benzo(k)fluoranthene	%	114			70-130	Pass	
Chrysene	%	125			70-130	Pass	
Dibenz(a.h)anthracene	%	85			70-130	Pass	
Fluoranthene	%	114			70-130	Pass	
Fluorene	%	117			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	79			70-130	Pass	
Naphthalene	%	124			70-130	Pass	
Phenanthrene	%	84			70-130	Pass	
Pyrene	%	112			70-130	Pass	
LCS - % Recovery							
Conductivity (at 25°C)	%	101			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	88			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	96			80-120	Pass	
Cadmium	%	100			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium			%	96			80-120	Pass	
Copper			%	97			80-120	Pass	
Lead			%	100			80-120	Pass	
Mercury			%	99			75-125	Pass	
Nickel			%	95			80-120	Pass	
Zinc			%	98			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	B20-Ap05575	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	B20-Ap05575	NCP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Suspended Solids Dried at 103–105°C	S20-Ap08219	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S20-Ap06356	CP	%	104			70-130	Pass	
Cadmium (filtered)	S20-Ap06356	CP	%	98			70-130	Pass	
Chromium (filtered)	S20-Ap06356	CP	%	97			70-130	Pass	
Copper (filtered)	S20-Ap06356	CP	%	95			70-130	Pass	
Lead (filtered)	S20-Ap06356	CP	%	99			70-130	Pass	
Mercury (filtered)	S20-Ap06356	CP	%	106			70-130	Pass	
Nickel (filtered)	S20-Ap06356	CP	%	95			70-130	Pass	
Zinc (filtered)	S20-Ap06356	CP	%	108			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1					
Acenaphthene	S20-Ap06357	CP	%	90			70-130	Pass	
Acenaphthylene	S20-Ap06357	CP	%	82			70-130	Pass	
Anthracene	S20-Ap06357	CP	%	76			70-130	Pass	
Benz(a)anthracene	S20-Ap06357	CP	%	86			70-130	Pass	
Benzo(a)pyrene	S20-Ap06357	CP	%	77			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Ap06357	CP	%	92			70-130	Pass	
Benzo(g.h.i)perylene	S20-Ap06357	CP	%	96			70-130	Pass	
Benzo(k)fluoranthene	S20-Ap06357	CP	%	91			70-130	Pass	
Chrysene	S20-Ap06357	CP	%	86			70-130	Pass	
Dibenz(a.h)anthracene	S20-Ap06357	CP	%	98			70-130	Pass	
Fluoranthene	S20-Ap06357	CP	%	81			70-130	Pass	
Fluorene	S20-Ap06357	CP	%	85			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ap06357	CP	%	91			70-130	Pass	
Naphthalene	S20-Ap06357	CP	%	87			70-130	Pass	
Phenanthrene	S20-Ap06357	CP	%	104			70-130	Pass	
Pyrene	S20-Ap06357	CP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-Ap07200	NCP	%	101			75-125	Pass	
Cadmium	M20-Ap07200	NCP	%	102			75-125	Pass	
Chromium	M20-Ap07200	NCP	%	102			75-125	Pass	
Copper	M20-Ap07200	NCP	%	102			75-125	Pass	
Lead	M20-Ap07200	NCP	%	104			75-125	Pass	
Mercury	M20-Ap07200	NCP	%	101			70-130	Pass	
Nickel	M20-Ap07200	NCP	%	100			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	M20-Ap07200	NCP	%	97			75-125	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-Ap10658	NCP	%	110			70-130	Pass	
Toluene	M20-Ap10658	NCP	%	111			70-130	Pass	
Ethylbenzene	M20-Ap10658	NCP	%	106			70-130	Pass	
m&p-Xylenes	M20-Ap10658	NCP	%	124			70-130	Pass	
o-Xylene	M20-Ap10658	NCP	%	106			70-130	Pass	
Xylenes - Total*	M20-Ap10658	NCP	%	118			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M20-Ap10697	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S20-Ap06356	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Ap06356	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Ap06356	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-Ap10697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M20-Ap10697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M20-Ap10697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M20-Ap10697	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M20-Ap10697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M20-Ap10697	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-Ap10697	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M20-Ap10697	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S20-Ap06356	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Ap06356	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Ap06356	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1	Result 2	RPD			
Acenaphthene	S20-Ap06356	CP	mg/L	0.00002	0.00001	42	30%	Fail	Q15
Acenaphthylene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Anthracene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benz(a)anthracene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(a)pyrene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Chrysene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluoranthene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluorene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Naphthalene	S20-Ap06356	CP	mg/L	0.00004	0.00004	3.0	30%	Pass	
Phenanthrene	S20-Ap06356	CP	mg/L	0.00002	0.00002	17	30%	Pass	
Pyrene	S20-Ap06356	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M20-Ap07187	NCP	uS/cm	1000	870	17	30%	Pass	
pH (at 25°C)	M20-Ap07187	NCP	pH Units	3.6	3.6	pass	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	B20-Ap04692	NCP	mg/L	160	140	17	30%	Pass	
Total Suspended Solids Dried at 103–105°C	M20-Ap09157	NCP	mg/L	< 1	< 1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S20-Ap06356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S20-Ap06356	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S20-Ap06356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S20-Ap06356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S20-Ap06356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S20-Ap06356	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S20-Ap06356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S20-Ap06356	CP	mg/L	0.014	0.011	28	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-Ap07200	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M20-Ap07200	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M20-Ap07200	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Copper	M20-Ap07200	NCP	mg/L	0.005	0.005	1.0	30%	Pass	
Lead	M20-Ap07200	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Mercury	M20-Ap07200	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M20-Ap07200	NCP	mg/L	0.013	0.013	1.0	30%	Pass	
Zinc	M20-Ap07200	NCP	mg/L	0.030	0.029	1.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Ursula Long	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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

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Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**

Contact name: Milad Noujaim
Project name: PADDINGTON
Project ID: 58554
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Apr 3, 2020 4:56 PM
Eurofins reference: **712063**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 10.6 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Milad Noujaim - mnoujaim@jbsg.com.au.

Chain of Custody

Eurofins | JBS&G

PROJECT NO.: 58554	LABORATORY BATCH NO.: 712063
PROJECT NAME: Paddington	SAMPLERS: MN
DATE NEEDED BY: STD	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Heavy Metals	PAH (low level)	TRH	VOCs	pH	Electrical Conductivity	Total dissolved solids	TSS	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
MW1	water	3/4/20		vials, Amber, Inorganics, HM tins		+	+	+	+	+	+	+	+				
MW2																	
MW3																	
QC																	
Rinsate																	
TS				vials + ice										+			
TB														+			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: M Nguyen DATE: 3/4/20	CONSIGNMENT NOTE NO.	NAME: Suzanne Ford DATE: 3/4/2020 4:35PM	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: Eurofins	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium **Hydroxide Prsvd;** VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **715872-L**
Project name ADDITIONAL - PADDINGTON
Project ID 58554
Received Date Apr 27, 2020

Client Sample ID			**MW1_0.5-0.6**	**MW3_1.4-1.5**
Sample Matrix			**US Leachate**	**US Leachate**
Eurofins Sample No.			**S20-Ap37989**	**S20-Ap37990**
Date Sampled			**Mar 27, 2020**	**Mar 27, 2020**
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	72	74
p-Terphenyl-d14 (surr.)	1	%	INT	INT
USA Leaching Procedure				
Leachate Fluid[C01]		comment	1.0	1.0
pH (initial)	0.1	pH Units	3.5	3.6
pH (off)	0.1	pH Units	5.2	5.1
pH (USA HCl addition)	0.1	pH Units	1.7	1.7

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 27, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
USA Leaching Procedure	Sydney	Apr 27, 2020	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

eurofins | Environment Testing

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IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ADDITIONAL - PADDINGTON
Project ID: 58554

Order No.:
Report #: 715872
Phone: 02 8245 0300
Fax:

Received: Apr 27, 2020 11:40 AM
Due: Apr 28, 2020
Priority: 1 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	MW1_0.5-0.6	Mar 27, 2020		US Leachate	S20-Ap37989	X	X
2	MW3_1.4-1.5	Mar 27, 2020		US Leachate	S20-Ap37990	X	X
Test Counts						2	2

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			mg/L	< 0.001			0.001	Pass	
Acenaphthylene			mg/L	< 0.001			0.001	Pass	
Anthracene			mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene			mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene			mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene			mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene			mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene			mg/L	< 0.001			0.001	Pass	
Chrysene			mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene			mg/L	< 0.001			0.001	Pass	
Fluoranthene			mg/L	< 0.001			0.001	Pass	
Fluorene			mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene			mg/L	< 0.001			0.001	Pass	
Naphthalene			mg/L	< 0.001			0.001	Pass	
Phenanthrene			mg/L	< 0.001			0.001	Pass	
Pyrene			mg/L	< 0.001			0.001	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	116			70-130	Pass	
Acenaphthylene			%	74			70-130	Pass	
Anthracene			%	94			70-130	Pass	
Benz(a)anthracene			%	102			70-130	Pass	
Benzo(a)pyrene			%	94			70-130	Pass	
Benzo(b&j)fluoranthene			%	93			70-130	Pass	
Benzo(g.h.i)perylene			%	97			70-130	Pass	
Benzo(k)fluoranthene			%	101			70-130	Pass	
Chrysene			%	102			70-130	Pass	
Dibenz(a.h)anthracene			%	97			70-130	Pass	
Fluoranthene			%	115			70-130	Pass	
Fluorene			%	73			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	96			70-130	Pass	
Naphthalene			%	106			70-130	Pass	
Phenanthrene			%	95			70-130	Pass	
Pyrene			%	115			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(a)pyrene	S20-Ap33798	NCP	%	109			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S20-Ap33797	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Chrysene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S20-Ap31150	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**JBS & G Australia (NSW) P/L**
Contact name:	Sahani Gunatunge
Project name:	ADDITIONAL - PADDINGTON
Project ID:	58554
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Apr 27, 2020 11:40 AM
Eurofins reference:	**715872**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 10.7 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Sahani Gunatunge - sgunatunge@jbsg.com.au.

#AU04_Enviro_Sample_NSW

To: Asim Khan
Subject: RE: 1 DAY TAT Additional analysis FW: Eurofins Final Test Results - Report 711021 : Site PADDINGTON (58554)

From: Sahani Gunatunge
Sent: Monday, 27 April 2020 11:40:36 AM (UTC+10:00) Canberra, Melbourne, Sydney
To: Ursula Long
Subject: RE: Eurofins Final Test Results - Report 711021 : Site PADDINGTON (58554)

EXTERNAL EMAIL*

Hi Ursula,

Can I please request TCLP PAHs on samples MW1_0.5-0.6 and MW3_1.4-1.5 on 24 hr TAT.

Thanks,

Sahani Gunatunge | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
T: 02 8245 0300 | M: 0410 240 607 | E: sgunatunge@jbsg.com.au |W: www.jbsg.com.au
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From: UrsulaLong@eurofins.com <UrsulaLong@eurofins.com>
Sent: Thursday, 9 April 2020 9:56 AM
To: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Cc: Milad Noujaim <mnoujaim@jbsg.com.au>
Subject: Eurofins Final Test Results - Report 711021 : Site PADDINGTON (58554)

Please find attached final results for your project in the subject header.

Regards

Ursula Long

Eurofins
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 299 008 420
Email: UrsulaLong@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1098 - Melbourne PFAS Accreditation
EnviroNote 1080 - Total Organofluorine Analysis & PFAS Investigations

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Eurofins 1 of 3

Chain of Custody

JBS&G

PROJECT NO.: 58554	LABORATORY BATCH NO.: 722434
PROJECT NAME: Pobbington	SAMPLERS: MW
DATE NEEDED BY: Standard TAT	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB24	28Z	TCLP Heavy Metals	TCLP PAH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH109 0-0.1	Soil	27/5		B, Jtice		X					X	
0.3-0.4				Jtice								
0.9-1.0				Jtice								
1.5-1.6				B, Jtice								
2.6-2.7							X					
3.2-3.3				Jtice								
BH110 0.1-0.2		28/5		B, Jtice								
0.5-0.6						X					X	
1.0-1.1				Jtice								
1.7-1.8												
BH111 0.1-0.2				B, Jtice		X					X	
0.6-0.7				Jtice								
1.5-1.6							X					
BH112 0-0.1		27/5		B, Jtice								
0.3-0.4						X					X	
1.5-1.6												
2.0-2.1				Jtice								
2.2-2.3												
3.4-3.5												

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: MW DATE: 28/5/20	CONSIGNMENT NOTE NO.	NAME: Grace	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: 28/5	
		OF: Eurofins	COOLER TEMP 6.6 deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

Controlled Copy (June 2015)

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Eurofins 2 of 3

Chain of Custody

JBS&G

PROJECT NO.: 58554	LABORATORY BATCH NO.: 722434
PROJECT NAME: Paddington	SAMPLERS: MN
DATE NEEDED BY: Standard TAT	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB22A	JB2	TCLP metals	TCLP PAH	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH113 0.1-0.2	Soil	27/5		B, J+ice									
0.4-0.5				↓		X						X	
1.0-1.1													
2.0-2.1				J+ice									
2.6-2.7				↓			X						
3.5-3.6													
BH114 0-0.1				B, J+ice									
0.2-0.3				↓		X						X	
0.4-0.5													
1.0-1.1													
1.9-2.0				J+ice									
2.5-2.6				↓									
3.0-3.1													
4.4-4.5													
BH115 0.2-0.3				B, J+ice									
0.9-1.0				↓		X						X	
1.5-1.6				J+ice									
2.5-2.6	↓			↓			X						
TS/TB	water	↓		Vial/ice						X			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: MN DATE: 28/5/20	CONSIGNMENT NOTE NO.	NAME: Grace	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: 28/5	
		OF: Eurofins	COOLER TEMP 6.6 ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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Evidins 3 of 3

Chain of Custody

JBS&G

PROJECT NO.: 58564	LABORATORY BATCH NO.: 722434
PROJECT NAME: Paddington	SAMPLERS: MN
DATE NEEDED BY: Standard TAT	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3211 5350 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB1A	JB2	TCLP Heavy metals	TCLP PAH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH116 0-0.1	Soil	27/5/20		B, Jtice								
0.3-0.4												
0.5-0.6				Jtice								
1.5-1.6						X					X	
2.9-3.0												
BH117 0-0.1				B, Jtice		X					X	
0.3-0.4												
0.7-0.8				Jtice								
1.5-1.6							X					
2.5-2.6												
BH118 0-0.1				B, Jtice								
0.3-0.4						X					X	
1.0-1.1												
1.5-1.6				Jtice								
2.2-2.3												
2.5-2.6												
QC01				B, Jtice		X					X	
QC02		27/5										
Rinsate	Water	27/5		Vials, Heavy Metals, Amber			X					

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: MNivinson DATE: 27/5	CONSIGNMENT NOTE NO.	NAME: Grace DATE: 28/5	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: Eurofins	COOLER TEMP 6.6 deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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#AU04_Enviro_Sample_NSW

From: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Sent: Friday, 29 May 2020 9:55 AM
To: #AU04_Enviro_Sample_NSW
Cc: Milad Noujaim
Subject: RE: Eurofins Sample Receipt Advice - Report 722434 : Site PADDINGTON (58554)

Follow Up Flag: Follow up
Flag Status: Completed

Hi Luka,

Can I please add asbestos analysis to BH116 0.3-0.4.

Kind Regards,
Sahani

Sahani Gunatunge | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
T: 02 8245 0300 | M: 0410 240 607 | E: sgunatunge@jbsg.com.au |W: www.jbsg.com.au
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From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Friday, 29 May 2020 8:55 AM
To: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Cc: Milad Noujaim <mnoujaim@jbsg.com.au>
Subject: Eurofins Sample Receipt Advice - Report 722434 : Site PADDINGTON (58554)

[EXTERNAL EMAIL] Stop and think before opening attachments, clicking or responding.

Dear Valued Client,

Asbestos bag not received for sample BH116 1.5-1.6, analysis cancelled.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Luca Dominici
Sample Receipt

Eurofins | Environmental Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 02 9900 8421
Email: EnviroSampleNSW@eurofins.com
Website:environment.eurofins.com.au

EnviroNote 1098 - Melbourne PFAS Accreditation
EnviroNote 1103 - NATA Accreditation for Dioxins

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NATA # 1261 Site # 18217

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

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Sample Receipt Advice

Company name:	**JBS & G Australia (NSW) P/L**
Contact name:	Sahani Gunatunge
Project name:	PADDINGTON
Project ID:	58554
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	May 28, 2020 5:18 PM
Eurofins reference:	**722434**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 6.7 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Asbestos bag not received for sample BH116 1.5-1.6, analysis cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Sahani Gunatunge - sgunatunge@jbsg.com.au.

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention:	Sahani Gunatunge
Report	722434-AID
Project Name	PADDINGTON
Project ID	58554
Received Date	May 28, 2020
Date Reported	Jun 04, 2020

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Project Name PADDINGTON
Project ID 58554
Date Sampled May 27, 2020 to May 28, 2020
Report 722434-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH109 0-0.1	20-My43449	May 27, 2020	Approximate Sample 363g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH110 0.5-0.6	20-My43451	May 28, 2020	Approximate Sample 599g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH111 0.1-0.2	20-My43452	May 28, 2020	Approximate Sample 520g Sample consisted of: Brown fine-grained sandy soil, cement and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH112 0.3-0.4	20-My43454	May 27, 2020	Approximate Sample 660g Sample consisted of: Brown fine-grained sandy soil, coal, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH113 0.4-0.5	20-My43455	May 27, 2020	Approximate Sample 570g Sample consisted of: Brown coarse-grained soil, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH114 0.2-0.3	20-My43457	May 27, 2020	Approximate Sample 532g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH115 0.9-1.0	20-My43458	May 27, 2020	Approximate Sample 614g Sample consisted of: Brown fine-grained sandy soil, cement, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH117 0-0.1	20-My43462	May 27, 2020	Approximate Sample 515g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH118 0.3-0.4	20-My43464	May 27, 2020	Approximate Sample 603g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
QC01	20-My43465	May 27, 2020	Approximate Sample 501g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH116 0.3-0.4	20-My43494	May 27, 2020	Approximate Sample 631g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	May 29, 2020	Indefinite

eurofins | Environment Testing

ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

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IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 722434
Phone: 02 8245 0300
Fax:

Received: May 28, 2020 5:18 PM
Due: Jun 4, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	HOLD	BTEX	Moisture Set	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	BH109 0-0.1	May 27, 2020		Soil	S20-My43449	X			X	X
2	BH109 2.6-2.7	May 27, 2020		Soil	S20-My43450				X	X
3	BH110 0.5-0.6	May 28, 2020		Soil	S20-My43451	X			X	X
4	BH111 0.1-0.2	May 28, 2020		Soil	S20-My43452	X			X	X
5	BH111 1.5-1.6	May 28, 2020		Soil	S20-My43453				X	X
6	BH112 0.3-0.4	May 27, 2020		Soil	S20-My43454	X			X	X
7	BH113 0.4-0.5	May 27, 2020		Soil	S20-My43455	X			X	X
8	BH113 2.6-2.7	May 27, 2020		Soil	S20-My43456				X	X
9	BH114 0.2-0.3	May 27, 2020		Soil	S20-My43457	X			X	X
10	BH115 0.9-1.0	May 27, 2020		Soil	S20-My43458	X			X	X

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NATA # 1261 Site # 18217

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
11	BH115 2.5-2.6	May 27, 2020		Soil	S20-My43459				X	X
12	TS	May 27, 2020		Water	S20-My43460			X		
13	BH116 1.5-1.6	May 27, 2020		Soil	S20-My43461				X	X
14	BH117 0-0.1	May 27, 2020		Soil	S20-My43462	X			X	X
15	BH117 1.5-1.6	May 27, 2020		Soil	S20-My43463				X	X
16	BH118 0.3-0.4	May 27, 2020		Soil	S20-My43464	X			X	X
17	QC01	May 27, 2020		Soil	S20-My43465	X			X	X
18	RINSATE	May 27, 2020		Water	S20-My43466					X
19	BH109 0.3-0.4	May 27, 2020		Soil	S20-My43467		X			
20	BH109 0.9-1.0	May 27, 2020		Soil	S20-My43468		X			
21	BH109 1.5-1.6	May 27, 2020		Soil	S20-My43469		X			
22	BH109 3.2-3.3	May 27, 2020		Soil	S20-My43470		X			
23	BH110 0.1-0.2	May 28, 2020		Soil	S20-My43471		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
24	BH110 1.0-1.1	May 28, 2020		Soil	S20-My43472		X			
25	BH110 1.7-1.8	May 28, 2020		Soil	S20-My43473		X			
26	BH111 0.6-0.7	May 28, 2020		Soil	S20-My43474		X			
27	BH112 0-0.1	May 28, 2020		Soil	S20-My43475		X			
28	BH112 1.5-1.6	May 27, 2020		Soil	S20-My43476		X			
29	BH112 2.0-2.1	May 27, 2020		Soil	S20-My43477		X			
30	BH112 2.2-2.3	May 27, 2020		Soil	S20-My43478		X			
31	BH112 3.4-3.5	May 27, 2020		Soil	S20-My43479		X			
32	BH113 0.1-0.2	May 27, 2020		Soil	S20-My43480		X			
33	BH113 1.0-1.1	May 27, 2020		Soil	S20-My43481		X			
34	BH113 2.0-2.1	May 27, 2020		Soil	S20-My43482		X			
35	BH113 3.5-3.6	May 27, 2020		Soil	S20-My43483		X			
36	BH114 0-0.1	May 27, 2020		Soil	S20-My43484		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
37	BH114 0.4-0.5	May 27, 2020		Soil	S20-My43485		X			
38	BH114 1.0-1.1	May 27, 2020		Soil	S20-My43486		X			
39	BH114 1.9-2.0	May 27, 2020		Soil	S20-My43487		X			
40	BH114 2.5-2.6	May 27, 2020		Soil	S20-My43488		X			
41	BH114 3.0-3.1	May 27, 2020		Soil	S20-My43489		X			
42	BH114 4.4-4.5	May 27, 2020		Soil	S20-My43490		X			
43	BH115 0.2-0.3	May 27, 2020		Soil	S20-My43491		X			
44	BH115 1.5-1.6	May 27, 2020		Soil	S20-My43492		X			
45	BH116 0-0.1	May 27, 2020		Soil	S20-My43493		X			
46	BH116 0.3-0.4	May 27, 2020		Soil	S20-My43494	X				
47	BH116 0.5-0.6	May 27, 2020		Soil	S20-My43495		X			
48	BH116 2.9-3.0	May 27, 2020		Soil	S20-My43496		X			
49	BH117 0.3-0.4	May 27, 2020		Soil	S20-My43497		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
50	BH117 0.7-0.8	May 27, 2020		Soil	S20-My43498		X			
51	BH117 2.5-2.6	May 27, 2020		Soil	S20-My43499		X			
52	BH118 0-0.1	May 27, 2020		Soil	S20-My43500		X			
53	BH118 1.0-1.1	May 27, 2020		Soil	S20-My43501		X			
54	BH118 1.5-1.6	May 27, 2020		Soil	S20-My43502		X			
55	BH118 2.2-2.3	May 27, 2020		Soil	S20-My43503		X			
56	BH118 2.5-2.6	May 27, 2020		Soil	S20-My43504		X			
57	QC02	May 28, 2020		Soil	S20-My43505		X			
58	TB	May 27, 2020		Water	S20-My44156			X		
Test Counts						11	38	2	16	17

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

Units

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

Terms

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

Comments

S20-My43449: The sample received was not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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JBS & G Australia (NSW) P/L
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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **722434-S**
Project name PADDINGTON
Project ID 58554
Received Date May 28, 2020

Client Sample ID			**BH109 0-0.1**	**BH109 2.6-2.7**	**BH110 0.5-0.6**	**BH111 0.1-0.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-My43449**	**S20-My43450**	**S20-My43451**	**S20-My43452**
Date Sampled			**May 27, 2020**	**May 27, 2020**	**May 28, 2020**	**May 28, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	26	29	< 20	< 20
TRH C15-C28	50	mg/kg	60	330	< 50	< 50
TRH C29-C36	50	mg/kg	140	370	56	< 50
TRH C10-C36 (Total)	50	mg/kg	226	729	56	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	67	96	97	91
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	150	610	< 100	< 100
TRH >C34-C40	100	mg/kg	190	240	110	< 100
TRH >C10-C40 (total)*	100	mg/kg	340	850	110	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	9.4	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	9.4	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	9.4	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	6.9	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	6.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	5.9	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	2.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	5.7	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	6.2	< 0.5	< 0.5

Client Sample ID			BH109 0-0.1	BH109 2.6-2.7	BH110 0.5-0.6	BH111 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43449	S20-My43450	S20-My43451	S20-My43452
Date Sampled			May 27, 2020	May 27, 2020	May 28, 2020	May 28, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	13	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	2.2	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	5.7	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	13	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	70.6	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	83	85	81
p-Terphenyl-d14 (surr.)	1	%	76	106	129	92
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	53	67	62	88
Tetrachloro-m-xylene (surr.)	1	%	102	94	92	96
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	53	67	62	88
Tetrachloro-m-xylene (surr.)	1	%	102	94	92	96

Client Sample ID			BH109 0-0.1	BH109 2.6-2.7	BH110 0.5-0.6	BH111 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43449	S20-My43450	S20-My43451	S20-My43452
Date Sampled			May 27, 2020	May 27, 2020	May 28, 2020	May 28, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	15	21	3.4	2.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	14	12	13
Copper	5	mg/kg	18	110	8.5	17
Lead	5	mg/kg	37	2600	27	25
Mercury	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
Nickel	5	mg/kg	10	27	< 5	< 5
Zinc	5	mg/kg	49	260	130	36
% Moisture	1	%	33	32	9.6	11

Client Sample ID			BH111 1.5-1.6	BH112 0.3-0.4	BH113 0.4-0.5	BH113 2.6-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43453	S20-My43454	S20-My43455	S20-My43456
Date Sampled			May 28, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	190	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	100	< 50	50
TRH C10-C36 (Total)	50	mg/kg	< 50	290	< 50	50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	105	95	89	91
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	250	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	350	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	5.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	5.7	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	6.0	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	4.4	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	4.2	< 0.5	< 0.5

Client Sample ID			BH111 1.5-1.6	BH112 0.3-0.4	BH113 0.4-0.5	BH113 2.6-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43453	S20-My43454	S20-My43455	S20-My43456
Date Sampled			May 28, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	3.3	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	3.8	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	3.8	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	11	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	5.0	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	11	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	49.4	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	82	72	75	85
p-Terphenyl-d14 (surr.)	1	%	98	109	114	99
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	61	89	63	120
Tetrachloro-m-xylene (surr.)	1	%	105	95	85	92
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH111 1.5-1.6	BH112 0.3-0.4	BH113 0.4-0.5	BH113 2.6-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43453	S20-My43454	S20-My43455	S20-My43456
Date Sampled			May 28, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	61	89	63	120
Tetrachloro-m-xylene (surr.)	1	%	105	95	85	92
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.7	6.6	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	12	12	< 5
Copper	5	mg/kg	< 5	23	24	< 5
Lead	5	mg/kg	9.3	150	410	22
Mercury	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	5.2	< 5	< 5
Zinc	5	mg/kg	< 5	120	120	47
% Moisture	1	%	8.3	14	17	18

Client Sample ID			BH114 0.2-0.3	BH115 0.9-1.0	BH115 2.5-2.6	BH116 1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43457	S20-My43458	S20-My43459	S20-My43461
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	20	< 20
TRH C15-C28	50	mg/kg	86	59	54	< 50
TRH C29-C36	50	mg/kg	84	< 50	66	< 50
TRH C10-C36 (Total)	50	mg/kg	170	59	140	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	94	86	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	140	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	240	< 100	< 100	< 100

Client Sample ID			BH114 0.2-0.3	BH115 0.9-1.0	BH115 2.5-2.6	BH116 1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43457	S20-My43458	S20-My43459	S20-My43461
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	2.2	1.2	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	2.4	1.5	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.7	1.7	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.1	1.0	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	1.7	0.9	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.4	0.6	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.9	1.1	0.6	< 0.5
Chrysene	0.5	mg/kg	1.2	1.0	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	2.3	1.9	0.8	0.7
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	1.0	< 0.5	1.0
Pyrene	0.5	mg/kg	3.0	2.1	0.8	0.7
Total PAH*	0.5	mg/kg	12.6	9.6	2.2	2.4
2-Fluorobiphenyl (surr.)	1	%	81	90	82	84
p-Terphenyl-d14 (surr.)	1	%	136	103	114	138
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	73	92	106	84
Tetrachloro-m-xylene (surr.)	1	%	84	104	82	87

Client Sample ID			BH114 0.2-0.3	BH115 0.9-1.0	BH115 2.5-2.6	BH116 1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43457	S20-My43458	S20-My43459	S20-My43461
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	73	92	106	84
Tetrachloro-m-xylene (surr.)	1	%	84	104	82	87
Heavy Metals						
Arsenic	2	mg/kg	8.5	6.1	2.2	4.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	26	11	7.0	29
Copper	5	mg/kg	16	7.7	9.3	< 5
Lead	5	mg/kg	64	27	46	62
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2
Nickel	5	mg/kg	12	< 5	< 5	< 5
Zinc	5	mg/kg	60	13	24	220
% Moisture	1	%	17	9.7	27	17

Client Sample ID			BH117 0-0.1	BH117 1.5-1.6	BH118 0.3-0.4	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43462	S20-My43463	S20-My43464	S20-My43465
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	220	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	130	52
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	350	52
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	96	87	87	64
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	300	< 100

Client Sample ID			BH117 0-0.1	BH117 1.5-1.6	BH118 0.3-0.4	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43462	S20-My43463	S20-My43464	S20-My43465
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	< 100	< 100	100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	400	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	6.2	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	6.4	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	6.7	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	3.8	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	4.8	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	4.3	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	4.6	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	3.4	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	7.6	0.6
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	2.4	< 0.5
Pyrene	0.5	mg/kg	< 0.5	0.6	9.0	0.7
Total PAH*	0.5	mg/kg	< 0.5	0.6	41.8	1.3
2-Fluorobiphenyl (surr.)	1	%	85	88	93	98
p-Terphenyl-d14 (surr.)	1	%	127	132	120	129
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH117 0-0.1	BH117 1.5-1.6	BH118 0.3-0.4	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-My43462	S20-My43463	S20-My43464	S20-My43465
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	76	90	104	82
Tetrachloro-m-xylene (surr.)	1	%	84	87	101	96
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	76	90	104	82
Tetrachloro-m-xylene (surr.)	1	%	84	87	101	96
Heavy Metals						
Arsenic	2	mg/kg	< 2	9.3	5.2	20
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.5
Chromium	5	mg/kg	< 5	11	13	29
Copper	5	mg/kg	< 5	8.8	27	24
Lead	5	mg/kg	11	17	130	58
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1
Nickel	5	mg/kg	< 5	< 5	5.4	14
Zinc	5	mg/kg	10	13	87	66
% Moisture	1	%	14	12	13	30

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
JBS&G Suite 2			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 01, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Jun 01, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 01, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 01, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 01, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Jun 01, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Jun 01, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Jun 01, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	May 28, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			

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Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
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Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 722434
Phone: 02 8245 0300
Fax:

Received: May 28, 2020 5:18 PM
Due: Jun 4, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	HOLD	BTEX	Moisture Set	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	BH109 0-0.1	May 27, 2020		Soil	S20-My43449	X			X	X
2	BH109 2.6-2.7	May 27, 2020		Soil	S20-My43450				X	X
3	BH110 0.5-0.6	May 28, 2020		Soil	S20-My43451	X			X	X
4	BH111 0.1-0.2	May 28, 2020		Soil	S20-My43452	X			X	X
5	BH111 1.5-1.6	May 28, 2020		Soil	S20-My43453				X	X
6	BH112 0.3-0.4	May 27, 2020		Soil	S20-My43454	X			X	X
7	BH113 0.4-0.5	May 27, 2020		Soil	S20-My43455	X			X	X
8	BH113 2.6-2.7	May 27, 2020		Soil	S20-My43456				X	X
9	BH114 0.2-0.3	May 27, 2020		Soil	S20-My43457	X			X	X
10	BH115 0.9-1.0	May 27, 2020		Soil	S20-My43458	X			X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
11	BH115 2.5-2.6	May 27, 2020		Soil	S20-My43459				X	X
12	TS	May 27, 2020		Water	S20-My43460			X		
13	BH116 1.5-1.6	May 27, 2020		Soil	S20-My43461				X	X
14	BH117 0-0.1	May 27, 2020		Soil	S20-My43462	X			X	X
15	BH117 1.5-1.6	May 27, 2020		Soil	S20-My43463				X	X
16	BH118 0.3-0.4	May 27, 2020		Soil	S20-My43464	X			X	X
17	QC01	May 27, 2020		Soil	S20-My43465	X			X	X
18	RINSATE	May 27, 2020		Water	S20-My43466					X
19	BH109 0.3-0.4	May 27, 2020		Soil	S20-My43467		X			
20	BH109 0.9-1.0	May 27, 2020		Soil	S20-My43468		X			
21	BH109 1.5-1.6	May 27, 2020		Soil	S20-My43469		X			
22	BH109 3.2-3.3	May 27, 2020		Soil	S20-My43470		X			
23	BH110 0.1-0.2	May 28, 2020		Soil	S20-My43471		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
24	BH110 1.0-1.1	May 28, 2020		Soil	S20-My43472		X			
25	BH110 1.7-1.8	May 28, 2020		Soil	S20-My43473		X			
26	BH111 0.6-0.7	May 28, 2020		Soil	S20-My43474		X			
27	BH112 0-0.1	May 28, 2020		Soil	S20-My43475		X			
28	BH112 1.5-1.6	May 27, 2020		Soil	S20-My43476		X			
29	BH112 2.0-2.1	May 27, 2020		Soil	S20-My43477		X			
30	BH112 2.2-2.3	May 27, 2020		Soil	S20-My43478		X			
31	BH112 3.4-3.5	May 27, 2020		Soil	S20-My43479		X			
32	BH113 0.1-0.2	May 27, 2020		Soil	S20-My43480		X			
33	BH113 1.0-1.1	May 27, 2020		Soil	S20-My43481		X			
34	BH113 2.0-2.1	May 27, 2020		Soil	S20-My43482		X			
35	BH113 3.5-3.6	May 27, 2020		Soil	S20-My43483		X			
36	BH114 0-0.1	May 27, 2020		Soil	S20-My43484		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
37	BH114 0.4-0.5	May 27, 2020		Soil	S20-My43485		X			
38	BH114 1.0-1.1	May 27, 2020		Soil	S20-My43486		X			
39	BH114 1.9-2.0	May 27, 2020		Soil	S20-My43487		X			
40	BH114 2.5-2.6	May 27, 2020		Soil	S20-My43488		X			
41	BH114 3.0-3.1	May 27, 2020		Soil	S20-My43489		X			
42	BH114 4.4-4.5	May 27, 2020		Soil	S20-My43490		X			
43	BH115 0.2-0.3	May 27, 2020		Soil	S20-My43491		X			
44	BH115 1.5-1.6	May 27, 2020		Soil	S20-My43492		X			
45	BH116 0-0.1	May 27, 2020		Soil	S20-My43493		X			
46	BH116 0.3-0.4	May 27, 2020		Soil	S20-My43494	X				
47	BH116 0.5-0.6	May 27, 2020		Soil	S20-My43495		X			
48	BH116 2.9-3.0	May 27, 2020		Soil	S20-My43496		X			
49	BH117 0.3-0.4	May 27, 2020		Soil	S20-My43497		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
50	BH117 0.7-0.8	May 27, 2020		Soil	S20-My43498		X			
51	BH117 2.5-2.6	May 27, 2020		Soil	S20-My43499		X			
52	BH118 0-0.1	May 27, 2020		Soil	S20-My43500		X			
53	BH118 1.0-1.1	May 27, 2020		Soil	S20-My43501		X			
54	BH118 1.5-1.6	May 27, 2020		Soil	S20-My43502		X			
55	BH118 2.2-2.3	May 27, 2020		Soil	S20-My43503		X			
56	BH118 2.5-2.6	May 27, 2020		Soil	S20-My43504		X			
57	QC02	May 28, 2020		Soil	S20-My43505		X			
58	TB	May 27, 2020		Water	S20-My44156			X		
Test Counts						11	38	2	16	17

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	93			70-130	Pass	
TRH C10-C14	%	83			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	89			70-130	Pass	
Toluene	%	95			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
o-Xylene	%	109			70-130	Pass	
Xylenes - Total*	%	111			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	94			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
TRH >C10-C16	%	88			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	95			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	87			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	%	81			70-130	Pass	
Benzo(g.h.i)perylene	%	92			70-130	Pass	
Benzo(k)fluoranthene	%	96			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	71			70-130	Pass	
Fluoranthene	%	86			70-130	Pass	
Fluorene	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	74			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	88			70-130	Pass	
Pyrene	%	98			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	102			70-130	Pass	
4.4'-DDD	%	97			70-130	Pass	
4.4'-DDE	%	100			70-130	Pass	
4.4'-DDT	%	129			70-130	Pass	
a-BHC	%	116			70-130	Pass	
Aldrin	%	106			70-130	Pass	
b-BHC	%	121			70-130	Pass	
d-BHC	%	91			70-130	Pass	
Dieldrin	%	112			70-130	Pass	
Endosulfan I	%	110			70-130	Pass	
Endosulfan II	%	120			70-130	Pass	
Endosulfan sulphate	%	106			70-130	Pass	
Endrin	%	99			70-130	Pass	
Endrin aldehyde	%	105			70-130	Pass	
Endrin ketone	%	86			70-130	Pass	
g-BHC (Lindane)	%	121			70-130	Pass	
Heptachlor	%	98			70-130	Pass	
Heptachlor epoxide	%	91			70-130	Pass	
Hexachlorobenzene	%	109			70-130	Pass	
Methoxychlor	%	130			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	112			70-130	Pass	
Aroclor-1260	%	106			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	105			70-130	Pass	
Cadmium	%	112			70-130	Pass	
Chromium	%	107			70-130	Pass	
Copper	%	109			70-130	Pass	
Lead	%	107			70-130	Pass	
Mercury	%	107			70-130	Pass	
Nickel	%	108			70-130	Pass	
Zinc	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S20-My30254	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S20-My30254	NCP	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Jn06112	NCP	%	94			70-130	Pass	
Acenaphthylene	S20-Jn06112	NCP	%	89			70-130	Pass	
Anthracene	S20-Jn06112	NCP	%	70			70-130	Pass	
Benz(a)anthracene	S20-Jn06112	NCP	%	80			70-130	Pass	
Benzo(a)pyrene	S20-Jn06112	NCP	%	78			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Jn06112	NCP	%	73			70-130	Pass	
Benzo(g.h.i)perylene	S20-Jn06112	NCP	%	118			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn06112	NCP	%	90			70-130	Pass	
Chrysene	S20-Jn06112	NCP	%	91			70-130	Pass	
Dibenz(a.h)anthracene	S20-Jn03010	NCP	%	72			70-130	Pass	
Fluoranthene	S20-Jn06112	NCP	%	81			70-130	Pass	
Fluorene	S20-Jn06112	NCP	%	84			70-130	Pass	
Naphthalene	S20-Jn06112	NCP	%	86			70-130	Pass	
Phenanthrene	S20-Jn06112	NCP	%	77			70-130	Pass	
Pyrene	S20-Jn06112	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Jn06112	NCP	%	82			70-130	Pass	
4.4'-DDD	S20-Jn06112	NCP	%	96			70-130	Pass	
4.4'-DDE	S20-Jn06112	NCP	%	95			70-130	Pass	
4.4'-DDT	S20-Jn03010	NCP	%	91			70-130	Pass	
a-BHC	S20-Jn06112	NCP	%	95			70-130	Pass	
Aldrin	S20-Jn06112	NCP	%	92			70-130	Pass	
b-BHC	S20-Jn06112	NCP	%	109			70-130	Pass	
d-BHC	S20-Jn06112	NCP	%	111			70-130	Pass	
Dieldrin	S20-Jn06112	NCP	%	86			70-130	Pass	
Endosulfan I	S20-Jn06112	NCP	%	105			70-130	Pass	
Endosulfan II	S20-Jn06112	NCP	%	103			70-130	Pass	
Endosulfan sulphate	S20-Jn06112	NCP	%	85			70-130	Pass	
Endrin	S20-Jn06112	NCP	%	95			70-130	Pass	
Endrin aldehyde	S20-Jn06112	NCP	%	96			70-130	Pass	
Endrin ketone	S20-Jn06112	NCP	%	81			70-130	Pass	
g-BHC (Lindane)	S20-Jn06112	NCP	%	105			70-130	Pass	
Heptachlor	S20-Jn06112	NCP	%	114			70-130	Pass	
Heptachlor epoxide	S20-Jn06112	NCP	%	87			70-130	Pass	
Hexachlorobenzene	S20-Jn06112	NCP	%	98			70-130	Pass	
Methoxychlor	S20-Jn03010	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Jn06112	NCP	%	85			70-130	Pass	
Aroclor-1260	S20-Jn06112	NCP	%	71			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-My43451	CP	%	103			70-130	Pass	
Cadmium	S20-My43451	CP	%	101			70-130	Pass	
Chromium	S20-My43451	CP	%	106			70-130	Pass	
Copper	S20-My43451	CP	%	101			70-130	Pass	
Lead	S20-My43451	CP	%	107			70-130	Pass	
Mercury	S20-My43451	CP	%	111			70-130	Pass	
Nickel	S20-My43451	CP	%	106			70-130	Pass	
Zinc	S20-My43451	CP	%	88			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-My43458	CP	%	76			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-My43458	CP	%	89			70-130	Pass	
Toluene	S20-My43458	CP	%	88			70-130	Pass	
Ethylbenzene	S20-My43458	CP	%	90			70-130	Pass	
m&p-Xylenes	S20-My43458	CP	%	104			70-130	Pass	
o-Xylene	S20-My43458	CP	%	103			70-130	Pass	
Xylenes - Total*	S20-My43458	CP	%	104			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-My43458	CP	%	93			70-130	Pass	
TRH C6-C10	S20-My43458	CP	%	80			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-My34324	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-My34324	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-My34324	NCP	mg/kg	60	< 50	19	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-My34324	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-My34324	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-My34324	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-My43450	CP	mg/kg	21	19	10	30%	Pass	
Cadmium	S20-My43450	CP	mg/kg	< 0.4	0.5	27	30%	Pass	
Chromium	S20-My43450	CP	mg/kg	14	11	20	30%	Pass	
Copper	S20-My43450	CP	mg/kg	110	66	48	30%	Fail	Q02
Lead	S20-My43450	CP	mg/kg	2600	2200	18	30%	Pass	
Mercury	S20-My43450	CP	mg/kg	0.6	0.7	1.0	30%	Pass	
Nickel	S20-My43450	CP	mg/kg	27	18	41	30%	Fail	Q15
Zinc	S20-My43450	CP	mg/kg	260	200	24	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-My43453	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-My43453	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-My43453	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-My43453	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S20-My43453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-My43455	CP	%	17	17	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-My43457	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-My43457	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-My43457	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-My43457	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-My43457	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-My43457	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-My43457	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-My43457	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-My43457	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-My43461	CP	mg/kg	4.1	5.8	34	30%	Fail	Q15
Cadmium	S20-My43461	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-My43461	CP	mg/kg	29	35	18	30%	Pass	
Copper	S20-My43461	CP	mg/kg	< 5	6.1	31	30%	Fail	Q15

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S20-My43461	CP	mg/kg	62	100	46	30%	Fail	Q15
Mercury	S20-My43461	CP	mg/kg	0.2	0.4	71	30%	Fail	Q15
Nickel	S20-My43461	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S20-My43461	CP	mg/kg	220	370	48	30%	Fail	Q02
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-My43464	CP	mg/kg	< 0.5	0.7	29	30%	Pass	
Benz(a)anthracene	S20-My43464	CP	mg/kg	3.8	4.9	26	30%	Pass	
Benzo(a)pyrene	S20-My43464	CP	mg/kg	4.8	6.6	30	30%	Pass	
Benzo(b&j)fluoranthene	S20-My43464	CP	mg/kg	4.3	6.4	42	30%	Fail	Q15
Benzo(g.h.i)perylene	S20-My43464	CP	mg/kg	1.1	1.5	20	30%	Pass	
Benzo(k)fluoranthene	S20-My43464	CP	mg/kg	4.6	7.0	43	30%	Fail	Q15
Chrysene	S20-My43464	CP	mg/kg	3.4	4.5	25	30%	Pass	
Dibenz(a.h)anthracene	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-My43464	CP	mg/kg	7.6	10	32	30%	Fail	Q15
Fluorene	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-My43464	CP	mg/kg	0.8	1.3	51	30%	Fail	Q15
Naphthalene	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-My43464	CP	mg/kg	2.4	3.0	20	30%	Pass	
Pyrene	S20-My43464	CP	mg/kg	9.0	14	42	30%	Fail	Q15
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-My43464	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-My43464	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-My43464	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-My43464	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S20-My43464	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **722434-W**
Project name PADDINGTON
Project ID 58554
Received Date May 28, 2020

Client Sample ID			R20 **TS**	**RINSATE**	**TB**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-My43460**	**S20-My43466**	**S20-My44156**
Date Sampled			**May 27, 2020**	**May 27, 2020**	**May 27, 2020**
Test/Reference	LOR	Unit			
BTEX					
Benzene	0.001	mg/L	110	< 0.001	< 0.001
Toluene	0.001	mg/L	120	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	110	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	110	< 0.002	< 0.002
o-Xylene	0.001	mg/L	120	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	120	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	136	123	83
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	< 0.1	-
TRH C10-C36 (Total)	0.1	mg/L	-	< 0.1	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	-	< 0.01	-
TRH C6-C10	0.02	mg/L	-	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	< 0.02	-
TRH >C10-C16	0.05	mg/L	-	< 0.05	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	-	< 0.1	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	-	< 0.001	-
Acenaphthylene	0.001	mg/L	-	< 0.001	-
Anthracene	0.001	mg/L	-	< 0.001	-
Benz(a)anthracene	0.001	mg/L	-	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	-	< 0.001	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	-	< 0.001	-
Benzo(g.h.i)perylene	0.001	mg/L	-	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	-	< 0.001	-
Chrysene	0.001	mg/L	-	< 0.001	-
Dibenz(a.h)anthracene	0.001	mg/L	-	< 0.001	-
Fluoranthene	0.001	mg/L	-	< 0.001	-
Fluorene	0.001	mg/L	-	< 0.001	-

Client Sample ID			R20TS	RINSATE	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-My43460	S20-My43466	S20-My44156
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	< 0.001	-
Naphthalene	0.001	mg/L	-	< 0.001	-
Phenanthrene	0.001	mg/L	-	< 0.001	-
Pyrene	0.001	mg/L	-	< 0.001	-
Total PAH*	0.001	mg/L	-	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	-	73	-
p-Terphenyl-d14 (surr.)	1	%	-	96	-
Organochlorine Pesticides					
Chlordanes - Total	0.001	mg/L	-	< 0.001	-
4.4'-DDD	0.0001	mg/L	-	< 0.0001	-
4.4'-DDE	0.0001	mg/L	-	< 0.0001	-
4.4'-DDT	0.0001	mg/L	-	< 0.0001	-
a-BHC	0.0001	mg/L	-	< 0.0001	-
Aldrin	0.0001	mg/L	-	< 0.0001	-
b-BHC	0.0001	mg/L	-	< 0.0001	-
d-BHC	0.0001	mg/L	-	< 0.0001	-
Dieldrin	0.0001	mg/L	-	< 0.0001	-
Endosulfan I	0.0001	mg/L	-	< 0.0001	-
Endosulfan II	0.0001	mg/L	-	< 0.0001	-
Endosulfan sulphate	0.0001	mg/L	-	< 0.0001	-
Endrin	0.0001	mg/L	-	< 0.0001	-
Endrin aldehyde	0.0001	mg/L	-	< 0.0001	-
Endrin ketone	0.0001	mg/L	-	< 0.0001	-
g-BHC (Lindane)	0.0001	mg/L	-	< 0.0001	-
Heptachlor	0.0001	mg/L	-	< 0.0001	-
Heptachlor epoxide	0.0001	mg/L	-	< 0.0001	-
Hexachlorobenzene	0.0001	mg/L	-	< 0.0001	-
Methoxychlor	0.0001	mg/L	-	< 0.0001	-
Toxaphene	0.01	mg/L	-	< 0.01	-
Aldrin and Dieldrin (Total)*	0.0001	mg/L	-	< 0.0001	-
DDT + DDE + DDD (Total)*	0.0001	mg/L	-	< 0.0001	-
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	-	< 0.001	-
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	-	< 0.001	-
Dibutylchlorendate (surr.)	1	%	-	INT	-
Tetrachloro-m-xylene (surr.)	1	%	-	83	-
Polychlorinated Biphenyls					
Aroclor-1016	0.005	mg/L	-	< 0.005	-
Aroclor-1221	0.001	mg/L	-	< 0.001	-
Aroclor-1232	0.005	mg/L	-	< 0.005	-
Aroclor-1242	0.005	mg/L	-	< 0.005	-
Aroclor-1248	0.005	mg/L	-	< 0.005	-
Aroclor-1254	0.005	mg/L	-	< 0.005	-
Aroclor-1260	0.005	mg/L	-	< 0.005	-
Total PCB*	0.001	mg/L	-	< 0.001	-
Dibutylchlorendate (surr.)	1	%	-	INT	-
Tetrachloro-m-xylene (surr.)	1	%	-	83	-

Client Sample ID			R20TS	RINSATE	TB
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S20-My43460	S20-My43466	S20-My44156
Date Sampled			May 27, 2020	May 27, 2020	May 27, 2020
Test/Reference	LOR	Unit			
Heavy Metals					
Arsenic	0.001	mg/L	-	< 0.001	-
Cadmium	0.0002	mg/L	-	< 0.0002	-
Chromium	0.001	mg/L	-	< 0.001	-
Copper	0.001	mg/L	-	< 0.001	-
Lead	0.001	mg/L	-	< 0.001	-
Mercury	0.0001	mg/L	-	< 0.0001	-
Nickel	0.001	mg/L	-	< 0.001	-
Zinc	0.005	mg/L	-	< 0.005	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
JBS&G Suite 2			
BTEX	Sydney	May 29, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	May 28, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 28, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 28, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	May 28, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	May 28, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	May 28, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	May 28, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 722434
Phone: 02 8245 0300
Fax:

Received: May 28, 2020 5:18 PM
Due: Jun 4, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	HOLD	BTEX	Moisture Set	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	BH109 0-0.1	May 27, 2020		Soil	S20-My43449	X			X	X
2	BH109 2.6-2.7	May 27, 2020		Soil	S20-My43450				X	X
3	BH110 0.5-0.6	May 28, 2020		Soil	S20-My43451	X			X	X
4	BH111 0.1-0.2	May 28, 2020		Soil	S20-My43452	X			X	X
5	BH111 1.5-1.6	May 28, 2020		Soil	S20-My43453				X	X
6	BH112 0.3-0.4	May 27, 2020		Soil	S20-My43454	X			X	X
7	BH113 0.4-0.5	May 27, 2020		Soil	S20-My43455	X			X	X
8	BH113 2.6-2.7	May 27, 2020		Soil	S20-My43456				X	X
9	BH114 0.2-0.3	May 27, 2020		Soil	S20-My43457	X			X	X
10	BH115 0.9-1.0	May 27, 2020		Soil	S20-My43458	X			X	X

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NATA # 1261 Site # 18217

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Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: PADDINGTON
Project ID: 58554

Order No.:
Report #: 722434
Phone: 02 8245 0300
Fax:

Received: May 28, 2020 5:18 PM
Due: Jun 4, 2020
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	HOLD	BTEX	Moisture Set	JBS&G Suite 2
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
11	BH115 2.5-2.6	May 27, 2020		Soil	S20-My43459				X	X
12	TS	May 27, 2020		Water	S20-My43460			X		
13	BH116 1.5-1.6	May 27, 2020		Soil	S20-My43461				X	X
14	BH117 0-0.1	May 27, 2020		Soil	S20-My43462	X			X	X
15	BH117 1.5-1.6	May 27, 2020		Soil	S20-My43463				X	X
16	BH118 0.3-0.4	May 27, 2020		Soil	S20-My43464	X			X	X
17	QC01	May 27, 2020		Soil	S20-My43465	X			X	X
18	RINSATE	May 27, 2020		Water	S20-My43466					X
19	BH109 0.3-0.4	May 27, 2020		Soil	S20-My43467		X			
20	BH109 0.9-1.0	May 27, 2020		Soil	S20-My43468		X			
21	BH109 1.5-1.6	May 27, 2020		Soil	S20-My43469		X			
22	BH109 3.2-3.3	May 27, 2020		Soil	S20-My43470		X			
23	BH110 0.1-0.2	May 28, 2020		Soil	S20-My43471		X			

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Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
24	BH110 1.0-1.1	May 28, 2020		Soil	S20-My43472		X			
25	BH110 1.7-1.8	May 28, 2020		Soil	S20-My43473		X			
26	BH111 0.6-0.7	May 28, 2020		Soil	S20-My43474		X			
27	BH112 0-0.1	May 28, 2020		Soil	S20-My43475		X			
28	BH112 1.5-1.6	May 27, 2020		Soil	S20-My43476		X			
29	BH112 2.0-2.1	May 27, 2020		Soil	S20-My43477		X			
30	BH112 2.2-2.3	May 27, 2020		Soil	S20-My43478		X			
31	BH112 3.4-3.5	May 27, 2020		Soil	S20-My43479		X			
32	BH113 0.1-0.2	May 27, 2020		Soil	S20-My43480		X			
33	BH113 1.0-1.1	May 27, 2020		Soil	S20-My43481		X			
34	BH113 2.0-2.1	May 27, 2020		Soil	S20-My43482		X			
35	BH113 3.5-3.6	May 27, 2020		Soil	S20-My43483		X			
36	BH114 0-0.1	May 27, 2020		Soil	S20-My43484		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
37	BH114 0.4-0.5	May 27, 2020		Soil	S20-My43485		X			
38	BH114 1.0-1.1	May 27, 2020		Soil	S20-My43486		X			
39	BH114 1.9-2.0	May 27, 2020		Soil	S20-My43487		X			
40	BH114 2.5-2.6	May 27, 2020		Soil	S20-My43488		X			
41	BH114 3.0-3.1	May 27, 2020		Soil	S20-My43489		X			
42	BH114 4.4-4.5	May 27, 2020		Soil	S20-My43490		X			
43	BH115 0.2-0.3	May 27, 2020		Soil	S20-My43491		X			
44	BH115 1.5-1.6	May 27, 2020		Soil	S20-My43492		X			
45	BH116 0-0.1	May 27, 2020		Soil	S20-My43493		X			
46	BH116 0.3-0.4	May 27, 2020		Soil	S20-My43494	X				
47	BH116 0.5-0.6	May 27, 2020		Soil	S20-My43495		X			
48	BH116 2.9-3.0	May 27, 2020		Soil	S20-My43496		X			
49	BH117 0.3-0.4	May 27, 2020		Soil	S20-My43497		X			

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
50	BH117 0.7-0.8	May 27, 2020		Soil	S20-My43498		X			
51	BH117 2.5-2.6	May 27, 2020		Soil	S20-My43499		X			
52	BH118 0-0.1	May 27, 2020		Soil	S20-My43500		X			
53	BH118 1.0-1.1	May 27, 2020		Soil	S20-My43501		X			
54	BH118 1.5-1.6	May 27, 2020		Soil	S20-My43502		X			
55	BH118 2.2-2.3	May 27, 2020		Soil	S20-My43503		X			
56	BH118 2.5-2.6	May 27, 2020		Soil	S20-My43504		X			
57	QC02	May 28, 2020		Soil	S20-My43505		X			
58	TB	May 27, 2020		Water	S20-My44156			X		
Test Counts						11	38	2	16	17

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4.4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	114			70-130	Pass	
Toluene	%	123			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
o-Xylene	%	107			70-130	Pass	
Xylenes - Total*	%	111			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	122			70-130	Pass	
TRH C10-C14	%	89			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	114			70-130	Pass	
TRH C6-C10	%	122			70-130	Pass	
TRH >C10-C16	%	93			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	108			70-130	Pass	
Acenaphthylene	%	91			70-130	Pass	
Anthracene	%	114			70-130	Pass	
Benz(a)anthracene	%	126			70-130	Pass	
Benzo(a)pyrene	%	123			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(k)fluoranthene	%	126			70-130	Pass	
Dibenz(a.h)anthracene	%	116			70-130	Pass	
Fluoranthene	%	123			70-130	Pass	
Fluorene	%	108			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	115			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
Phenanthrene	%	120			70-130	Pass	
Pyrene	%	116			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	92			70-130	Pass	
4.4'-DDD	%	110			70-130	Pass	
4.4'-DDE	%	105			70-130	Pass	
a-BHC	%	107			70-130	Pass	
Aldrin	%	116			70-130	Pass	
b-BHC	%	89			70-130	Pass	
d-BHC	%	116			70-130	Pass	
Dieldrin	%	105			70-130	Pass	
Endosulfan I	%	129			70-130	Pass	
Endosulfan II	%	102			70-130	Pass	
Endosulfan sulphate	%	125			70-130	Pass	
Endrin aldehyde	%	130			70-130	Pass	
Endrin ketone	%	90			70-130	Pass	
g-BHC (Lindane)	%	111			70-130	Pass	
Heptachlor	%	110			70-130	Pass	
Heptachlor epoxide	%	80			70-130	Pass	
Hexachlorobenzene	%	87			70-130	Pass	
Methoxychlor	%	127			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	101			70-130	Pass	
Aroclor-1260	%	91			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	112			70-130	Pass	
Cadmium	%	99			70-130	Pass	
Chromium	%	97			70-130	Pass	
Copper	%	89			70-130	Pass	
Lead	%	98			70-130	Pass	
Mercury	%	98			70-130	Pass	
Nickel	%	93			70-130	Pass	
Zinc	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Jn02346	NCP	%	90			70-130	Pass	
Toluene	S20-Jn02346	NCP	%	100			70-130	Pass	
Ethylbenzene	S20-Jn02346	NCP	%	91			70-130	Pass	
m&p-Xylenes	S20-Jn02346	NCP	%	93			70-130	Pass	
o-Xylene	S20-Jn02346	NCP	%	96			70-130	Pass	
Xylenes - Total*	S20-Jn02346	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Jn02346	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Jn02346	NCP	%	97			70-130	Pass	
TRH C6-C10	S20-Jn02346	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-My42866	NCP	%	107			70-130	Pass	
Cadmium	S20-My42866	NCP	%	99			70-130	Pass	
Chromium	S20-My42866	NCP	%	95			70-130	Pass	
Copper	S20-My42866	NCP	%	88			70-130	Pass	
Lead	S20-My42866	NCP	%	96			70-130	Pass	
Mercury	S20-My42866	NCP	%	95			70-130	Pass	
Nickel	S20-My42866	NCP	%	91			70-130	Pass	
Zinc	S20-My42866	NCP	%	91			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-My45677	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-My45677	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-My45677	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-My45677	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-My45677	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-My45677	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-My45677	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-My45677	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-My45677	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Jn06161	NCP	mg/L	0.002	0.002	5.0	30%	Pass	
Cadmium	S20-Jn06161	NCP	mg/L	0.0002	< 0.0002	15	30%	Pass	
Chromium	S20-Jn06161	NCP	mg/L	0.001	0.001	8.0	30%	Pass	
Copper	S20-Jn06161	NCP	mg/L	0.003	0.003	9.0	30%	Pass	
Lead	S20-Jn06161	NCP	mg/L	0.002	0.002	14	30%	Pass	
Mercury	S20-Jn06161	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S20-Jn06161	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S20-Jn06161	NCP	mg/L	0.039	0.042	8.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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#AU04_Enviro_Sample_NSW

Subject: FW: 1 DAY TAT Additional Analysis FW: Eurofins Test Results - Report 722434 : Site PADDINGTON (58554)

Importance: High

From: Asim Khan
Sent: Thursday, 11 June 2020 3:26 PM
To: #AU04_Enviro_Sample_NSW; #AU04_COCNSW
Cc: Ursula Long
Subject: 1 DAY TAT Additional Analysis FW: Eurofins Test Results - Report 722434 : Site PADDINGTON (58554)
Importance: High

Additional analysis please on 1 day TAT.

- TCLP Lead and TCLP PAH for sample BH109 2.6-2.7
- Lead for sample BH109 3.2-3.3
- TCLP PAH in sample BH118 0.3-0.4

Thanks,

Kind regards,

Asim Khan
Analytical Services Manager

Eurofins | Environment Testing
Phone : +61 2 9900 8432
Mobile: +61 429 051 456
Email : AsimKhan@eurofins.com

From: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Sent: Thursday, 11 June 2020 3:24 PM
To: Asim Khan <AsimKhan@eurofins.com>
Cc: Ursula Long <UrsulaLong@eurofins.com>
Subject: RE: Eurofins Test Results - Report 722434 : Site PADDINGTON (58554)

EXTERNAL EMAIL*

Hi Asim,

Can I please request the following additional analysis on this batch on 24 hr TAT:

- TCLP Lead and TCLP PAH for sample BH109 2.6-2.7
- Lead for sample BH109 3.2-3.3
- TCLP PAH in sample BH118 0.3-0.4

Kind Regards,
Sahani

Sahani Gunatunge | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
T: 02 8245 0300 | M: 0410 240 607 | E: sgunatunge@jbsg.com.au |W: www.jbsg.com.au
Contaminated Land | Groundwater Remediation | Approvals and Assessments | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Fire Management Planning | Stakeholder and Risk Management
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From: AsimKhan@eurofins.com <AsimKhan@eurofins.com>
Sent: Thursday, 4 June 2020 6:40 PM
To: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Cc: Milad Noujaim <mnoujaim@jbsg.com.au>
Subject: Eurofins Test Results - Report 722434 : Site PADDINGTON (58554)

[EXTERNAL EMAIL] Stop and think before opening attachments, clicking or responding.

Please find attached results for your project in the subject header.

Please note: My office hours are 12 pm to 8 pm.

Kind regards,

Asim Khan
Analytical Services Manager

Eurofins | Environment Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone : +61 2 9900 8432
Phone : +61 429 051 456
Email : AsimKhan@eurofins.com
Website : www.eurofins.com.au/environmental-testing

EnviroNote 1098 - Melbourne PFAS Accreditation
EnviroNote 1103 - NATA Accreditation for Dioxins

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**JBS & G Australia (NSW) P/L**
Contact name:	Sahani Gunatunge
Project name:	ADDITIONAL: PADDINGTON
Project ID:	58554
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Jun 11, 2020 3:24 PM
Eurofins reference:	**724951**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 6.7 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Sahani Gunatunge - sgunatunge@jbsg.com.au.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **724951-L**
Project name ADDITIONAL: PADDINGTON
Project ID 58554
Received Date Jun 11, 2020

Client Sample ID			**BH109 2.6-2.7**	**BH118 0.3-0.4**
Sample Matrix			**US Leachate**	**US Leachate**
Eurofins Sample No.			**S20-Jn18278**	**S20-Jn18280**
Date Sampled			**May 27, 2020**	**May 27, 2020**
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	116	112
p-Terphenyl-d14 (surr.)	1	%	65	52
Heavy Metals				
Lead	0.01	mg/L	0.81	-
USA Leaching Procedure				
Leachate Fluid[C01]		comment	1.0	1.0
pH (initial)	0.1	pH Units	8.4	8.2
pH (off)	0.1	pH Units	5.1	5.0
pH (USA HCl addition)	0.1	pH Units	1.6	1.6

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 11, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Heavy Metals	Sydney	Jun 12, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
USA Leaching Procedure	Sydney	Jun 11, 2020	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

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NATA # 1261 Site # 20794

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Site # 23736

New Zealand

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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

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

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ADDITIONAL: PADDINGTON
Project ID: 58554

Order No.:
Report #: 724951
Phone: 02 8245 0300
Fax:

Received: Jun 11, 2020 3:24 PM
Due: Jun 12, 2020
Priority: 1 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Lead	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH109 2.6-2.7	May 27, 2020		US Leachate	S20-Jn18278	X	X	X	
2	BH109 3.2-3.3	May 27, 2020		Soil	S20-Jn18279	X			X
3	BH118 0.3-0.4	May 27, 2020		US Leachate	S20-Jn18280		X	X	
Test Counts						2	2	2	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Lead	mg/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	105			70-130	Pass	
Acenaphthylene	%	105			70-130	Pass	
Anthracene	%	105			70-130	Pass	
Benz(a)anthracene	%	105			70-130	Pass	
Benzo(a)pyrene	%	105			70-130	Pass	
Benzo(b&j)fluoranthene	%	72			70-130	Pass	
Benzo(g.h.i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	105			70-130	Pass	
Chrysene	%	105			70-130	Pass	
Dibenz(a.h)anthracene	%	77			70-130	Pass	
Fluoranthene	%	105			70-130	Pass	
Fluorene	%	105			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	78			70-130	Pass	
Naphthalene	%	105			70-130	Pass	
Phenanthrene	%	105			70-130	Pass	
Pyrene	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Lead	%	88			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Jn18278	CP	%	115			70-130	Pass	
Acenaphthylene	S20-Jn18278	CP	%	104			70-130	Pass	
Anthracene	S20-Jn18278	CP	%	115			70-130	Pass	
Benz(a)anthracene	S20-Jn18278	CP	%	78			70-130	Pass	
Benzo(a)pyrene	S20-Jn18278	CP	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Jn18278	CP	%	75			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	S20-Jn18278	CP	%	83			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn18278	CP	%	100			70-130	Pass	
Chrysene	S20-Jn18278	CP	%	94			70-130	Pass	
Dibenz(a.h)anthracene	S20-Jn18278	CP	%	73			70-130	Pass	
Fluoranthene	S20-Jn18278	CP	%	106			70-130	Pass	
Fluorene	S20-Jn18278	CP	%	115			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn18278	CP	%	74			70-130	Pass	
Naphthalene	S20-Jn18278	CP	%	105			70-130	Pass	
Phenanthrene	S20-Jn18278	CP	%	114			70-130	Pass	
Pyrene	S20-Jn18278	CP	%	111			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S20-Jn12902	NCP	%	83			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S20-Jn18257	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sahani Gunatunge**

Report **724951-S**
Project name ADDITIONAL: PADDINGTON
Project ID 58554
Received Date Jun 11, 2020

Client Sample ID			**BH109 3.2-3.3**
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-Jn18279**
Date Sampled			**May 27, 2020**
Test/Reference	LOR	Unit	
Heavy Metals			
Lead	5	mg/kg	12
% Moisture	1	%	17

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Sydney	Jun 11, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Jun 11, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			

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IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ADDITIONAL: PADDINGTON
Project ID: 58554

Order No.:
Report #: 724951
Phone: 02 8245 0300
Fax:

Received: Jun 11, 2020 3:24 PM
Due: Jun 12, 2020
Priority: 1 Day
Contact Name: Sahani Gunatunge

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Lead	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH109 2.6-2.7	May 27, 2020		US Leachate	S20-Jn18278	X	X	X	
2	BH109 3.2-3.3	May 27, 2020		Soil	S20-Jn18279	X			X
3	BH118 0.3-0.4	May 27, 2020		US Leachate	S20-Jn18280		X	X	
Test Counts						2	2	2	1

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Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Lead			mg/kg	< 5			5	Pass	
LCS - % Recovery									
Heavy Metals									
Lead			%	110			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S20-Jn17811	NCP	%	110			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S20-Jn18406	NCP	mg/kg	25	32	23	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Jn17581	NCP	%	11	9.6	10	30%	Pass	

Comments

Sample Integrity

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

Authorised By

Ursula Long	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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CERTIFICATE OF ANALYSIS 240103

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	M Noujaim
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**58554, Paddington**
Number of Samples	3 Soil
Date samples received	01/04/2020
Date completed instructions received	15/04/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	22/04/2020
Date of Issue	22/04/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date extracted	-	16/04/2020
Date analysed	-	16/04/2020
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	102

svTRH (C10-C40) in Soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date extracted	-	15/04/2020
Date analysed	-	17/04/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	95

PAHs in Soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date extracted	-	16/04/2020
Date analysed	-	16/04/2020
Naphthalene	mg/kg	0.2
Acenaphthylene	mg/kg	0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	0.3
Phenanthrene	mg/kg	1.2
Anthracene	mg/kg	0.4
Fluoranthene	mg/kg	1.2
Pyrene	mg/kg	1.2
Benzo(a)anthracene	mg/kg	0.6
Chrysene	mg/kg	0.5
Benzo(b,j+k)fluoranthene	mg/kg	0.7
Benzo(a)pyrene	mg/kg	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2
Total +ve PAH's	mg/kg	7.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.7
Surrogate p-Terphenyl-d14	%	114

Organochlorine Pesticides in soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date extracted	-	16/04/2020
Date analysed	-	16/04/2020
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	99

PCBs in Soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date extracted	-	16/04/2020
Date analysed	-	16/04/2020
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	99

Acid Extractable metals in soil		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date prepared	-	16/04/2020
Date analysed	-	16/04/2020
Arsenic	mg/kg	6
Cadmium	mg/kg	<0.4
Chromium	mg/kg	18
Copper	mg/kg	6
Lead	mg/kg	25
Mercury	mg/kg	<0.1
Nickel	mg/kg	1
Zinc	mg/kg	8

Moisture		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date prepared	-	15/04/2020
Date analysed	-	16/04/2020
Moisture	%	20

Asbestos ID - soils NEPM - ASB-001		
Our Reference		240103-1
Your Reference	UNITS	QA01
Date Sampled		27/03/2020
Type of sample		Soil
Date analysed	-	22/04/2020
Sample mass tested	g	522.69
Sample Description	-	Brown clayey soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Date analysed	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	86	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	85	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	109	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			15/04/2020	[NT]	[NT]	[NT]	[NT]	15/04/2020	[NT]
Date analysed	-			17/04/2020	[NT]	[NT]	[NT]	[NT]	17/04/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	121	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	121	[NT]
Surrogate o-Terphenyl	%		Org-020	98	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Date analysed	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	86	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	119	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Date analysed	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Date analysed	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	101	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Date analysed	-			16/04/2020	[NT]	[NT]	[NT]	[NT]	16/04/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	92	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Samples received in good order: Holding time exceedance

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

240103

Envirolab Ref: 21115

CHAIN OF CUSTODY

JBS&G

PROJECT NO: 53452
PROJECT NAME: [illegible]
DATE NEEDED BY: [illegible]

LABORATORY BATCH NO.:
SAMPLERS:
QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) [illegible]@jbsg.com.au; (3) [illegible]@jbsg.com.au

SAMPLE ID	MATRIX	DATE	TIME	(2) TYPE & PRESERVATIVE	pH	SA Hold	TYPE OF CONTAINERS: P / G / V	NOTES:
(1) D.A.D (4)	Soil	27/3/20		[illegible]		X		
(3) D.A.D		27/3/20		[illegible]		X		

RELINQUISHED BY:
NAME: [illegible] DATE: 27/3/20
OF: JBS&G

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO:
TRANSPORT CO:

RECEIVED BY:
NAME:
DATE:
OF:

FOR RECEIVING LAB USE ONLY:
COOLER SEAL – Yes / No / Intact / Broken
COOLER TEMP ____ deg C

RELINQUISHED BY:
NAME: DATE:
OF:

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO:
TRANSPORT CO:

RECEIVED BY:
NAME: DATE:
OF:

FOR RECEIVING LAB USE ONLY:
COOLER SEAL – Yes / No / Intact / Broken
COOLER TEMP ____ deg C

Container & Preservative Codes: P = Plastic; G = Glass Bottle; A = Nitric Acid Preservation; C = Sodium Hydroxide Preservation; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; S = Sulfuric Acid Preservation; Z = Zinc Preservation; E = EDTA Preservation; ST = Sterile Bottle; O = Other

CHAIN OF CUSTODY

Eurofins 21114

JBS&G

PROJECT NO 53557
PROJECT NAME [illegible]
DATE NEEDED BY

LABORATORY BATCH NO.
SAMPLERS MN
QC LEVEL: NEPM (2013)

PHONE Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO (1) adminnsw@jbsg.com.au; (2) [illegible]@jbsg.com.au; (3) [illegible]@jbsg.com.au

SAMPLE ID	LAB REF	DATE	TIME	TYPE & PRESERVATIVE	pH	JB2A	JB2	pH, %clay, CEC, TOC	BTEX	DUP & REPLICATE	SPLIT	NOTES
BH01-0.0-0.1	S-1	27/3/20		J+S+ICE		X					X	
-0.4-0.5												
-0.5-0.6												
-0.9-1.0				J+S+ASS+ICE			X					
(1) QAC1				J+S+ICE				SEND to ENVIROLAB				
QC1						X						
(2) QA2				ASS ICE				SEND to ENVIROLAB				
QC2												
(3) QA02		30/3/20		J+S+ICE				SEND to ENVIROLAB				
QC2												
[illegible]				[illegible]		X						
[illegible]				[illegible]			X		X			

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 24 0103
Date Received: 1/4/20
Time Received: 12:15
Received By: [illegible]
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

RELINQUISHED BY	METHOD OF SHIPMENT	RECEIVED BY	FOR RECEIVING LAB USE ONLY:
NAME [illegible] DATE 27/3/20	CONSIGNMENT NOTE NO.	NAME	COOLER SEAL – Yes ___ No ___ Intact ___ Broken ___
OF JBSG	TRANSPORT CO	DATE	
NAME DATE	CONSIGNMENT NOTE NO	OF	COOLER TEMP ___ deg C
OF	TRANSPORT CO	NAME DATE	COOLER SEAL – Yes ___ No ___ Intact ___ Broken ___
		OF	COOLER TEMP ___ deg C

Container & Preservative Codes: P = Plastic, J = Jar, B = Bag, A = Amber Bottle, H = Nitric Acid Preservative, C = Sodium Hydroxide Preservative, VC = Hydrochloric Acid Preserved Vial, VS = Sulfuric Acid Preserved Vial, S = Sulfuric Acid Preserved, Z = Zinc Preserved, E = EDTA Preserved, ST = Sterile Bottle, O = Other

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 240339

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	S Gunatunge, M Noujaim
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**58554, Paddington**
Number of Samples	1 Water
Date samples received	03/04/2020
Date completed instructions received	03/04/2020

Analysis Details

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

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

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

Report Details

Date results requested by	14/04/2020
Date of Issue	14/04/2020

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Hannah Nguyen, Senior Chemist
Josh Williams, Senior Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in water		
Our Reference		240339-1
Your Reference	UNITS	QA
Date Sampled		03/04/2020
Type of sample		Water
Date extracted	-	06/04/2020
Date analysed	-	07/04/2020
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1

VOCs in water		
Our Reference		240339-1
Your Reference	UNITS	QA
Date Sampled		03/04/2020
Type of sample		Water
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	96
Surrogate toluene-d8	%	89
Surrogate 4-BFB	%	104

vTRH(C6-C10)/BTEXN in Water		
Our Reference	UNITS	240339-1
Your Reference		QA
Date Sampled		03/04/2020
Type of sample		Water
Date extracted	-	06/04/2020
Date analysed	-	07/04/2020
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	2
Surrogate Dibromofluoromethane	%	96
Surrogate toluene-d8	%	89
Surrogate 4-BFB	%	104

svTRH (C10-C40) in Water		
Our Reference	UNITS	240339-1
Your Reference		QA
Date Sampled		03/04/2020
Type of sample		Water
Date extracted	-	06/04/2020
Date analysed	-	07/04/2020
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	103

PAHs in Water - Low Level		
Our Reference		240339-1
Your Reference	UNITS	QA
Date Sampled		03/04/2020
Type of sample		Water
Date extracted	-	06/04/2020
Date analysed	-	06/04/2020
Naphthalene	µg/L	1
Acenaphthylene	µg/L	0.9
Acenaphthene	µg/L	2.7
Fluorene	µg/L	2.1
Phenanthrene	µg/L	2.3
Anthracene	µg/L	0.4
Fluoranthene	µg/L	0.4
Pyrene	µg/L	0.2
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	10
Surrogate p-Terphenyl-d14	%	74

HM in water - dissolved		
Our Reference		240339-1
Your Reference	UNITS	QA
Date Sampled		03/04/2020
Type of sample		Water
Date prepared	-	06/04/2020
Date analysed	-	06/04/2020
Arsenic-Dissolved	µg/L	17
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	3

Miscellaneous Inorganics		
Our Reference	UNITS	240339-1
Your Reference		QA
Date Sampled		03/04/2020
Type of sample		Water
Date prepared	-	03/04/2020
Date analysed	-	03/04/2020
pH	pH Units	6.8
Electrical Conductivity	µS/cm	680
Total Suspended Solids	mg/L	46
Total Dissolved Solids (grav)	mg/L	410

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Date analysed	-			07/04/2020	[NT]	[NT]	[NT]	[NT]	07/04/2020	[NT]
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-013	95	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate toluene-d8	%		Org-013	88	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate 4-BFB	%		Org-013	106	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Date analysed	-			07/04/2020	[NT]	[NT]	[NT]	[NT]	07/04/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	82	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	95	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate toluene-d8	%		Org-016	88	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate 4-BFB	%		Org-016	106	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Date analysed	-			07/04/2020	[NT]	[NT]	[NT]	[NT]	07/04/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate o-Terphenyl	%		Org-003	86	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Date analysed	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Naphthalene	µg/L	0.2	Org-012/017	<0.2	[NT]	[NT]	[NT]	[NT]	114	[NT]
Acenaphthylene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Phenanthrene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Anthracene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-012/017	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	120	[NT]	[NT]	[NT]	[NT]	71	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Date analysed	-			06/04/2020	[NT]	[NT]	[NT]	[NT]	06/04/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			03/04/2020	1	03/04/2020	03/04/2020		03/04/2020	[NT]
Date analysed	-			03/04/2020	1	03/04/2020	03/04/2020		03/04/2020	[NT]
pH	pH Units		Inorg-001	[NT]	1	6.8	[NT]		102	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	680	[NT]		102	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	46	48	4	92	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	410	[NT]		88	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab 1 of 1

Chain of Custody

JBS&G

PROJECT NO.: 59554	LABORATORY BATCH NO.:
PROJECT NAME: Dobbington	SAMPLERS: MW
DATE NEEDED BY: STD	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3112 2688 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) ....mwallington.....@jbsg.com.au; (3) ....s.cunningham.....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Asbestos	Heavy Metals	PAH's (low level)	TRH	VOC	pH	EC	Total Sulphate as SO4	TCL	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
(1) BA	Water	31/4/20		vials, Ambers, Inorganics, Heavy Metals	Lice		X	X	X	X	X	X	X	X			

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 240334

Date Received: 31/4/20

Time Received: 1350

Received By: RZ

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: M Wallington DATE: 31/4/20	CONSIGNMENT NOTE NO.	NAME: Ian DATE: 31/4/20 1350	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: JBS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 243807

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	S Gunatunge
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**58554, Paddington**
Number of Samples	2 SOIL
Date samples received	28/05/2020
Date completed instructions received	28/05/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	04/06/2020
Date of Issue	02/06/2020

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

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

Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date extracted	-	01/06/2020
Date analysed	-	02/06/2020
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	115

svTRH (C10-C40) in Soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date extracted	-	01/06/2020
Date analysed	-	02/06/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	82

PAHs in Soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date extracted	-	01/06/2020
Date analysed	-	02/06/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.2
Pyrene	mg/kg	0.3
Benzo(a)anthracene	mg/kg	0.1
Chrysene	mg/kg	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.3
Benzo(a)pyrene	mg/kg	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1
Total +ve PAH's	mg/kg	1.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	70

Organochlorine Pesticides in soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date extracted	-	01/06/2020
Date analysed	-	02/06/2020
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	109

PCBs in Soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date extracted	-	01/06/2020
Date analysed	-	02/06/2020
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	109

Acid Extractable metals in soil		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date prepared	-	01/06/2020
Date analysed	-	01/06/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	12
Copper	mg/kg	19
Lead	mg/kg	19
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	31

Moisture		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date prepared	-	01/06/2020
Date analysed	-	02/06/2020
Moisture	%	11

Asbestos ID - soils NEPM - ASB-001		
Our Reference		243807-1
Your Reference	UNITS	QA01
Date Sampled		27/05/2020
Type of sample		SOIL
Date analysed	-	02/06/2020
Sample mass tested	g	388.87
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			02/06/2020	[NT]	[NT]	[NT]	[NT]	02/06/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	109	[NT]	[NT]	[NT]	[NT]	125	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	81	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			02/06/2020	[NT]	[NT]	[NT]	[NT]	02/06/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	92	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	81	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			02/06/2020	[NT]	[NT]	[NT]	[NT]	02/06/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	109	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			02/06/2020	[NT]	[NT]	[NT]	[NT]	02/06/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	109	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Date analysed	-			01/06/2020	[NT]	[NT]	[NT]	[NT]	01/06/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	112	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Enviolab 1 of 1

Chain of Custody

JBS&G

PROJECT NO.: 53655	LABORATORY BATCH NO.:
PROJECT NAME: Poddington	SAMPLERS: MW
DATE NEEDED BY: STD	QC LEVEL: NEPM (2013)

PHONE: Sydney 02 8245 0300 | Perth 08 9488 0100 | Brisbane 07 3211 5350 | Melbourne 03 9642 0599 | Adelaide 08 8431 7113

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	STD	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
1	QA01	Soil	27/5		B, J ice		X		X	
2	QA02	↓	28/5		↓					

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 243807
Date Received: 28/5/20
Time Received: 1645
Received by: SR
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: MWorgan DATE: 28/5/20	CONSIGNMENT NOTE NO.	NAME: DATE: 28/5/20	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: JBS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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Appendix F Detailed ESDAT Quality Assurance / Quality Control

Soil RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (SOIL)
Filter: ALL

SDG	711021	711021		711021	ENVIROLAB 2020-04-01T00:00:00	
Field ID	MW3_1.0-1.1	QC01	**RPD**	MW3_1.0-1.1	QA01	**RPD**
Sampled Date/Time	27/03/2020	27/03/2020		27/03/2020	27/03/2020	

Chem_Grou	ChemName	Units	EQL						
Metals & M	Arsenic (Total)	mg/kg	2 (Primary): 4 (Interlab)	**4.3**	**12.0**	**94**	**4.3**	**6.0**	**33**
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium (Total)	mg/kg	5 (Primary): 1 (Interlab)	**20.0**	**43.0**	**73**	20.0	18.0	11
	Copper	mg/kg	5 (Primary): 1 (Interlab)	6.2	6.5	5	6.2	6.0	3
	Lead	mg/kg	5 (Primary): 1 (Interlab)	**12.0**	**29.0**	**83**	**12.0**	**25.0**	**70**
	Mercury (Inorganic)	mg/kg	0.1	**<0.1**	**0.2**	**67**	<0.1	<0.1	0
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	<5.0	<5.0	0	<5.0	1.0	0
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	**<5.0**	**6.9**	**32**	**<5.0**	**8.0**	**46**
etalloids									
TPHs (NEPC	C6-C9 Fraction	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C10-C14 Fraction	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0
	C15-C28 Fraction	mg/kg	50 (Primary): 100 (Interlab	<50.0	<50.0	0	<50.0	<100.0	0
	C29-C36 Fraction	mg/kg	50 (Primary): 100 (Interlab	<50.0	<50.0	0	<50.0	<100.0	0
	C10-C36 Fraction (Total)	mg/kg	50	<50.0	<50.0	0	<50.0		
1999)									
TRHs (NEPC	>C10-C16 Fraction	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	>C16-C34 Fraction	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	>C34-C40 Fraction	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	>C10-C40 Fraction (Total)	mg/kg	100 (Primary): 50 (Interlab	<100.0	<100.0	0	<100.0	<50.0	0
	>C10-C16 less Naphthale	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 Fraction	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C6-C10 less BTEX (F1)	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
2013)									
BTEXN	Benzene	mg/kg	0.1 (Primary): 0.2 (Interlab	<0.1	<0.1	0	<0.1	<0.2	0
	Ethylbenzene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab	<0.1	<0.1	0	<0.1	<0.5	0
	Xylene (o)	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Xylene (m & p)	mg/kg	0.2 (Primary): 2 (Interlab)	<0.2	<0.2	0	<0.2	<2.0	0
	Xylene (Total)	mg/kg	0.3 (Primary): 3 (Interlab)	<0.3	<0.3	0	<0.3	<3.0	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<1.0 - 0.2	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<1.0 - 0.2	0
Polycyclic A	Acenaphthene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Acenaphthylene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.1	0
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	0.6	18	<0.5	0.4	0
	Benz(a)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab	**<0.5**	**1.1**	**75**	<0.5	0.6	18
	Benzo(a)pyrene	mg/kg	0.5 (Primary): 0.05 (Interla	**<0.5**	**0.8**	**46**	<0.5	0.4	0
	Benzo(b,j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Benzo(g,h,i)perylene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.2	0
	Benzo(k)fluoranthene	mg/kg	0.5	**<0.5**	**0.8**	**46**	<0.5		
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interlab	**<0.5**	**0.9**	**57**	<0.5	0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Fluoranthene	mg/kg	0.5 (Primary): 0.1 (Interlab	**0.6**	**2.3**	**117**	**0.6**	**1.2**	**67**
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.3	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.2	0
	Phenanthrene	mg/kg	0.5 (Primary): 0.1 (Interlab	**0.5**	**2.3**	**129**	**0.5**	**1.2**	**82**
	PAHs (Total)	mg/kg	0.5	**1.8**	**11.2**	**145**	1.8		
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab	**0.7**	**2.4**	**110**	**0.7**	**1.2**	**53**
omatic Hydrocarbons									
Organochlor	4,4-DDE	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Aldrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Aldrin + Dieldrin (Sum of	mg/kg	0.05	<0.05	<0.05	0	<0.05		
	alpha-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	beta-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1		
	DDD	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	DDT	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Dieldrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	DDT+DDE+DDD (Sum of T	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	delta-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan alpha	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan beta	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan sulphate	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin aldehyde	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	<0.05		
	Heptachlor	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Heptachlor Epoxide	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Lindane	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Methoxychlor	mg/kg	0.2 (Primary): 0.1 (Interlab	<0.2	<0.2	0	<0.2	<0.1	0
	Toxaphene	mg/kg	1	<1.0	<1.0	0	<1.0		
ine Pesticides									
Polychlorina	Aroclor 1016	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 1221	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 1232	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 1242	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 1248	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 1254	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0

Soil RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (SOIL)
Filter: ALL

			SDG	711021	711021		711021	ENVIROLAB 2020-04-01T00:00:00	
			Field ID	MW3_1.0-1.1	QC01	**RPD**	MW3_1.0-1.1	QA01	**RPD**
			Sampled Date/Time	27/03/2020	27/03/2020		27/03/2020	27/03/2020	
	Aroclor 1260	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	PCBs (Total)	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
ted Biphenyls									
Chlorinated	Hexachlorobenzene	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
Benzenes									
Asbestos	Approx. Sample Mass	G		512.0	455.0	12	512.0		
	Asbestos from ACM in Sc	%w/w		0.0	0.0	0	0.0		
	Asbestos from FA & AF in	%w/w		0.0	0.0	0	0.0		
Asbestos	Asbestos Reported Result	COMMENT		1.0	1.0	0	1.0		
Asbestos	Mass ACM	G		0.0	0.0	0	0.0		
	Mass Asbestos in ACM	G		0.0	0.0	0	0.0		
	Mass FA	G		0.0	0.0	0	0.0		
	Mass Asbestos in FA	G		0.0	0.0	0	0.0		
	Mass AF	G		0.0	0.0	0	0.0		
	Mass Asbestos in AF	G		0.0	0.0	0	0.0		
	Mass Asbestos in FA & AF	G		0.0	0.0	0	0.0		
Asbestos - T	ACM - Comment	COMMENT		1.0	1.0	0	1.0		
	AF - Comment	COMMENT		1.0	1.0	0	1.0		
	FA - Comment	COMMENT		1.0	1.0	0	1.0		
	Organic Fibres - Commen	COMMENT		1.0	1.0	0	1.0		
	Respirable Fibres - Comm	COMMENT		1.0	1.0	0	1.0		
	Synthetic Fibres - Comme	COMMENT		1.0	1.0	0	1.0		
race Analysis									
Other	% Moisture 103oC	%	1	19.0	21.0	10	19.0		
EPA VIC - IW	Organochlorine Pesticide	mg/kg	0.1	<0.2	<0.2	0	<0.2		
	Other Organochlorine Pe	mg/kg	0.1	<0.2	<0.2	0	<0.2		

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

Soil RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (SOIL)
Filter: ALL

SDG	722434	722434		722434	ENVIROLAB 2020-05-29T00:00:00			
Field ID	BH109 0-0.1	QC01	**RPD**	BH109 0-0.1	QA01	**RPD**		
Sampled Date/Time	27/05/2020	27/05/2020		27/05/2020	27/05/2020			

Chem_Grou	ChemName	Units	EQL						
Metals & M	Arsenic (Tot	mg/kg	2 (Primary): 4 (Interlab)	15.0	20.0	29	**15.0**	**<4.0**	**116**
	Cadmium	mg/kg	0.4	<0.4	0.5	22	<0.4	<0.4	0
	Chromium (	mg/kg	5 (Primary): 1 (Interlab)	**19.0**	**29.0**	**42**	**19.0**	**12.0**	**45**
	Copper	mg/kg	5 (Primary): 1 (Interlab)	18.0	24.0	29	18.0	19.0	5
	Lead	mg/kg	5 (Primary): 1 (Interlab)	**37.0**	**58.0**	**44**	**37.0**	**19.0**	**64**
	Mercury (In	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	**10.0**	**14.0**	**33**	**10.0**	**2.0**	**133**
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	49.0	66.0	30	**49.0**	**31.0**	**45**
etalloids									
TPHs (NEPC	C6-C9 Fracti	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C10-C14 Fra	mg/kg	20 (Primary): 50 (Interlab)	26.0	<20.0	26	26.0	<50.0	0
	C15-C28 Fra	mg/kg	50 (Primary): 100 (Interlab	60.0	<50.0	18	60.0	<100.0	0
	C29-C36 Fra	mg/kg	50 (Primary): 100 (Interlab	**140.0**	**52.0**	**92**	**140.0**	**<100.0**	**33**
	C10-C36 Fra	mg/kg	50	**226.0**	**52.0**	**125**	226.0		
1999)									
TRHs (NEPC	>C10-C16 Fr	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	>C16-C34 Fr	mg/kg	100	**150.0**	**<100.0**	**40**	**150.0**	**<100.0**	**40**
	>C34-C40 Fr	mg/kg	100	**190.0**	**<100.0**	**62**	**190.0**	**<100.0**	**62**
	>C10-C40 Fr	mg/kg	100 (Primary): 50 (Interlab	**340.0**	**<100.0**	**109**	**340.0**	**<50.0**	**149**
	>C10-C16 le	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 Frac	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C6-C10 less	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
2013)									
BTEXN	Benzene	mg/kg	0.1 (Primary): 0.2 (Interlab	<0.1	<0.1	0	<0.1	<0.2	0
	Ethylbenzer	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab	<0.1	<0.1	0	<0.1	<0.5	0
	Xylene (o)	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Xylene (m &	mg/kg	0.2 (Primary): 2 (Interlab)	<0.2	<0.2	0	<0.2	<2.0	0
	Xylene (Tota	mg/kg	0.3 (Primary): 3 (Interlab)	<0.3	<0.3	0	<0.3	<3.0	0
	Naphthalen	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Naphthalen	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
Polycyclic A	Acenaphthe	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Acenaphthy	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Benz(a)anth	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.1	0
	Benzo(a)pyr	mg/kg	0.5 (Primary): 0.05 (Interla	<0.5	<0.5	0	<0.5	0.2	0
	Benzo(a)pyr	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a)pyr	mg/kg	0.5	0.6	0.6	0	0.6	<0.5	18
	Benzo(a)pyr	mg/kg	0.5	1.2	1.2	0	**1.2**	**<0.5**	**82**
	Benzo(b,j)flu	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Benzo(g,h,i)	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.1	0
	Benzo(k)fluo	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	0.2	0
	Dibenz(a,h)a	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Fluoranthen	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	0.6	18	<0.5	0.2	0
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Indeno(1,2,3	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Phenanthre	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	PAHs (Total)	mg/kg	0.5	**<0.5**	**1.3**	**89**	<0.5		
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab	**<0.5**	**0.7**	**33**	<0.5	0.3	0
omatic Hydrocarbons									
Organochlo	4,4-DDE	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Aldrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Aldrin + Die	mg/kg	0.05	<0.05	<0.05	0	<0.05		
	alpha-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	beta-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1		
	DDD	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	DDT	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Dieldrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	DDT+DDE+D	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	delta-BHC	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin aldeh	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin keto	mg/kg	0.05	<0.05	<0.05	0	<0.05		
	Heptachlor	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Heptachlor	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Lindane	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0
	Methoxychl	mg/kg	0.2 (Primary): 0.1 (Interlab	<0.2	<0.2	0	<0.2	<0.1	0
	Toxaphene	mg/kg	1	<1.0	<1.0	0	<1.0		
ine Pesticides									
Polychlorina	Aroclor 101	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 122	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 123	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Aroclor 124	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0

Soil RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (SOIL)
Filter: ALL

		SDG	722434	722434		722434	ENVIROLAB 2020-05-29T00:00:00			
		Field ID	BH109 0-0.1	QC01	**RPD**	BH109 0-0.1	QA01	**RPD**		
		Sampled Date/Time	27/05/2020	27/05/2020		27/05/2020	27/05/2020			
	Aroclor 124	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0	
	Aroclor 125	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0	
	Aroclor 126	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0	
	PCBs (Total)	mg/kg	0.5 (Primary): 0.1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0	
ıted Biphenyls										
Chlorinated	Hexachlorob	mg/kg	0.05 (Primary): 0.1 (Interla	<0.05	<0.05	0	<0.05	<0.1	0	
Benzenes										

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

Groundwater RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (WATER)
Filter: ALL

SDG	712063	712063		712063	NVIROLAB 2020-04-03T00:00:00			
Field ID	MW3	QC	**RPD**	MW3	QA	**RPD**		
Sampled Date/Time	3/04/2020	3/04/2020		3/04/2020	3/04/2020			

Chem_Grou	ChemName	Units	EQL						
VOC	Total MAH*	mg/l	0.003	<0.003	<0.003	0	<0.003		
Metals & M	Arsenic (Total) (Filtered)	mg/l	0.001	**0.009**	**0.022**	**84**	**0.009**	**0.017**	**62**
	Cadmium (Filtered)	mg/l	0.0002 (Primary): 0.0001 (I	<0.0002	<0.0002	0	<0.0002	<0.0001	0
	Chromium (Total) (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Mercury (Inorganic) (Filtere	mg/l	0.0001 (Primary): 0.00005	<0.0001	<0.0001	0	<0.0001	<0.0001	0
	Nickel (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Zinc (Filtered)	mg/l	0.005 (Primary): 0.001 (Int	**<0.005**	**0.007**	**33**	<0.005	0.003	0
etalloids									
TPHs (NEPC	C6-C9 Fraction	mg/l	0.02 (Primary): 0.01 (Interl	<0.02	<0.02	0	<0.02	<0.01	0
	C10-C14 Fraction	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	C15-C28 Fraction	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	C29-C36 Fraction	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	C10-C36 Fraction (Total)	mg/l	0.1	<0.1	<0.1	0	<0.1		
1999)									
TRHs (NEPC	>C10-C16 Fraction	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	>C16-C34 Fraction	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	>C34-C40 Fraction	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	>C10-C40 Fraction (Total)	mg/l	0.1	<0.1	<0.1	0	<0.1		
	>C10-C16 less Naphthalene	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	C6-C10 Fraction	mg/l	0.02 (Primary): 0.01 (Interl	<0.02	<0.02	0	<0.02	<0.01	0
	C6-C10 less BTEX (F1)	mg/l	0.02 (Primary): 0.01 (Interl	<0.02	<0.02	0	<0.02	<0.01	0
2013)									
BTEXN	Benzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Ethylbenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Toluene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Xylene (o)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Xylene (m & p)	mg/l	0.002	<0.002	<0.002	0	<0.002	<0.002	0
	Xylene (Total)	mg/l	0.003	<0.003	<0.003	0	<0.003		
	Naphthalene	mg/l	0.01 (Primary): 0.001 (Inte	<0.01	<0.01	0	<0.01	0.001 - 0.002	0
	Naphthalene	mg/l	0.00001 (Primary): 0.001 (I	**0.0005**	**0.0003**	**55**	**0.0005**	**0.001 - 0.002**	**61**
Polycyclic A	Acenaphthene	mg/l	0.00001 (Primary): 0.0001	**0.0011**	**0.0006**	**60**	**0.0011**	**0.0027**	**84**
	Acenaphthylene	mg/l	0.00001 (Primary): 0.0001	**0.0003**	**0.0001**	**70**	**0.0003**	**0.0009**	**103**
	Anthracene	mg/l	0.00001 (Primary): 0.0001	**0.0003**	**0.0002**	**67**	0.0003	0.0004	22
	Benz(a)anthracene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Benzo(a)pyrene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Benzo(b,j)fluoranthene	mg/l	0.00001	<0.0	<0.0	0	<0.0		
	Benzo(g,h,i)perylene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Benzo(k)fluoranthene	mg/l	0.00001	<0.0	<0.0	0	<0.0		
	Chrysene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Dibenz(a,h)anthracene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Fluoranthene	mg/l	0.00001 (Primary): 0.0001	**0.0001**	**0.0001**	50	**0.0001**	**0.0004**	**120**
	Fluorene	mg/l	0.00001 (Primary): 0.0001	**0.0008**	**0.0004**	**73**	**0.0008**	**0.0021**	**86**
	Indeno(1,2,3-c,d)pyrene	mg/l	0.00001 (Primary): 0.0001	<0.0	<0.0	0	<0.0	<0.0001	0
	Phenanthrene	mg/l	0.00001 (Primary): 0.0001	**0.0007**	**0.0004**	**64**	**0.0007**	**0.0023**	**103**
	PAHs (Total)	mg/l	0.00001	**0.004**	**0.0021**	**64**	0.004		
	Pyrene	mg/l	0.00001 (Primary): 0.0001	**0.0001**	**0.0**	**67**	**0.0001**	**0.0002**	**86**
omatic Hydrocarbons									
Chlorinated	1,1,1,2-tetrachloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,1,1-trichloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,1,2,2-tetrachloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,1,2-trichloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,1-dichloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,2,3-trichloropropane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,2-dichloroethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,2-dichloropropane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	1,3-dichloropropane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Bromochloromethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Carbon tetrachloride	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Chloroethane	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01	0
	Chloromethane	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01	0
	Dichlorodifluoromethane	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01	0
	Dichloromethane	mg/l	0.001	<0.001	<0.001	0	<0.001		
	Trichlorofluoromethane	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01	0
Alkanes									
Chlorinated	1,1-dichloroethene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	3-chloropropene	mg/l	0.001	<0.001	<0.001	0	<0.001		
	4-chlorotoluene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	cis-1,2-dichloroethene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	cis-1,3-dichloropropene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Tetrachloroethene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	trans-1,2-dichloroethene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	trans-1,3-dichloropropene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Trichloroethene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Vinyl Chloride	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01	0

Groundwater RPDs
Project Name: SGS Weigall Sports Complex DSI

Field Duplicates (WATER)
Filter: ALL

	SDG	712063	712063		712063	NVIROLAB 2020-04-03T00:00:00				
	Field ID	MW3	QC	**RPD**	MW3	QA				**RPD**
	Sampled Date/Time	3/04/2020	3/04/2020		3/04/2020	3/04/2020				
Alkenes										
Solvents	2-Propanone (Acetone)	µg/l	1	<1.0	1.0	0	<1.0			
Monocyclic	1,2,4-trimethyl benzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	1,3,5-trimethyl benzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Bromobenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Isopropylbenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Styrene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
Aromatic Hydrocarbons										
Miscellaneo	1,2-dibromoethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	2-Butanone (MEK)	mg/l	0.001	<0.001	<0.001	0	<0.001			
	4-Methyl-2-pentanone (MIE	mg/l	0.001	<0.001	<0.001	0	<0.001			
	Bromomethane	mg/l	0.001 (Primary): 0.01 (Inte	<0.001	<0.001	0	<0.001	<0.01		0
	Dibromomethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Iodomethane	mg/l	0.001	<0.001	<0.001	0	<0.001			
us Hydrocarbons										
Chlorinated	1,2-Dichlorobenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	1,3-dichlorobenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	1,4-dichlorobenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Chlorobenzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
Benzenes										
Trihalometh	Bromodichloromethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Chloroform	mg/l	0.005 (Primary): 0.001 (Int	<0.005	<0.005	0	<0.005	<0.001		0
	Dibromochloromethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
	Tribromomethane	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001		0
anes										
Organic Sulf	Carbon disulfide	mg/l	0.001	<0.001	<0.001	0	<0.001			
ur Compounds										
Ionic Balanc	EC_Lab	µS/cm	10	710.0	710.0	0	710.0			
e										
Other	Total Dissolved Solids	mg/l	10 (Primary): 5 (Interlab)	400.0	390.0	3	400.0	410.0		2
	Total Suspended Solids	mg/l	1 (Primary): 5 (Interlab)	61.0	52.0	16	61.0	46.0		28
EPA VIC - IW	Chlorinated Hydrocarbons E	µg/l	5	<5.0	<5.0	0	<5.0			
	Other Chlorinated Hydrocar	µg/l	5	<5.0	<5.0	0	<5.0			

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

Appendix G Statistical Analyses

	A	B
1		
2	Sample ID	BaP TEQ concentration mg/kg
3	BH101_0.2-0.3	3.174
4	BH102_0.2-0.3	6.591
5	BH102_0.7-0.8	4.706
6	BH103_0.9-1.0	1.21
7	BH103_0-0.1	1.21
8	BH104_0.3-0.4	1.21
9	BH107_0-0.1	1.21
10	MW1_3.5-3.6	1.21
11	MW2_0.2-0.3	2.859
12	MW3_1.0-1.1	1.21
13	BH1 0.4-0.5	1.1
14	BH1 1.9-2.0	7
15	BH1 3.0-3.1	5.3
16	BH1 3.9-4.0	7.1
17	BH2 0.1-0.2	0.5
18	BH2 1.9-2.0	6.8
19	BH4 0.4-0.5	7.3
20	BH4 5.5-5.6	1.2
21	BH6 0.4-0.5	1.6
22	BH6 3.9 - 4	1.1
23	BH7 0-0.1	2.1
24	BH7 2.9 - 3	2.8
25	BH7 3.9 - 4	0.5
26	BH109 0-0.1	1.21
27	BH110 0.5-0.6	1.21
28	BH111 0.1-0.2	1.21
29	BH111 1.5-1.6	1.21
30	BH112 0.3-0.4	5.748
31	BH113 0.4-0.5	1.21
32	BH113 2.6-2.7	1.21
33	BH114 0.2-0.3	2.43
34	BH115 0.9-1.0	1.458
35	BH115 2.5-2.6	0.64
36	BH116 1.5-1.6	1.21
37	BH117 0-0.1	1.21
38	BH117 1.5-1.6	1.21
39	BH118 0.3-0.4	6.445

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	15/06/2020 8:41:11 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C1

General Statistics

Total Number of Observations	37	Number of Distinct Observations	21
		Number of Missing Observations	7
Minimum	0.5	Mean	2.611
Maximum	7.3	Median	1.21
SD	2.253	Std. Error of Mean	0.37
Coefficient of Variation	0.863	Skewness	1.157

Normal GOF Test

Shapiro Wilk Test Statistic	0.728	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.936	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.3	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.146	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.236	95% Adjusted-CLT UCL (Chen-1995)	3.295
		95% Modified-t UCL (Johnson-1978)	3.248

Gamma GOF Test

A-D Test Statistic	3.247	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.3	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.147	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.706	k star (bias corrected MLE)	1.586
Theta hat (MLE)	1.53	Theta star (bias corrected MLE)	1.646
nu hat (MLE)	126.3	nu star (bias corrected)	117.3
MLE Mean (bias corrected)	2.611	MLE Sd (bias corrected)	2.073
		Approximate Chi Square Value (0.05)	93.34
Adjusted Level of Significance	0.0431	Adjusted Chi Square Value	92.41

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.283	95% Adjusted Gamma UCL (use when n<50)	3.315

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.844	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.936	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.146	Data Not Lognormal at 5% Significance Level

56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59					Minimum of Logged Data	-0.693				Mean of logged Data		0.639
60					Maximum of Logged Data	1.988				SD of logged Data		0.788
61												
62	**Assuming Lognormal Distribution**											
63					95% H-UCL	3.435				90% Chebyshev (MVUE) UCL		3.659
64					95% Chebyshev (MVUE) UCL	4.158				97.5% Chebyshev (MVUE) UCL		4.85
65					99% Chebyshev (MVUE) UCL	6.211						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71					95% CLT UCL	3.22				95% Jackknife UCL		3.236
72					95% Standard Bootstrap UCL	3.2				95% Bootstrap-t UCL		3.312
73					95% Hall's Bootstrap UCL	3.27				95% Percentile Bootstrap UCL		3.227
74					95% BCA Bootstrap UCL	3.266						
75					90% Chebyshev(Mean, Sd) UCL	3.722				95% Chebyshev(Mean, Sd) UCL		4.226
76					97.5% Chebyshev(Mean, Sd) UCL	4.924				99% Chebyshev(Mean, Sd) UCL		6.297
77												
78	**Suggested UCL to Use**											
79					95% Chebyshev (Mean, Sd) UCL	4.226						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

	A	B
1		
2	Sample ID	Nickel (mg/kg)
3	BH101_0.2-0.3	5.1
4	BH102_0.2-0.3	7.2
5	BH102_0.7-0.8	32
6	BH103_0.9-1.0	5
7	BH103_0-0.1	85
8	BH104_0.3-0.4	5.9
9	BH107_0.9-1.0	16
10	BH107_0-0.1	5.2
11	MW1_0.5-0.6	6.4
12	MW1_3.5-3.6	6.1
13	MW2_0.2-0.3	5
14	MW3_1.0-1.1	5
15	MW3_1.4-1.5	5
16	BH1 0.4-0.5	29
17	BH1 1.9-2.0	2
18	BH1 3.0-3.1	3
19	BH1 3.9-4.0	2
20	BH2 0.1-0.2	3
21	BH2 1.9-2.0	3
22	BH4 0.4-0.5	5
23	BH4 1.9-2.0	4
24	BH4 5.5-5.6	3
25	BH6 0.4-0.5	2
26	BH6 2.4-2.5	2
27	BH6 3.9 - 4m	1
28	BH7 0-0.1	11
29	BH7 2.9 - 3m	2
30	BH7 3.9 - 4m	1
31	BH109 0-0.1	10
32	BH109 2.6-2.7	27
33	BH110 0.5-0.6	5
34	BH111 0.1-0.2	5
35	BH111 1.5-1.6	5
36	BH112 0.3-0.4	5.2
37	BH113 0.4-0.5	5
38	BH113 2.6-2.7	5
39	BH114 0.2-0.3	12
40	BH115 0.9-1.0	5
41	BH115 2.5-2.6	5
42	BH116 1.5-1.6	5
43	BH117 0-0.1	5
44	BH117 1.5-1.6	5
45	BH118 0.3-0.4	5.4

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	15/06/2020 8:51:58 AM
From File	WorkSheet_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C1

General Statistics

Total Number of Observations	43	Number of Distinct Observations	20
		Number of Missing Observations	1
Minimum	1	Mean	8.64
Maximum	85	Median	5
SD	13.76	Std. Error of Mean	2.099
Coefficient of Variation	1.593	Skewness	4.494

Normal GOF Test

Shapiro Wilk Test Statistic	0.463	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.943	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.356	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	12.17	95% Adjusted-CLT UCL (Chen-1995)	13.63
		95% Modified-t UCL (Johnson-1978)	12.41

Gamma GOF Test

A-D Test Statistic	3.926	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.287	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.138	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.173	k star (bias corrected MLE)	1.107
Theta hat (MLE)	7.363	Theta star (bias corrected MLE)	7.805
nu hat (MLE)	100.9	nu star (bias corrected)	95.2
MLE Mean (bias corrected)	8.64	MLE Sd (bias corrected)	8.212
		Approximate Chi Square Value (0.05)	73.69
Adjusted Level of Significance	0.0444	Adjusted Chi Square Value	73.04

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	11.16	95% Adjusted Gamma UCL (use when n<50)	11.26

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.89	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.943	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.215	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.135	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	0	Mean of logged Data 1.673
Maximum of Logged Data	4.443	SD of logged Data 0.862
Assuming Lognormal Distribution		
95% H-UCL	10.37	90% Chebyshev (MVUE) UCL 11.04
95% Chebyshev (MVUE) UCL	12.59	97.5% Chebyshev (MVUE) UCL 14.73
99% Chebyshev (MVUE) UCL	18.94	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	12.09	95% Jackknife UCL 12.17
95% Standard Bootstrap UCL	12.1	95% Bootstrap-t UCL 16.89
95% Hall's Bootstrap UCL	24	95% Percentile Bootstrap UCL 12.25
95% BCA Bootstrap UCL	14.02	
90% Chebyshev(Mean, Sd) UCL	14.94	95% Chebyshev(Mean, Sd) UCL 17.79
97.5% Chebyshev(Mean, Sd) UCL	21.74	99% Chebyshev(Mean, Sd) UCL 29.52
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	17.79	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)		
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.		
For additional insight the user may want to consult a statistician.		

Appendix H Previous Analytical Results (DP 2020)

Douglas Partners
Geotechnics / Environment / Groundwater

Table H1a: Summary of Laboratory Results – Metals, TRH, BTEX, PAH

				Metals								TRH						BTEX				PAH			
				Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
			PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Depth	Material Type	Sampled Date	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
On-Site Samples																									
BH1	0.4-0.5	Fill	19/12/2019	<4	0.5	3	2700	270	0.2	29	400	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.74	1.1	9.9
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	1.9-2.0	Fill	19/12/2019	<4	<0.4	4	11	93	0.1	2	71	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	4.8	7	53
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	3.0-3.1	Sand (pos. fill)	19/12/2019	<4	<0.4	7	29	120	0.4	3	89	<25	<50	<25	<50	140	<100	<0.2	<0.5	<1	<1	<1	3.7	5.3	37
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	3.9-4.0	Sand (pos. fill)	19/12/2019	<4	<0.4	6	22	120	0.3	2	88	<25	<50	<25	<50	250	<100	<0.2	<0.5	<1	<1	<1	4.9	7.1	54
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH2	0.1-0.2	Fill	19/12/2019	<4	<0.4	6	9	37	0.1	3	37	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.4	0.5	4
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH2	1.9-2.0	Fill	19/12/2019	<4	<0.4	6	34	130	0.5	3	71	<25	<50	<25	<50	250	100	<0.2	<0.5	<1	<1	<1	4.6	6.8	49
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	0.4-0.5	Fill	18/12/2019	5	<0.4	10	49	370	0.7	5	210	<25	<50	<25	<50	320	140	<0.2	<0.5	<1	<1	<1	4.9	7.3	54
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	1.9-2.0	Fill	18/12/2019	5	<0.4	32	50	290	0.6	4	220	<25	<50	<25	<50	360	130	<0.2	<0.5	<1	<1	<1	5.5	8	61
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	5.5-5.6	Sand	18/12/2019	<4	<0.4	12	5	76	<0.1	3	15	<25	<50	<25	<50	100	<100	<0.2	<0.5	<1	<1	<1	0.79	1.2	11
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	0.4-0.5	Fill	15/01/2020	<4	<0.4	10	10	130	0.3	2	68	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1	1.6	18
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	2.4-2.5	Fill	15/01/2020	<4	<0.4	10	21	380	0.5	2	92	<25	<50	<25	<50	380	<100	<0.2	<0.5	<1	<1	1.4	7.7	12	110
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	3.9 - 4m	Sand	15/01/2020	<4	<0.4	2	4	88	0.1	<1	19	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.78	1.1	10
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BH7	0-0.1	Fill	15/01/2020	11	<0.4	13	31	120	1.3	11	170	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.3	2.1	14
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH7	2.9 - 3m	Sand (pos. fill)	15/01/2020	<4	<0.4	6	42	260	0.6	2	150	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1.8	2.8	26
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BH7	3.9 - 4m	Sand (pos. fill)	15/01/2020	<4	<0.4	<1	4	90	<0.1	<1	20	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BD1/18122019	0.4-1.5	Fill	18/12/2019	4	<0.4	11	39	230	0.6	7	200	<25	<50	<25	<50	310	160	<0.2	<0.5	<1	<1	<1	3.2	4.9	35
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BD2/19122019	1.9-2.0	Fill	19/12/2019	<4	<0.4	7	23	130	0.4	2	65	<25	<50	<25	<50	220	<100	<0.2	<0.5	<1	<1	<1	4.4	6.5	50
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	Fill	19/12/2019	<4	<0.4	5	120	500	0.2	21	390	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
Off-Site Samples																									
BH3	0.9-1.0	Fill	20/12/2019	14	<0.4	7	60	29	0.2	7	110	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.3	1.9	14
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	1.4-1.5	Fill	18/12/2019	9	0.7	7	190	410	0.5	3	420	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.5	2.2	16
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	1.9-2.0	Fill	18/12/2019	6	0.4	10	250	2300	0.5	3	310	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	4.1	6.1	47
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	2.4-2.5	Fill	18/12/2019	<4	<0.4	8	130	340	0.4	3	170	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	5.9	8.6	67
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	Fill	18/12/2019	6	0.6	7	3100	340	0.7	3	340	NT	<50	NT	<50	200	<100	NT	NT	NT	NT	NT	NT	NT	NT
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance | EIL/ESL exceedance | HIL/HSL and EIL/ESL exceedance | ML exceedance | ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C (Recreational / Open Space), HSL A/B (Residential / Low - High Density), DC HSL C (Reactional / Open Space)
EIL/ESL	NEPC, Schedule B1 - EIL UR/POS (Urban Residential and Public Open Space), ESL UR/POS (Urban Residential and Public Open Space)
ML	NEPC, Schedule B1 - ML R/P/POS (Residential, Parkland and Public Open Space)
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

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Table H1b: Summary of Laboratory Results – Phenol, OCP, OPP, PCB, Asbestos

				Phenol	OCP													OPP	PCB	Asbestos		
				Phenol	DDT+DDE+DDD c	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyriphos	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos (50 g)
			PQL	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			
Sample ID	Depth	Material Type	Sampled Date	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	-	-	-
On-Site Samples																						
BH1	0.4-0.5	Fill	19/12/2019	<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	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	3.0-3.1	Sand (pos. fill)	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	3.9-4.0	Sand (pos. fill)	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH2	0.1-0.2	Fill	19/12/2019	<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	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH2	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	0.4-0.5	Fill	18/12/2019	<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	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	1.9-2.0	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	5.5-5.6	Sand	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	0.4-0.5	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	2.4-2.5	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	3.9 - 4m	Sand	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	0-0.1	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	2.9 - 3m	Sand (pos. fill)	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	3.9 - 4m	Sand (pos. fill)	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BD1/18122019	0.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BD2/19122019	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
Off-Site Samples																						
BH3	0.9-1.0	Fill	20/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	1.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	1.9-2.0	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	2.4-2.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance | EIL/ESL exceedance | HIL/HSL and EIL/ESL exceedance | ML exceedance | ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C (Recreational / Open Space), HSL A/B (Residential / Low - High Density), DC HSL B (Direct contact HSL C Recreational / Open Space)
EIL/ESL	NEPC, Schedule B1 - EIL UR/POS (Urban Residential and Public Open Space), ESL UR/POS (Urban Residential and Public Open Space)
ML	NEPC, Schedule B1 - ML R/P/POS (Residential, Parkland and Public Open Space)
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Table H2: Summary Acid Sulfate Soil Results

Sample ID	Sample Depth (m)	Summary Sample Description (refer to attached logs, Appendix G)	Date	Screening Resullts				Chromium Reducible Sulfur Results	
				pH_f	pH_{fox}	Change (pH_f-pH_{fox})	Strength of Reaction	Net Acidity (mol H+/tonne)	Chromium Reducible Sulfur (%w/w)
ASSMAC Action Criteria (Stone, Ahern and Blunden 1998)				≤4 [1] or >4 and <5.5 [2]	<3 [2] or 3 – 4 [2]	> 1 [2]	-	18 [3]	0.03 [3]
BH1	0.4-0.5	Fill, pale gre-brown sand and gravel	19/12/2019	5.6	4.9	0.7	Low reaction	-	-
BH1	0.9-1	Fill, pale gre-brown sand and gravel	19/12/2019	7.8	6.2	1.6	Low reaction	-	-
BH1	1.5-1.6	Fill, light brown sand	19/12/2019	7.7	5.6	2.1	Low reaction	-	-
BH1	1.9-2	Fill, light brown sand	19/12/2019	8.5	6.1	2.4	Low reaction	-	-
BH1	3-3.1	Brown sand (possible fill)	19/12/2019	7.8	4	3.8	Medium reaction	-	-
BH1	3.9-4	Dark grey clayey sand, wet (possible fill)	19/12/2019	7.6	5.1	2.5	Medium reaction	-	-
BH1	4-4.45	Dark grey clayey sand, wet (possible fill)	19/12/2019	5.9	3.3	2.6	High reaction	**20**	0.02
BH1	5.5-5.95	Dark grey clayey sand, wet (possible fill)	19/12/2019	6.7	3.2	3.5	Low reaction	11	0.02
BH1	7-7.45	Grey sand	19/12/2019	6.5	2.7	3.8	Low reaction	17	**0.03**
BH1	8.5-8.95	Grey sand	19/12/2019	7.9	7	0.9	Low reaction	-	-
BH1	10-10.45	Grey sand	19/12/2019	7	4.8	2.2	Low reaction	**-**	-
BH1	11.5-11.95	Brown clay with sand	19/12/2019	5.6	3.1	2.5	Low reaction	**26**	<0.005
BH2	0.4-0.5	Fill, pale brown sand	19/12/2019	6.8	4.9	1.9	High reaction	-	-
BH2	0.9-1	Fill, sandy gravel with clay	19/12/2019	7.7	6.3	1.4	Low reaction	-	-
BH2	1.9-2	Fill, sandy gravel with clay	19/12/2019	8	5.3	2.7	Low reaction	-	-
BH2	2.5-2.95	Dark grey clayey sand, wet (possible fill)	19/12/2019	6.5	1.9	4.6	High reaction	**130**	**0.21**
BH2	4-4.45	Pale grey to grey sand	19/12/2019	6.6	2	4.6	Low reaction	17	**0.03**
BH2	7-7.45	Pale grey brown sand	19/12/2019	7	5.3	1.7	Low reaction	-	-
BH2	8.5-8.95	Pale grey brown sand	19/12/2019	7.4	5.8	1.6	Low reaction	-	-
BH2	10-10.45	Pale grey brown sand	19/12/2019	7.1	5.8	1.3	Low reaction	-	-
BH6	2.4-2.5	Fill, grey to brown silty sand with clay	1/15/2020	8.3	6.7	1.6	High reaction	<5	<0.005
BH6	3.9-4.0	Dark grey and pale grey sand, trace silt	1/15/2020	8.5	6.6	1.9	Medium reaction	-	-
BH6	4-4.45	Dark grey and pale grey sand, trace silt	1/15/2020	7.9	6.3	1.6	Low reaction	-	-
BH7	1.4-1.5	Fill, pale grey sand	1/15/2020	8.3	7.1	1.2	High reaction	-	-
BH7	2.9-3.0	Brown to pale grey sand trace silt and clay (possible fill)	1/15/2020	7.5	6.5	1	Medium reaction	-	-
BH7	5-5.1	Dark brown to brown silty sand, wet	1/15/2020	7.7	6.6	1.1	High reaction	<5	<0.005

Notes:
pHf - non-oxidised pH
pHfox - oxidised pH
1 - Indicative value only for Actual Acid Sulfate Soil
2 - Indicative value only for Potential Acid Sulfate Soil
3 - Action criteria for coarse textured soils

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Table H3: Summary Waste Classification Assessment

			Metals							TRH		BTEX						PAH			Phenol	OCP		OPP	PCB	Asbestos		
			Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	C10-C36 recoverable hydrocarbons	Benzene	Toluene	Ethylbenzene	m+p-Xylene	o-Xylene	Xylenes (total)	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAHs	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/Kg	Trace Analysis	Total Asbestos
		PQL	4	0.4	1	1	0.03	0.1	1	25	50	0.2	0.5	1	2	1	3	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1			
Sample ID	Depth	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-
On-Site Samples																												
BH1	0.4-0.5	19/12/2019	<4	0.5	3	270	4.3	0.2	29	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.74	NT	9.9	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BH1	1.9-2.0	19/12/2019	<4	<0.4	4	93	NT	0.1	2	<25	260	<0.2	<0.5	<1	<2	<1	<3	4.8	<0.001	53	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH1	3.0-3.1	19/12/2019	<4	<0.4	7	120	0.34	0.4	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	3.7	<0.001	37	NT	NT	NT	NT	NT	NT	NT	NT
BH1	3.9-4.0	19/12/2019	<4	<0.4	6	120	0.32	0.3	2	<25	280	<0.2	<0.5	<1	<2	<1	<3	4.9	<0.001	54	NT	NT	NT	NT	NT	NT	NT	NT
BH2	0.1-0.2	19/12/2019	<4	<0.4	6	37	NT	0.1	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.4	NT	4	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BH2	1.9-2.0	19/12/2019	<4	<0.4	6	130	0.2	0.5	3	<25	290	<0.2	<0.5	<1	<2	<1	<3	4.6	<0.001	49	NT	NT	NT	NT	NT	NAD	NAD	NAD
BD2/19122019	0m	19/12/2019	<4	<0.4	7	130	NT	0.4	2	<25	250	<0.2	<0.5	<1	<2	<1	<3	4.4	NT	50	NT	NT	NT	NT	NT	NT	NT	NT
BH4	0.4-0.5	18/12/2019	5	<0.4	10	370	1.4	0.7	5	<25	370	<0.2	<0.5	<1	<2	<1	<3	4.9	<0.001	54	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BD1/18122019	0m	18/12/2019	4	<0.4	11	230	NT	0.6	7	<25	370	<0.2	<0.5	<1	<2	<1	<3	3.2	NT	35	NT	NT	NT	NT	NT	NT	NT	NT
BH4	1.9-2.0	18/12/2019	5	<0.4	32	290	1.4	0.6	4	<25	420	<0.2	<0.5	<1	<2	<1	<3	5.5	<0.001	61	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH4	5.5-5.6	18/12/2019	<4	<0.4	12	76	NT	<0.1	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.79	NT	11	NT	NT	NT	NT	NT	NT	NT	NT
BH6	0.4-0.5	15/01/2020	<4	<0.4	10	130	0.2	0.3	2	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1	<0.001	18	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH6	2.4-2.5	15/01/2020	<4	<0.4	10	380	1.6	0.5	2	<25	420	<0.2	<0.5	<1	<2	<1	<3	7.7	<0.001	110	NT	NT	NT	NT	NT	NT	NT	NT
BH6	3.9 - 4m	15/01/2020	<4	<0.4	2	88	NT	0.1	<1	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.78	NT	10	NT	NT	NT	NT	NT	NT	NT	NT
BH7	0-0.1	15/01/2020	11	<0.4	13	120	<0.03	1.3	11	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.3	<0.001	14	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH7	2.9 - 3m	15/01/2020	<4	<0.4	6	260	0.72	0.6	2	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.8	<0.001	26	NT	NT	NT	NT	NT	NT	NT	NT
BH7	3.9 - 4m	15/01/2020	<4	<0.4	<1	90	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<2	<1	<3	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	19/12/2019	<4	<0.4	5	500	NT	0.2	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	18/12/2019	6	0.6	7	340	NT	0.7	3	NT	140	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Off-Site Samples																												
BH3	0.9-1.0	20/12/2019	14	<0.4	7	29	NT	0.2	7	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.3	<0.001	14	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH5	1.4-1.5	18/12/2019	9	0.7	7	410	NT	0.5	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.5	NT	16	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH5	1.9-2.0	18/12/2019	6	0.4	10	2300	13	0.5	3	<25	260	<0.2	<0.5	<1	<2	<1	<3	4.1	<0.001	47	NT	NT	NT	NT	NT	NT	NT	NT
BH5	2.4-2.5	18/12/2019	<4	<0.4	8	340	4.4	0.4	3	<25	160	<0.2	<0.5	<1	<2	<1	<3	5.9	<0.001	67	NT	NT	NT	NT	NT	NT	NT	NT

Waste Classification Criteria																											
CT1 (mg/kg)	100	20	100	100	N/A	4	40	650	10000	10	288	600	N/A	N/A	1000	0.8	N/A	200	288	60	50	4	50	N/A	N/A	N/A
SCC1 (mg/kg)	500	100	1900	1500	N/A	50	1050	650	10000	18	518	1080	N/A	N/A	1800	10	N/A	200	518	108	50	7.5	50	N/A	N/A	N/A
TCLP1 (mg/L)	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CT2 (mg/kg)	400	80	400	400	N/A	16	160	2600	40000	40	1152	2400	N/A	N/A	4000	3.2	N/A	800	1152	240	50	16	50	N/A	N/A	N/A
SCC2(mg/kg)	2000	400	7600	6000	N/A	200	4200	2600	40000	72	2073	4320	N/A	N/A	7200	23	N/A	800	2073	432	50	30	50	N/A	N/A	N/A
TCLP2 (mg/L)	N/A	N/A	N/A	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

NT = Not tested NC = No criteria AD = Asbestos detected NAD = No asbestos detected

Notes:

*	QA/QC replicate of sample listed directly below the primary sample
**	Total chromium used as initial screen for chromium(VI).
***	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
****	Criteria for scheduled chemicals used as an initial screen
*****	Criteria for Chlorpyrifos used as initial screen
PQL	Practical quantitation limit
CT1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General sol
SCC1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
TCLP1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
CT2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted s
SCC2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
TCLP2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when

Appendix I Proposed Development Plans

DRAWING LIST

DWG No	FACILITY	DWG NAME
A0000	WEIGALL SPORTS COMPLEX + CARPARK	COVER SHEET
A0001	WEIGALL SPORTS COMPLEX	PHOTOMONTAGE NEILD AVENUE - VIEW 1
A0002	WEIGALL SPORTS COMPLEX	PHOTOMONTAGE NEILD AVENUE - VIEW 2
A0003	WEIGALL SPORTS COMPLEX	PHOTOMONTAGE VIALOUX ST - VIEW 1
A0004	WEIGALL CARPARK	PHOTOMONTAGE ALMA ST - VIEW 1
A0005	WEIGALL SPORTS COMPLEX	PHOTOMONTAGE OF WEIGALL SPORTS COMPLEX - VIEW 1
A0006	WEIGALL SPORTS COMPLEX + CARPARK	PHOTOMONTAGE OF WEIGALL SPORTS COMPLEX + CARPARK - VIEW 1
A1000	WEIGALL SPORTS COMPLEX + CARPARK	LOCALITY PLAN
A1001	WEIGALL SPORTS COMPLEX + CARPARK	SITE PLAN
A1100	WEIGALL SPORTS COMPLEX + CARPARK	DEMOLITION PLAN
A2100	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT - BASEMENT
A2101	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT - GROUND
A2102	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT- MEZZANINE
A2103	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT - FIRST
A2104	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT - SECOND
A2105	WEIGALL SPORTS COMPLEX	GENERAL ARRANGMENT - ROOF
A2110	WEIGALL CARPARK	GENERAL ARRANGMENT - LOWER GROUND + UPPER GROUND
A2111	WEIGALL CARPARK	GENERAL ARRANGMENT- LOWER FIRST + UPPER FIRST
A3100	WEIGALL SPORTS COMPLEX	ELEVATIONS - SHEET 1
A3101	WEIGALL SPORTS COMPLEX	ELEVATIONS - SHEET 2
A3110	WEIGALL CARPARK	ELEVATIONS - SHEET 3
A3111	WEIGALL CARPARK	ELEVATIONS - SHEET 4
A3200	WEIGALL SPORTS COMPLEX	SECTIONS - SHEET 1
A3201	WEIGALL SPORTS COMPLEX	SECTIONS - SHEET 2
A3210	WEIGALL CARPARK	SECTIONS - SHEET 3
A3211	WEIGALL CARPARK	SECTIONS - SHEET 4
A4100	WEIGALL SPORTS COMPLEX	WALL SECTIONS
A9100	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-EXISTING CONDITION
A9101	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-EXISTING CONDITION
A9102	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-PROPOSED
A9103	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-PROPOSED
A9200	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES SUN EYE DIAGRAMS WINTER SOLSTICE JUNE 21-EXISTING CONDITION
A9201	WEIGALL SPORTS COMPLEX	SOLAR ACCESS STUDIES SUN EYE DIAGRAMS WINTER SOLSTICE JUNE 21-PROPOSED

SSDA

SGS Weigall Sports Complex

6 Neild Ave, Darlinghurst

Revisions

No.	Date	Description	Checked	Approved
1	10/06/2020	ISSUED TO AUTHORITIES FOR INFORMATION	ADC	LC
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Key

Client
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ABN 53 003 782 250

Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
COVER SHEET

Sheet Status
NOT FOR CONSTRUCTION

Scale

Drawing No.
A0000

Issue
3

PLOT DATE & TIME: 3/08/2020 8:10:16 PM
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
LOCALITY PLAN
Sheet Status
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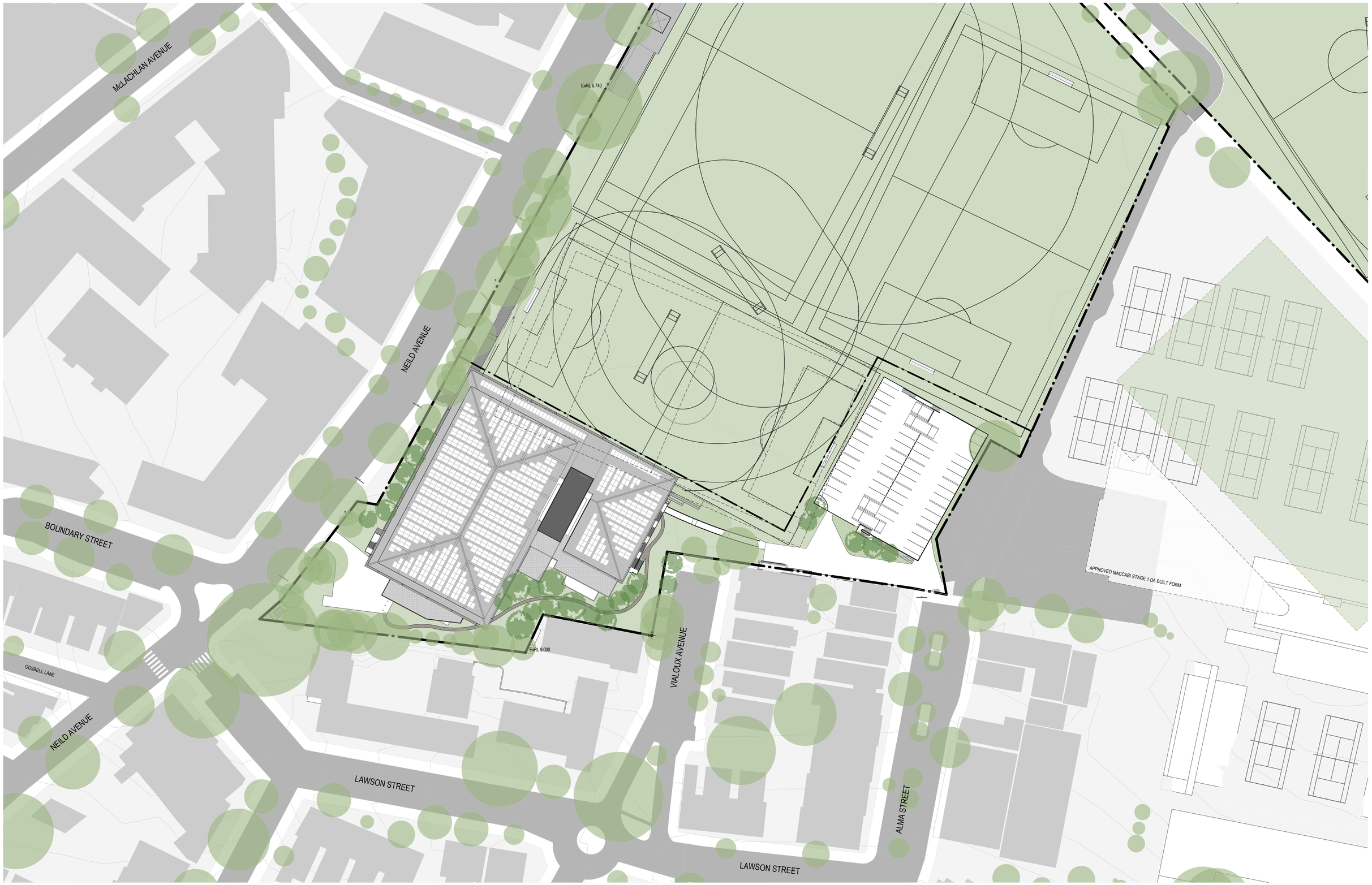
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Drawing No.
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst

Proj. No. 19086

Drawing Title
SITE PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 500 @A1

Drawing No.
A1001

Issue
4

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ELEMENTS TO BE DEMOLISHED

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst

Proj. No. 19086

Drawing Title
DEMOLITION PLAN

Sheet Status
NOT FOR CONSTRUCTION

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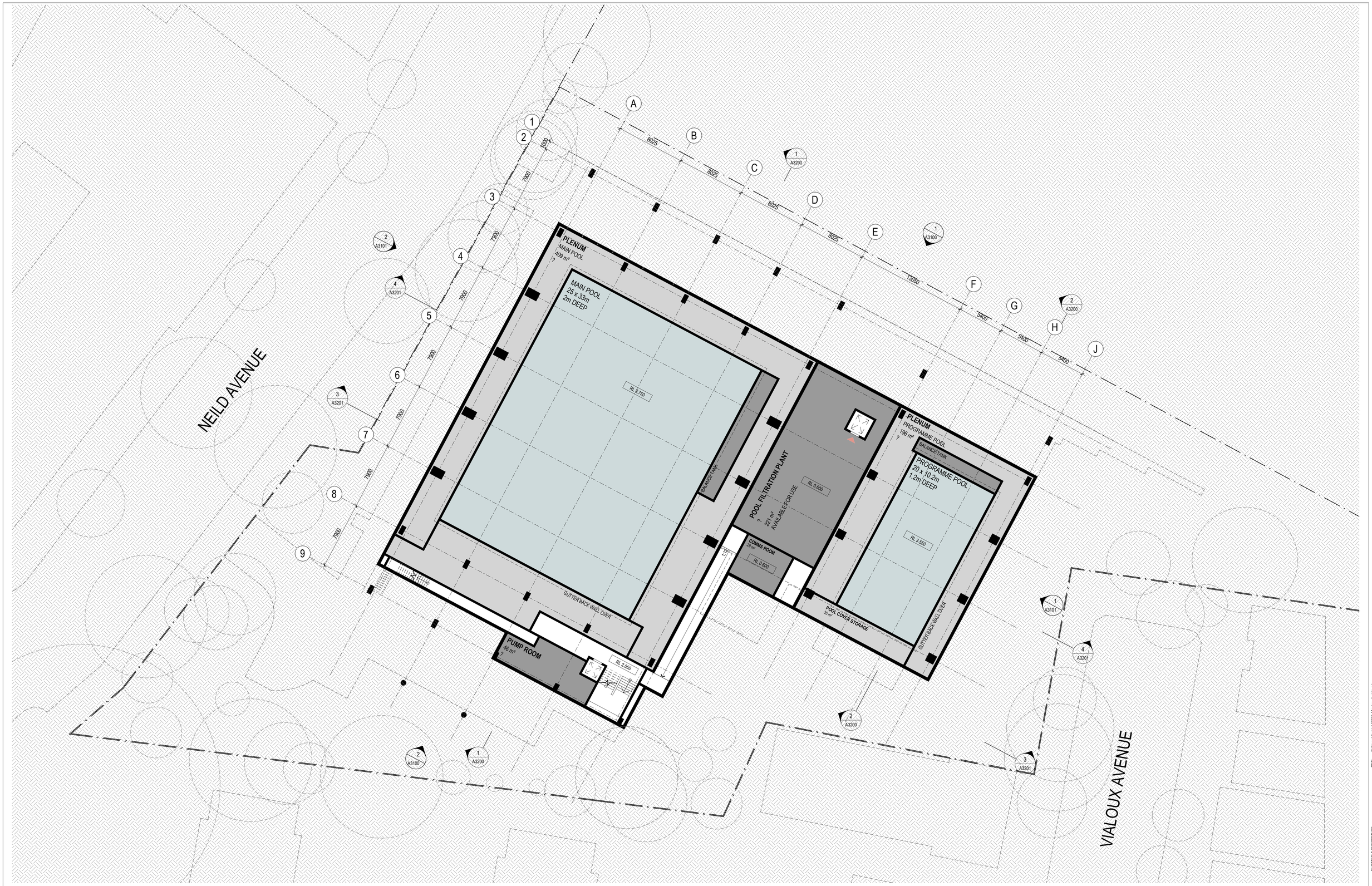
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Issue
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT - BASEMENT

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
A2100

Issue
8

DRAFT

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NEILD AVENUE

VIALOUX AVENUE

AQUATIC HALL 01
1415 m²

MAIN POOL
25 x 33m
2m DEEP

RL 2.750

RL 4.750

TERRACE / ASSEMBLY
RL 6.200

SECURE EXTERNAL ENTRY FOYER
RL 6.230

UP

DN

RECEPTION

FOYER
RL 4.750

WET CHANGE
52 m²

WET CHANGE
52 m²

AQUATIC HALL 02
461 m²

BOH / WC
25 m²

PROGRAMME POOL
20 x 10.2m
1.2m DEEP

RL 3.550

LANDSCAPED SPECTATOR TERRACES

OFFICE
7 m²

STORAGE
41 m²

MSR
33 m²

OFFICE
9 m²

ENTRY
9 m²

REFUSE
14 m²

WET CHANGE
52 m²

WET CHANGE
52 m²

WC
7.0m²

OFFICE
9 m²

STORAGE
23 m²

CARPARK
RL 6.900

RL 5.600

RL 6.480

RL 6.620

RL 3.600

RL 6.900

HARDSTAND EXTENT TBC

SUBSTATION LOCATION + ARRANGEMENT TBC

UPGRADE EXISTING BOUNDARY FENCE

STORMWATER EASEMENT OVER PERMEABLE PAVERS

GREEN WASTE ENCLOSURE

SUB

ExRL 6.060

ExRL 6.120

ExRL 6.245

ExRL 6.286

ExRL 6.410

ExRL 6.510

ExRL 6.938

LINE OF BUILDING OVER

8025 8025 8025 8025 5400 5400 5400

7900 7900 7900 7900 7900 7900

1 2 3 4 5 6 7 8 9

A B C D E F G H J

T117 T120 T122 T127 T128 T129 T30 T30B T30C T30E T33 T138 T139 T140 T141 T142 T143 T27 T28 T116 T115 T13 T14 T22 T23 T24

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst

Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT - GROUND

Scale
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Drawing No.
A2101

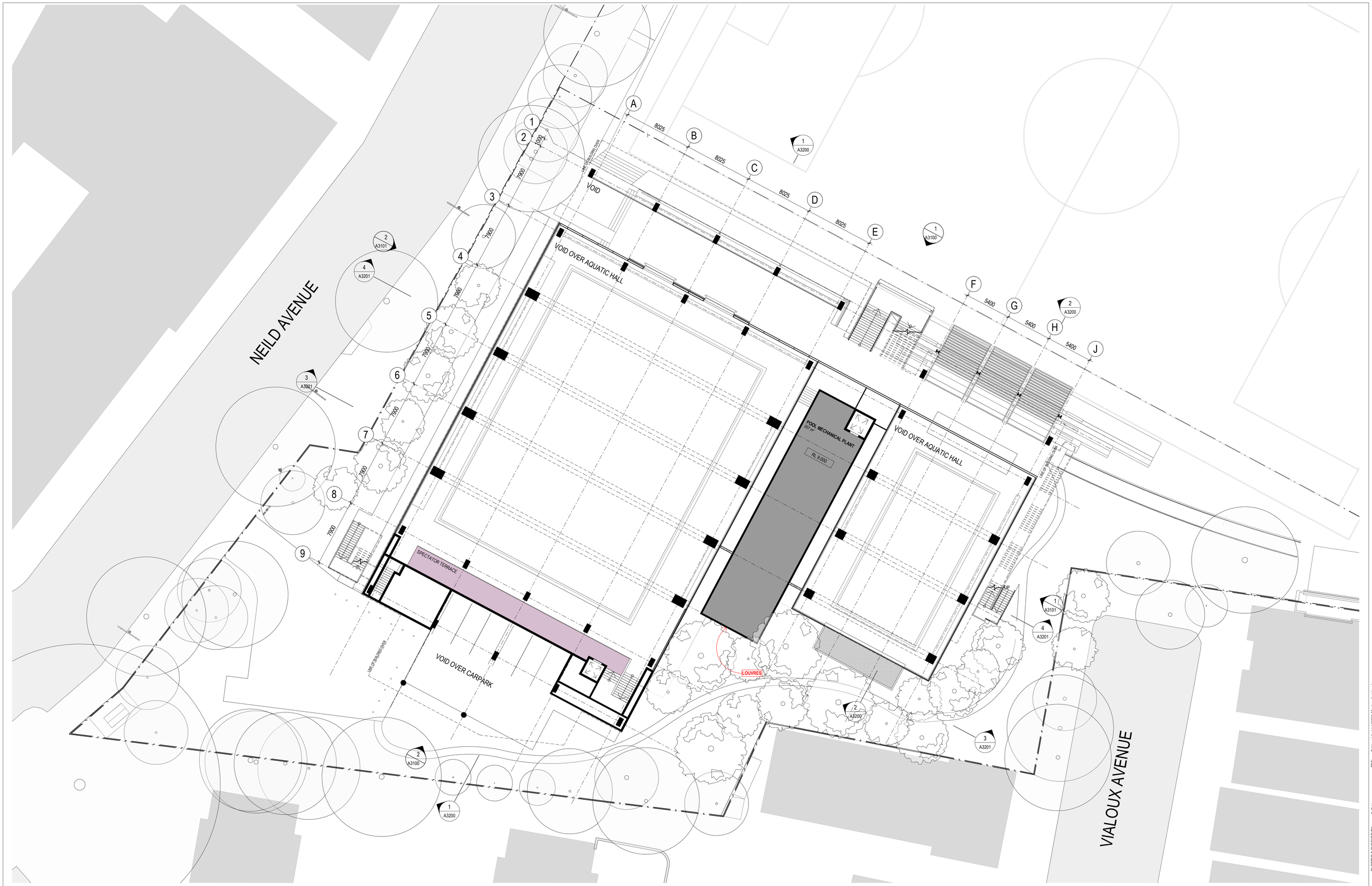
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Sheet Status
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SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT- MEZZANINE

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
A2102

Issue
8

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst

Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT - FIRST

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
A2103

Issue
7

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7	03/08/2020	95% DESIGN ISSUE	ADC	LC

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ABN 53 003 782 250

Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT - SECOND

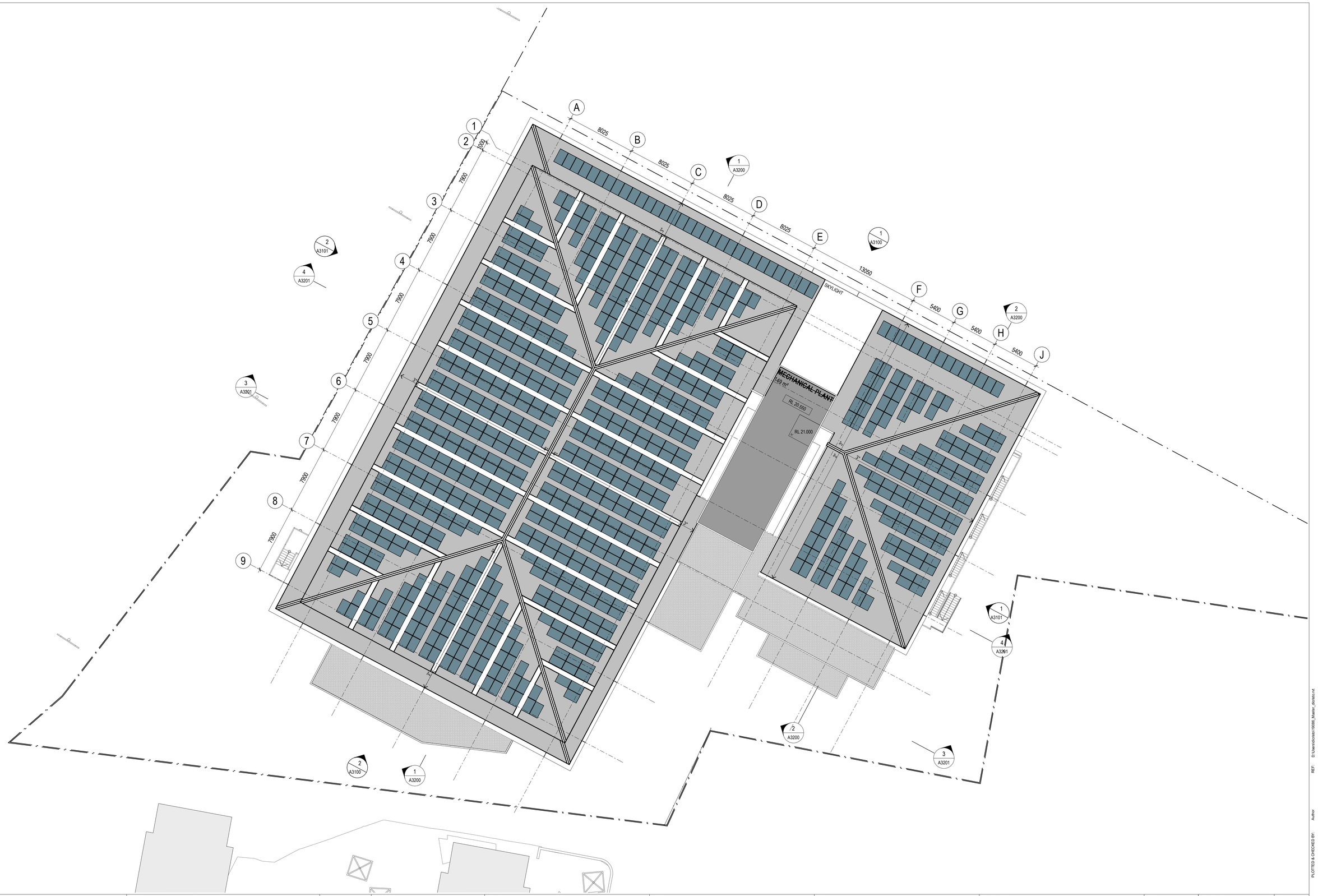
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
GENERAL ARRANGMENT - ROOF

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
A2105

Issue
7

DRAFT

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
GENERAL ARRANGMENT - LOWER GROUND + UPPER GROUND

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
A2110

Issue
4

DRAFT

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4	03/08/2020	95% DESIGN ISSUE	ADC	LC

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N

Client
Sydney Grammar School

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
GENERAL ARRANGMENT- LOWER FIRST + UPPER FIRST
Sheet Status
NOT FOR CONSTRUCTION

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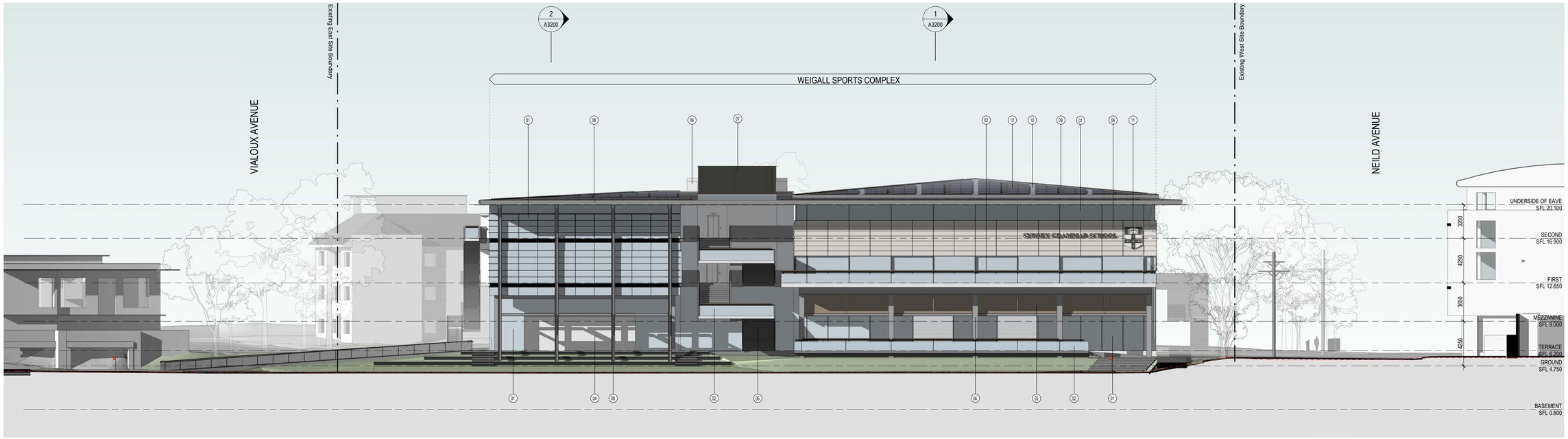
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Issue
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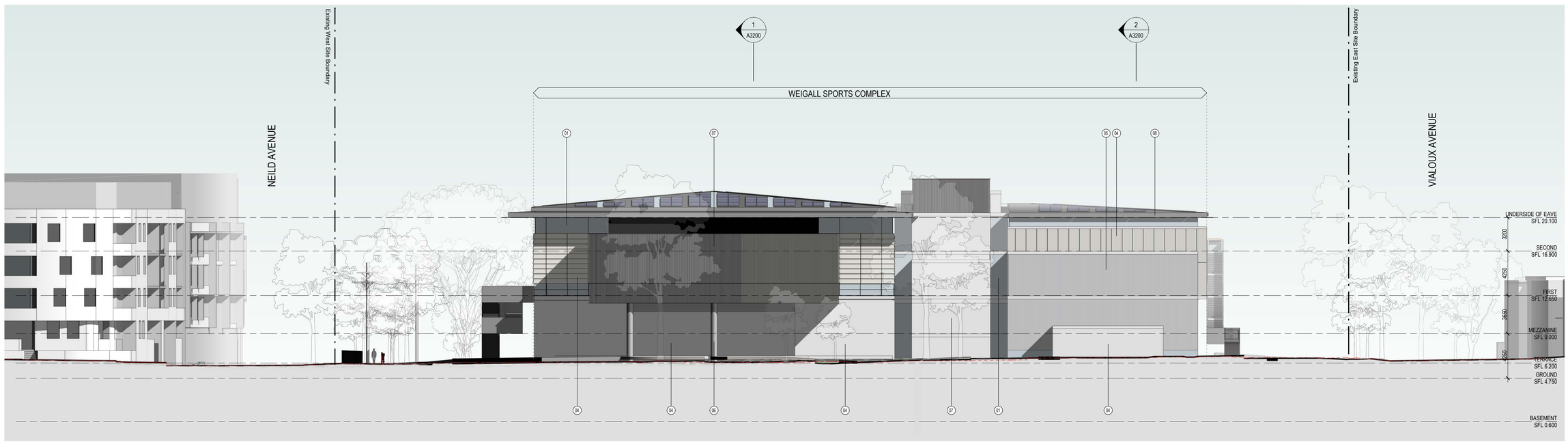
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1 Elevation - North



2 Elevation - South

MATERIAL LEGEND:

01 GLAZING	06 CONCRETE / MASONRY	11 SIGNAGE
02 BALUSTRADE	07 LOUVRES	12 PHOTOVOLTAIC ARRAY
03 OPERABLE SCREENS	08 STEELWORK	
04 SOLID WALL CLADDING	09 SOLID ROOF CLADDING	
05 SEMI-OPAQUE WALL CLADDING	10 SEMI-OPAQUE ROOF CLADDING	

Revisions

No.	Date	Description	Checked	Approved
2	14/05/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
3	26/05/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
4	10/06/2020	ISSUED TO AUTHORITIES FOR INFORMATION	ADC	LC
5	26/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
6	03/08/2020	95% DESIGN ISSUE	ADC	LC

Key

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
ELEVATIONS - SHEET 1

Sheet Status
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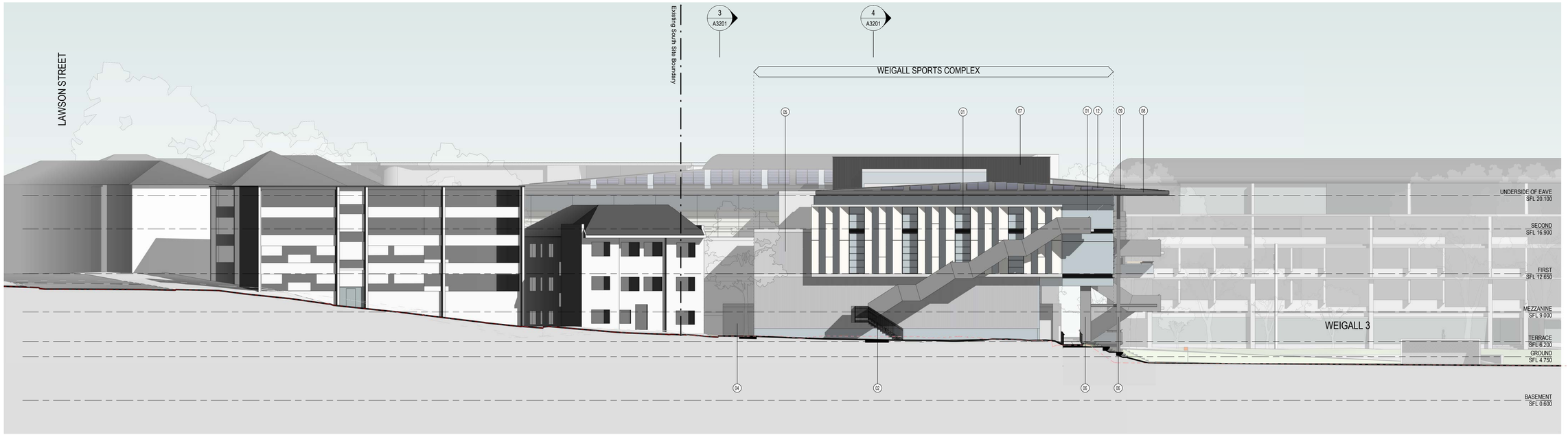
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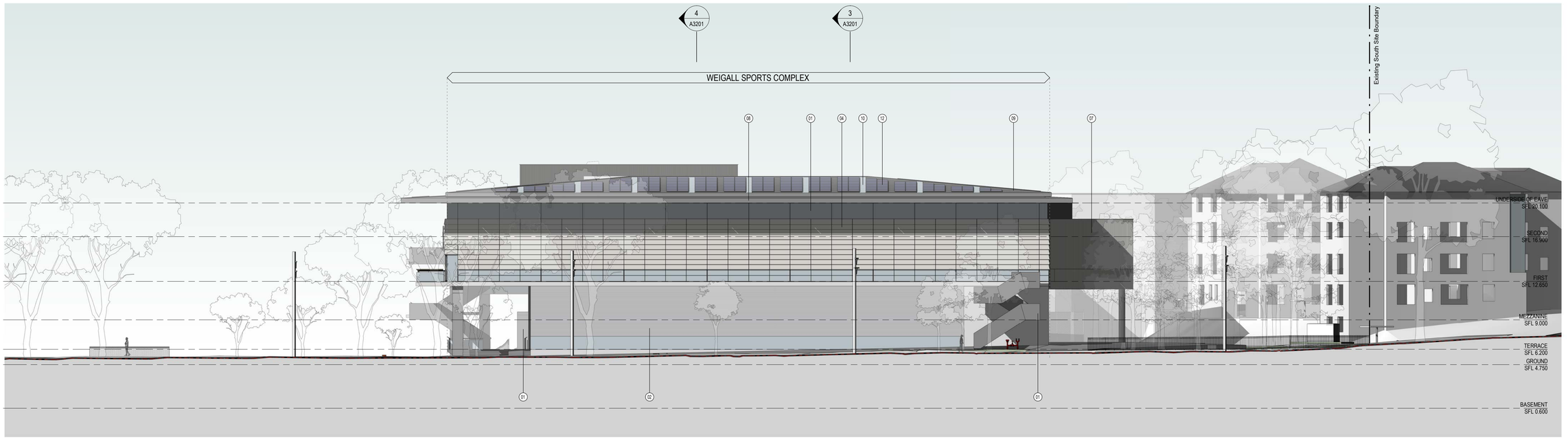
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1 Elevation - East



2 Elevation - West

MATERIAL LEGEND:

01 GLAZING	06 CONCRETE / MASONRY	11 SIGNAGE
02 BALUSTRADE	07 LOUVRES	12 PHOTOVOLTAIC ARRAY
03 OPERABLE SCREENS	08 STEELWORK	
04 SOLID WALL CLADDING	09 SOLID ROOF CLADDING	
05 SEMI-OPAQUE WALL CLADDING	10 SEMI-OPAQUE ROOF CLADDING	

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
ELEVATIONS - SHEET 2

Sheet Status
NOT FOR CONSTRUCTION

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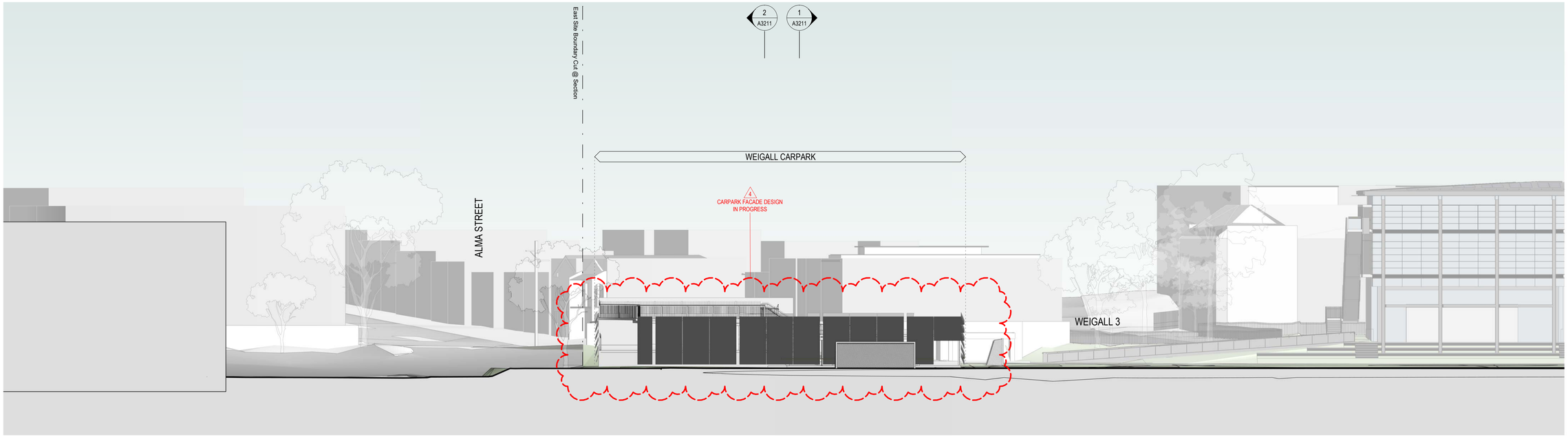
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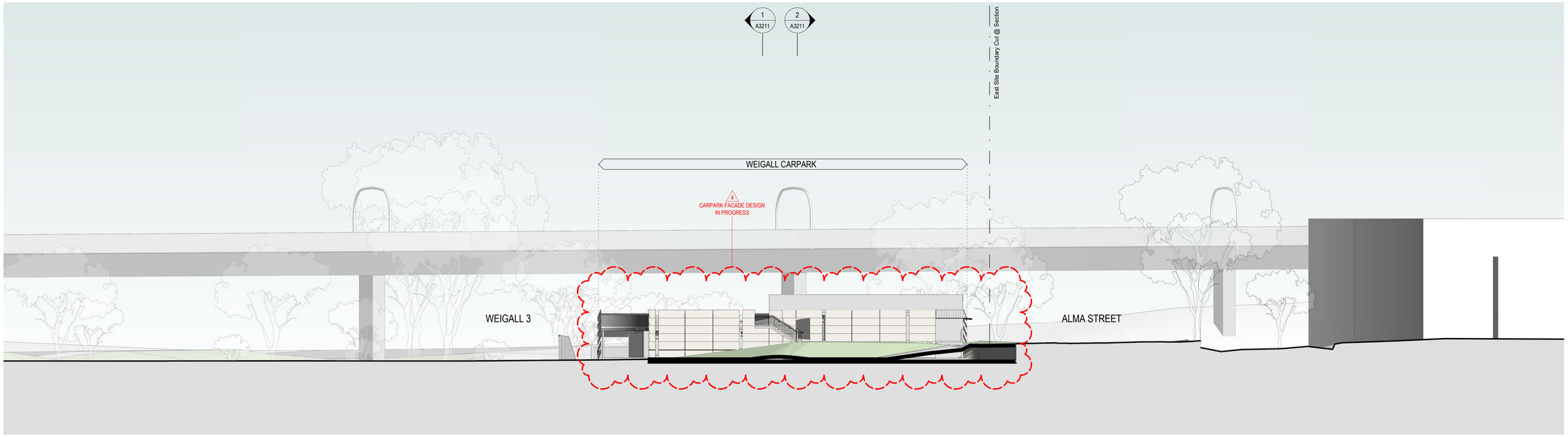
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1 Carpark Elevation- North



2 Carpark Elevation - South

Revisions				
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
ELEVATIONS - SHEET 3

Sheet Status
NOT FOR CONSTRUCTION

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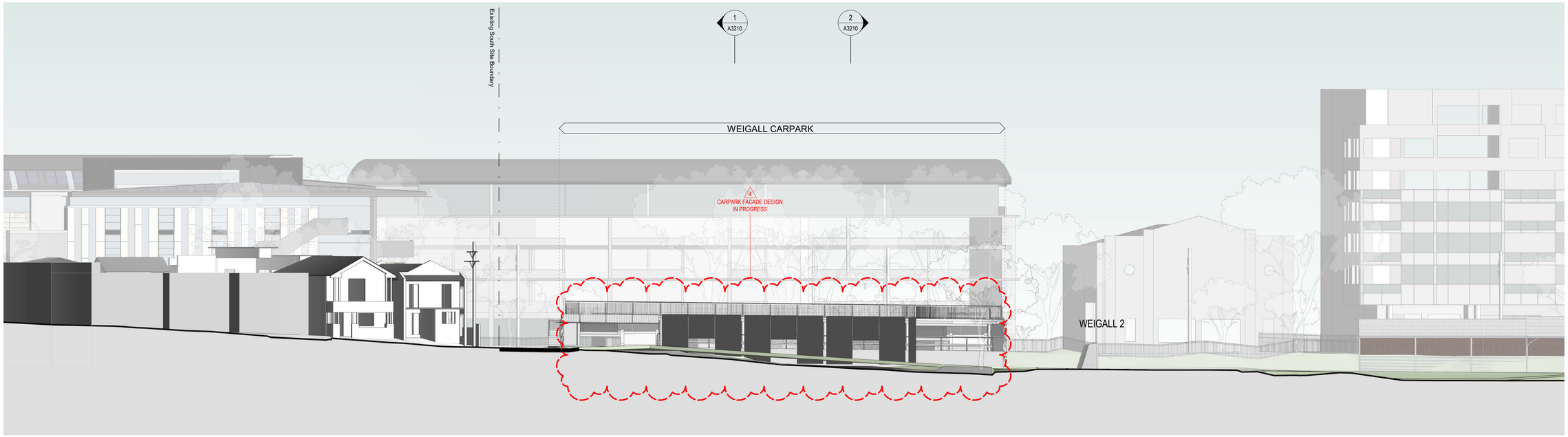
Drawing No.
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Issue
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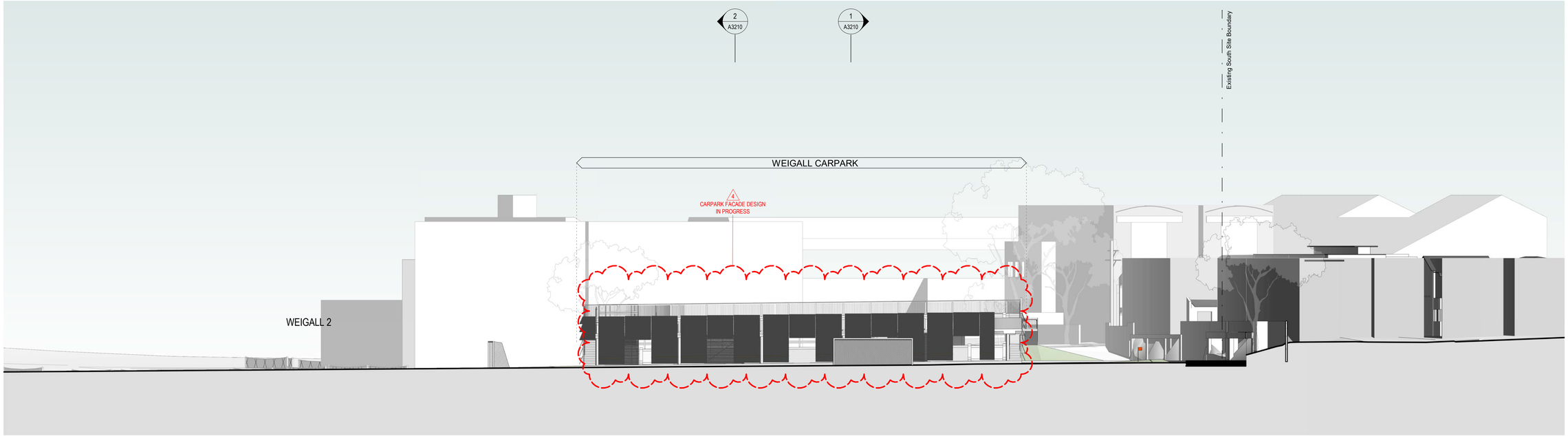
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1 Carpark Elevation - East



2 Carpark Elevation - West

Revisions

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1	03/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
ELEVATIONS - SHEET 4

Sheet Status
NOT FOR CONSTRUCTION

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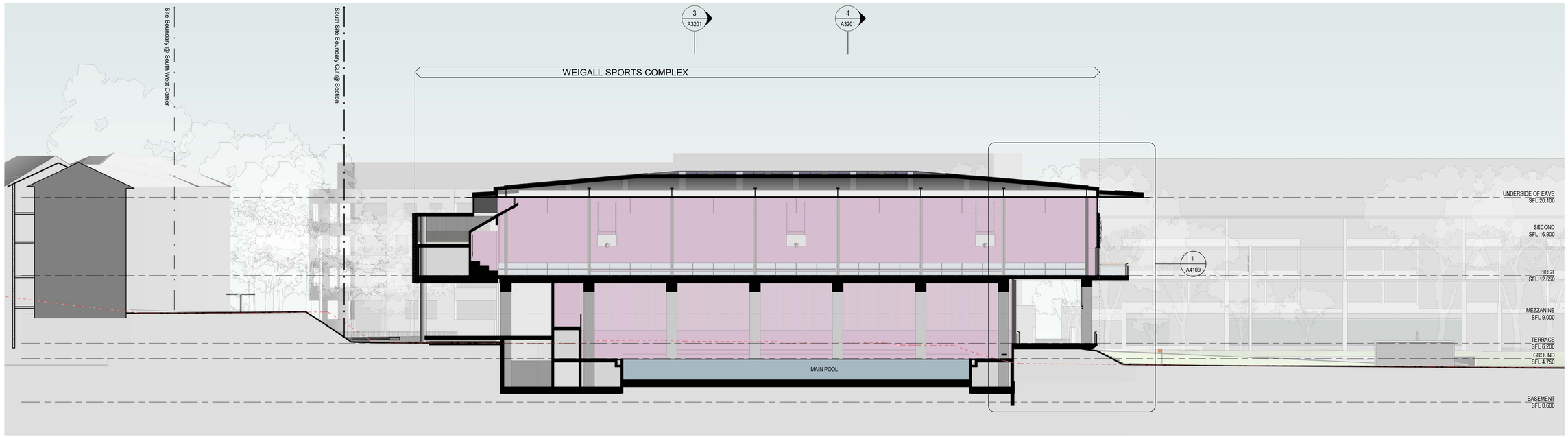
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Issue
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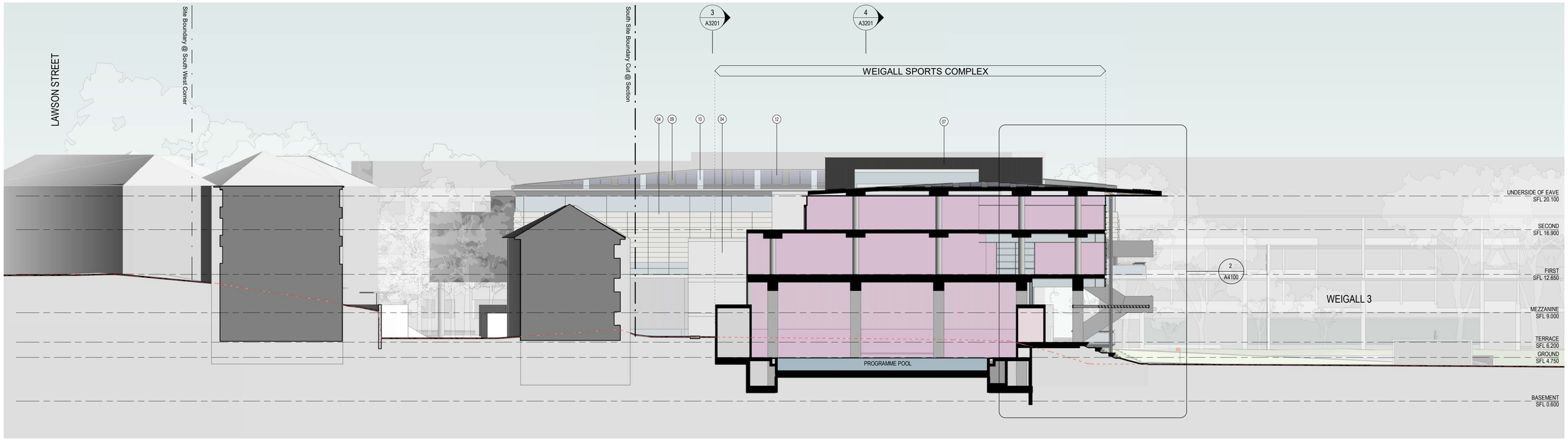
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1 SECTION 1



2 SECTION 2

Revisions				
No.	Date	Description	Checked	Approved
2	14/05/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
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5	26/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
6	03/08/2020	95% DESIGN ISSUE	ADC	LC

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ABN 53 003 782 250

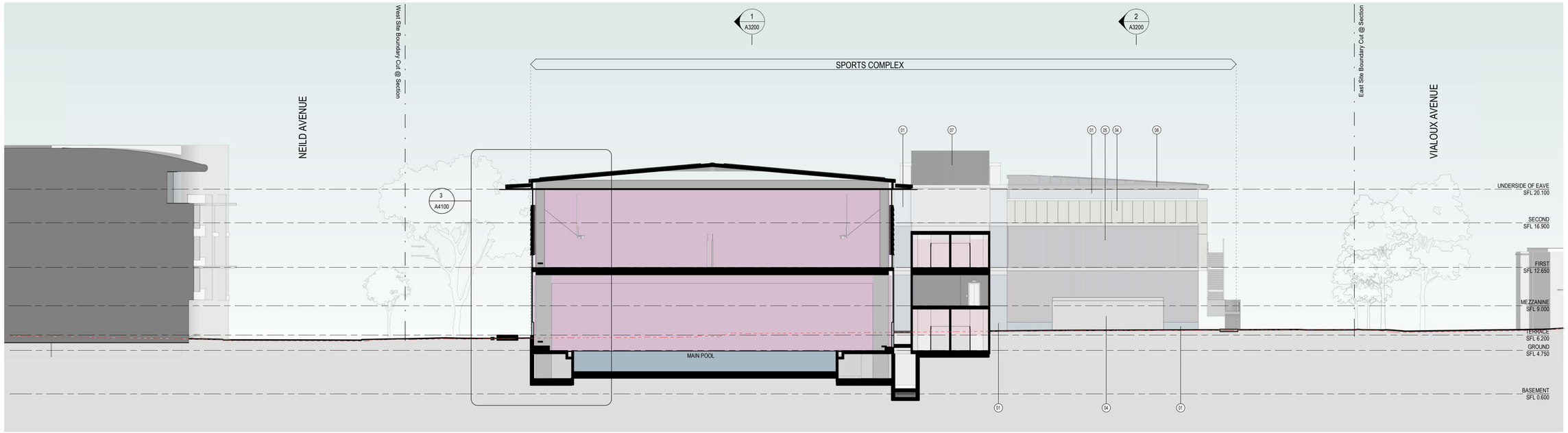
Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
SECTIONS - SHEET 1
Sheet Status
NOT FOR CONSTRUCTION

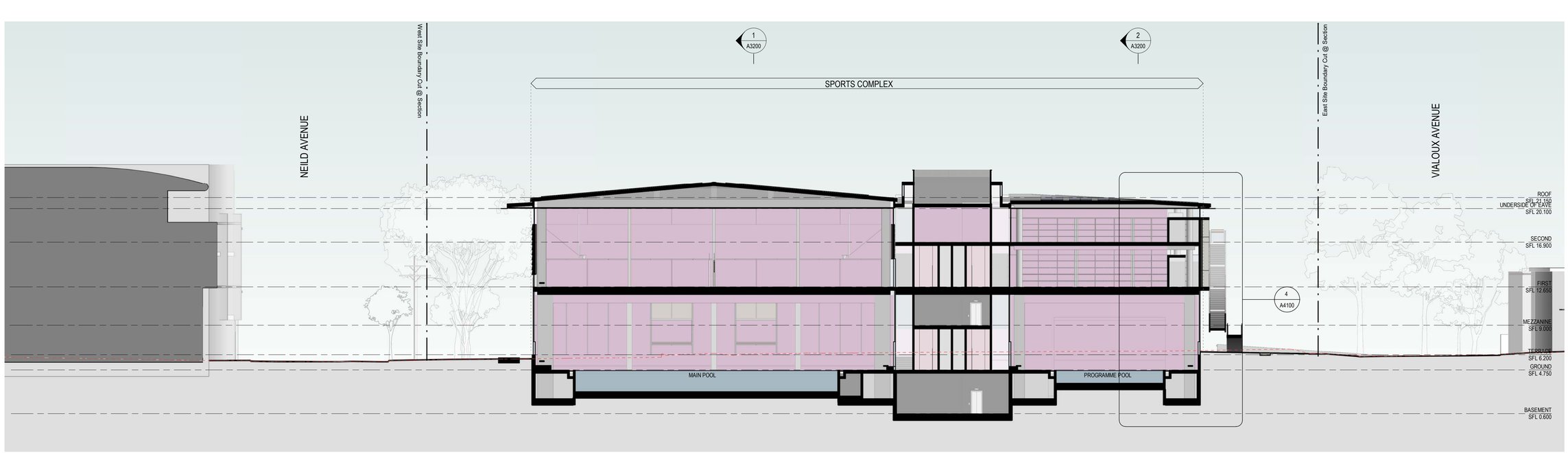
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Drawing No.
A3200
Issue
6
DRAFT

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3 SECTION 3



4 SECTION 4

Revisions

No.	Date	Description	Checked	Approved
2	14/05/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
3	26/05/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
4	10/06/2020	ISSUED TO AUTHORITIES FOR INFORMATION	ADC	LC
5	26/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
6	03/08/2020	95% DESIGN ISSUE	ADC	LC

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ABN 53 003 782 250

Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL SPORTS COMPLEX
SECTIONS - SHEET 2

Sheet Status
NOT FOR CONSTRUCTION

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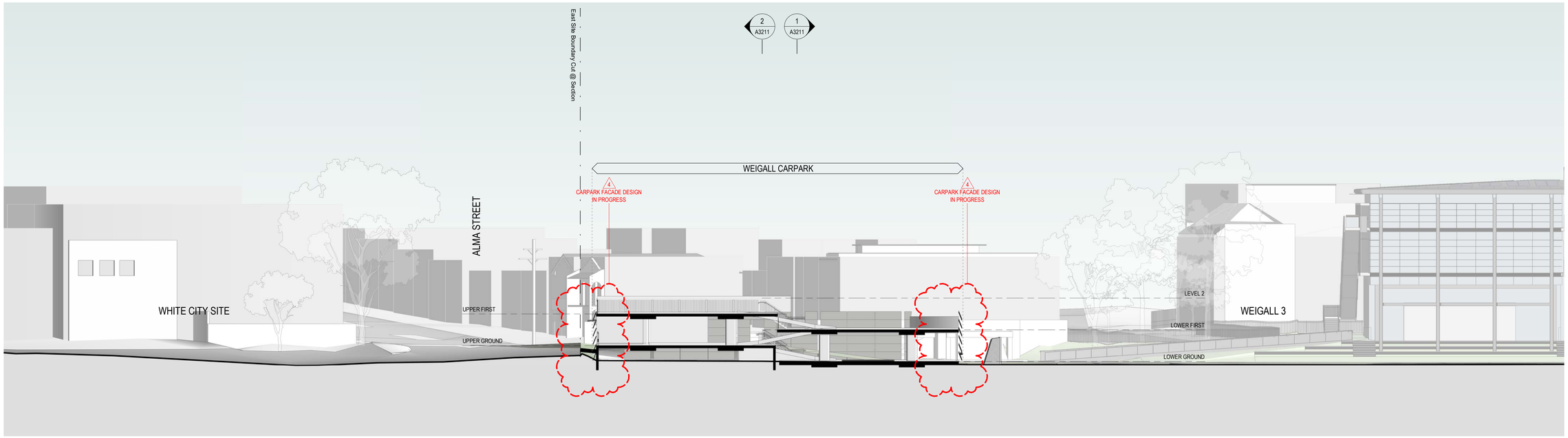
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Issue
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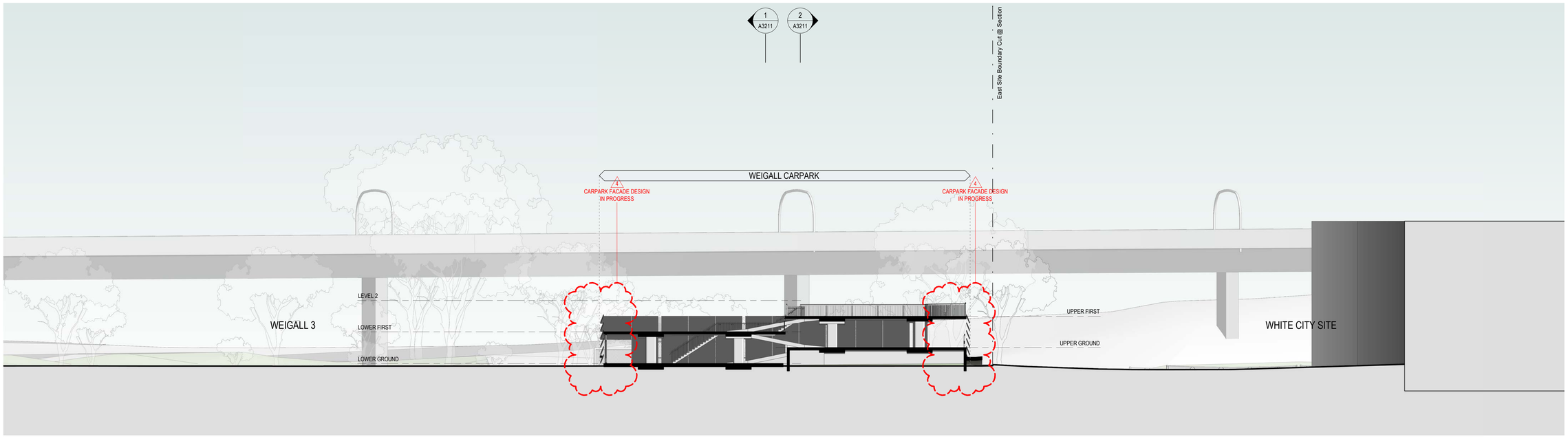
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1 Carpark Section 1



2 Carpark Section 2

Revisions

No.	Date	Description	Checked	Approved
1	03/06/2020	SSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
2	10/06/2020	ISSUED TO AUTHORITIES FOR INFORMATION	ADC	LC
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
SECTIONS - SHEET 3

Sheet Status
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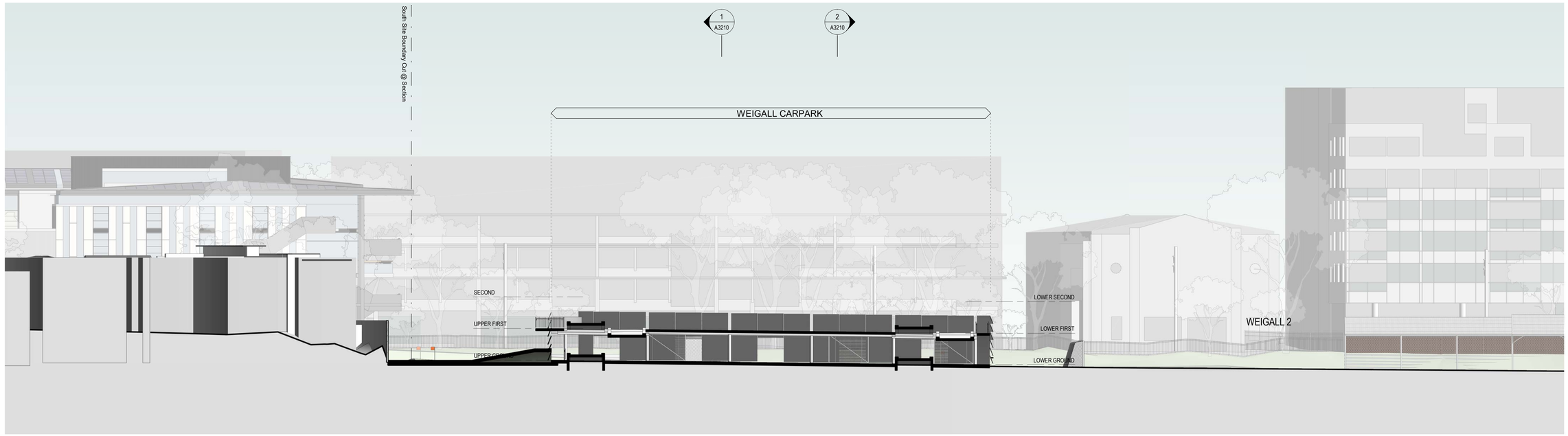
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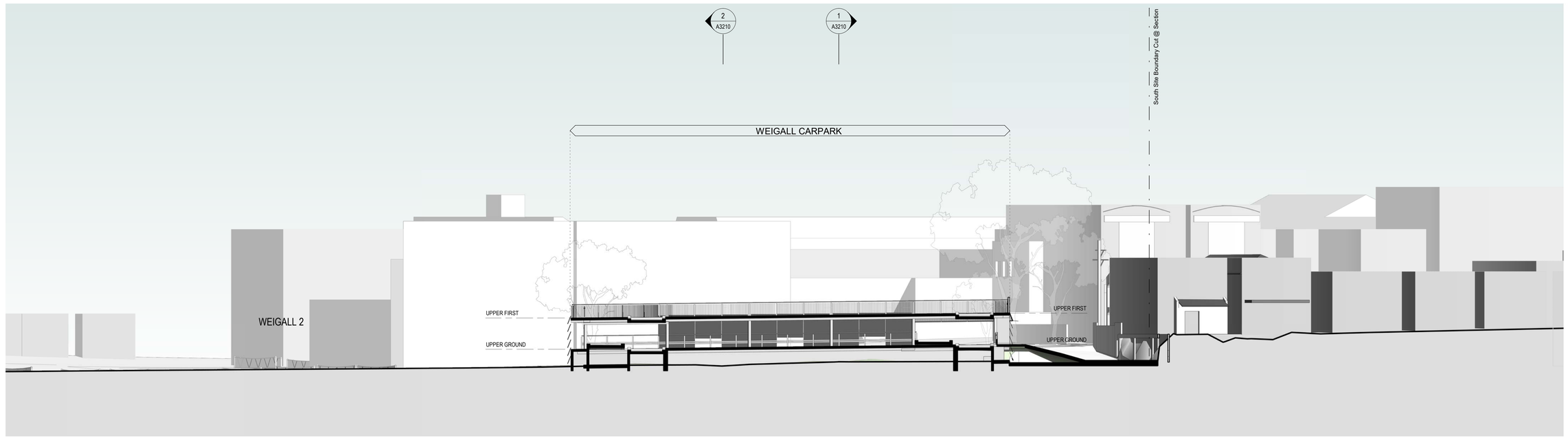
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1 Carpark Section 3



2 Carpark Section 4

Revisions				
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1	03/06/2020	SSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
WEIGALL CARPARK
SECTIONS - SHEET 4

Sheet Status
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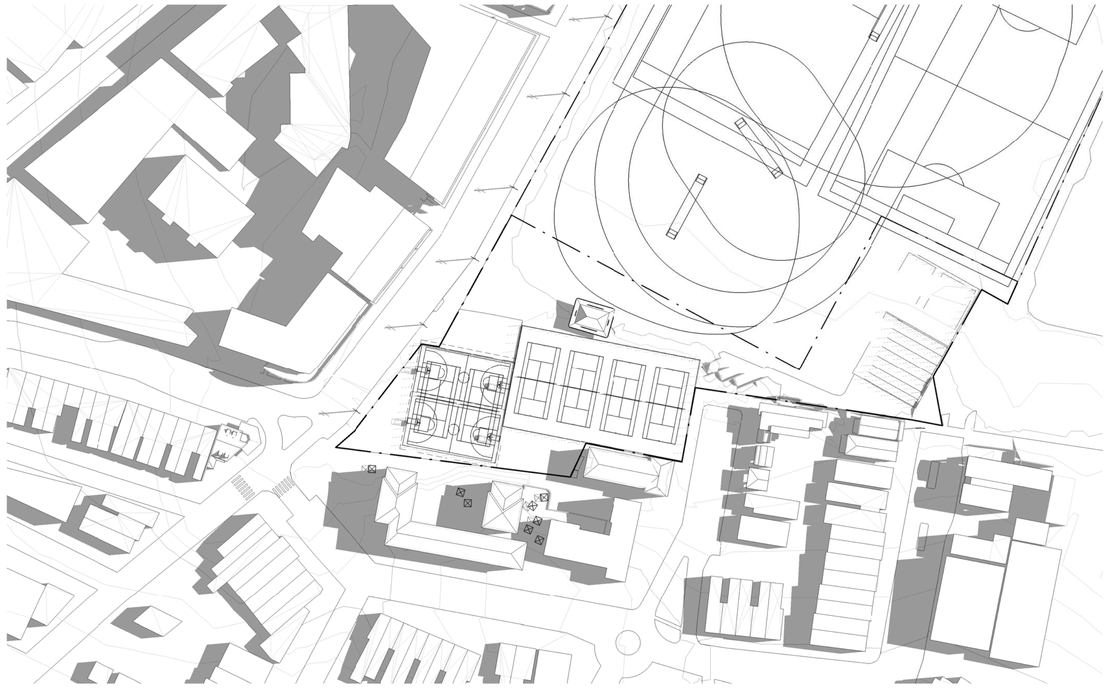
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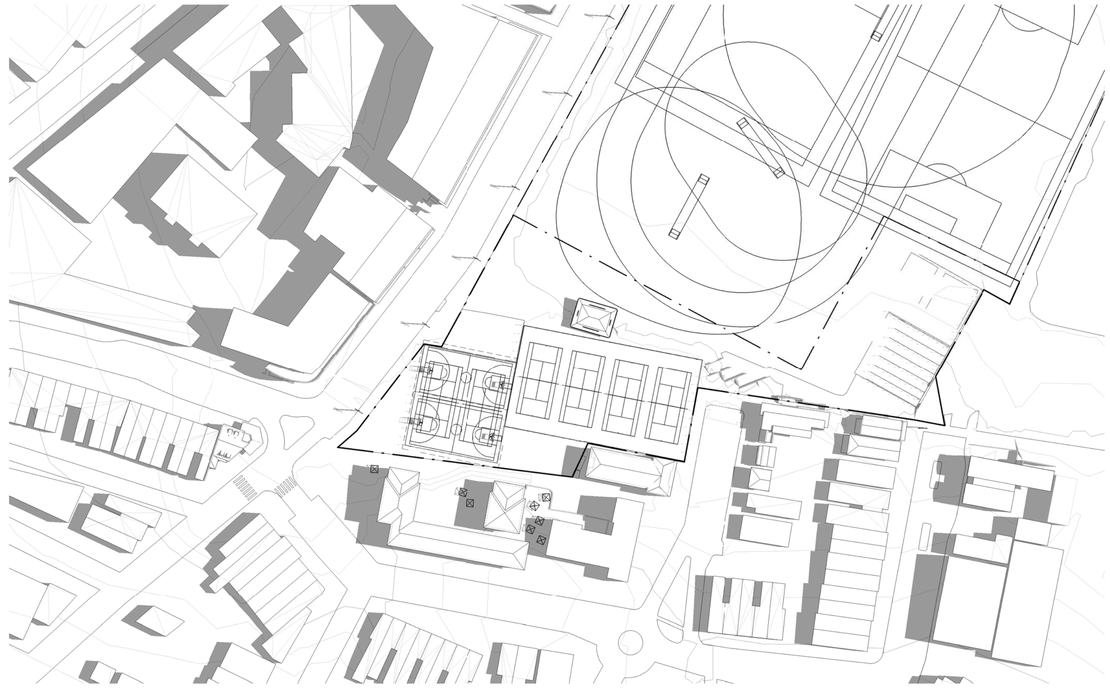
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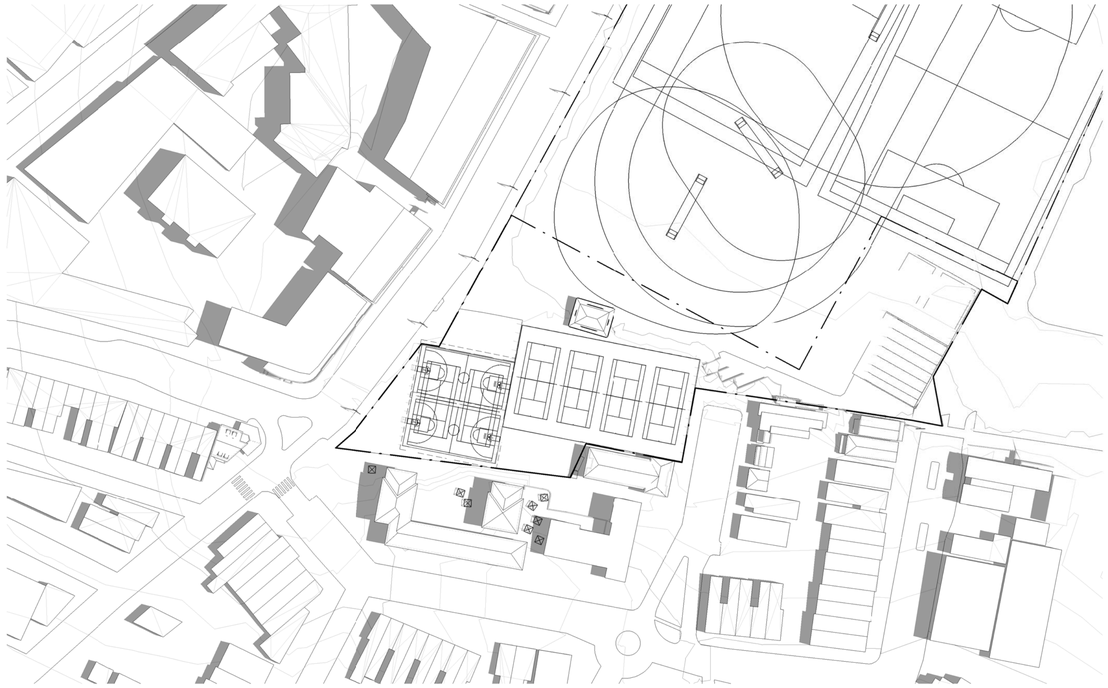
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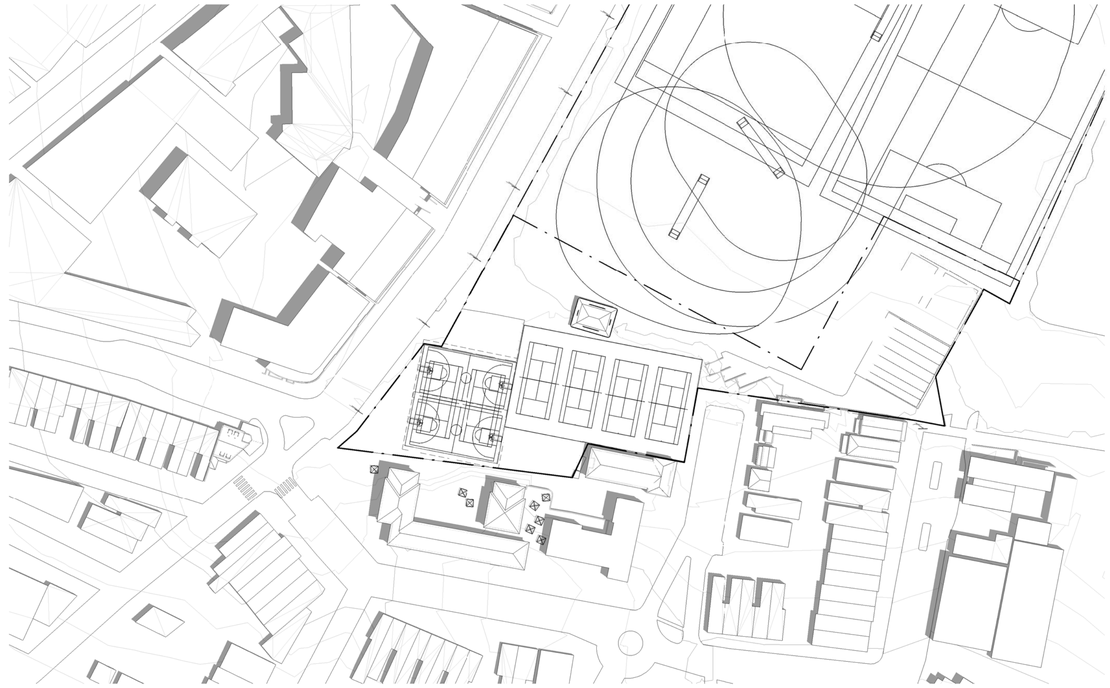
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3 21/06 11 00 AM



4 21/06 12 00 PM

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No.	Date	Description	Checked	Approved
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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-EXISTING CONDITION
Sheet Status
NOT FOR CONSTRUCTION

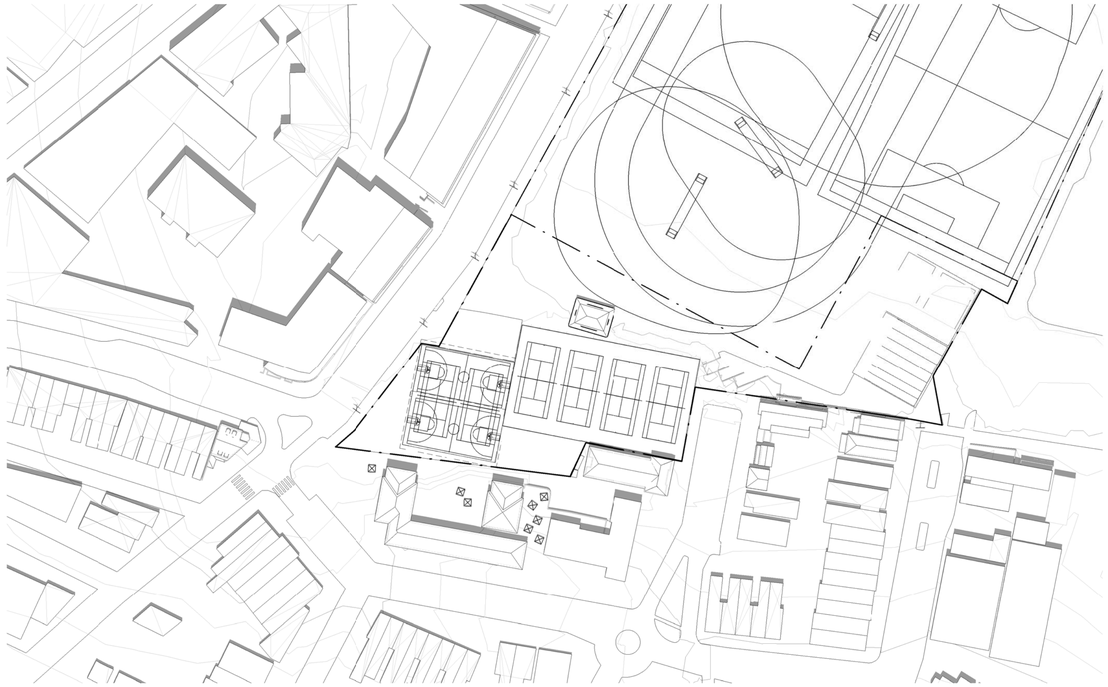
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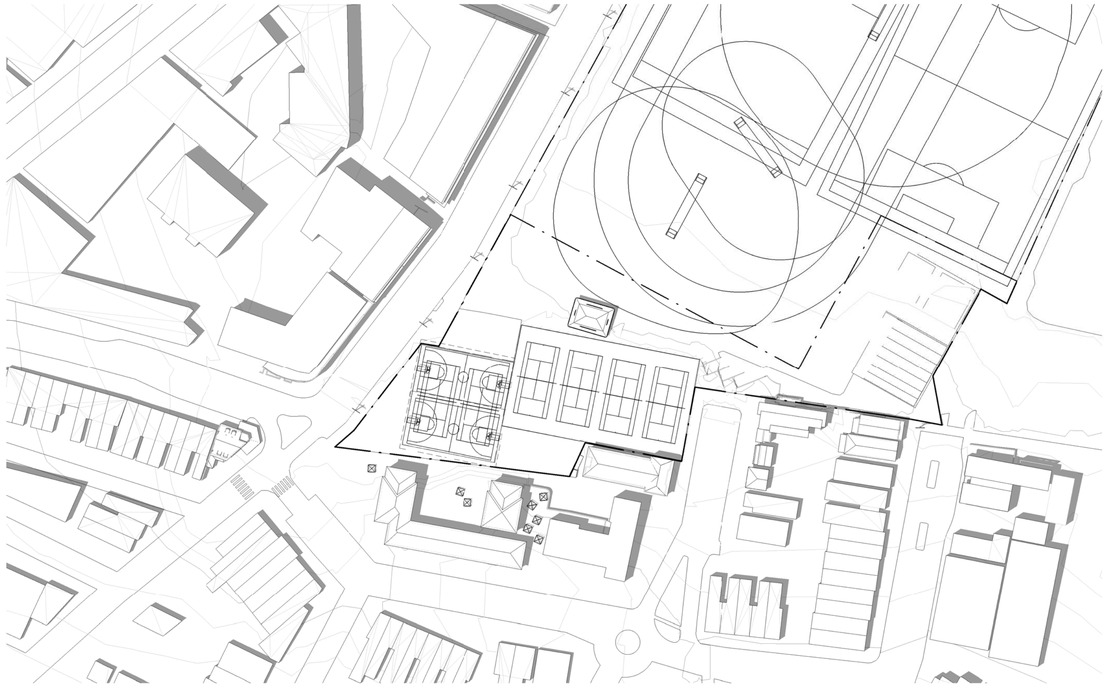
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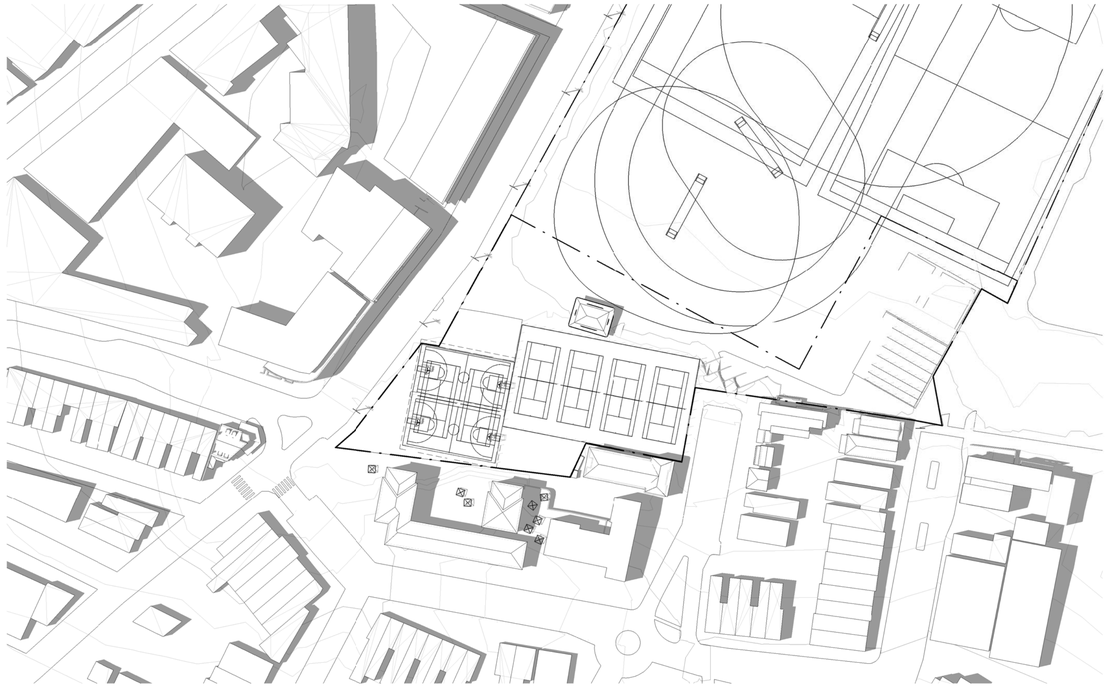
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1 21/06 13 00 PM



2 21/06 14 00 PM



3 21/06 15 00 PM

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Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-EXISTING CONDITION
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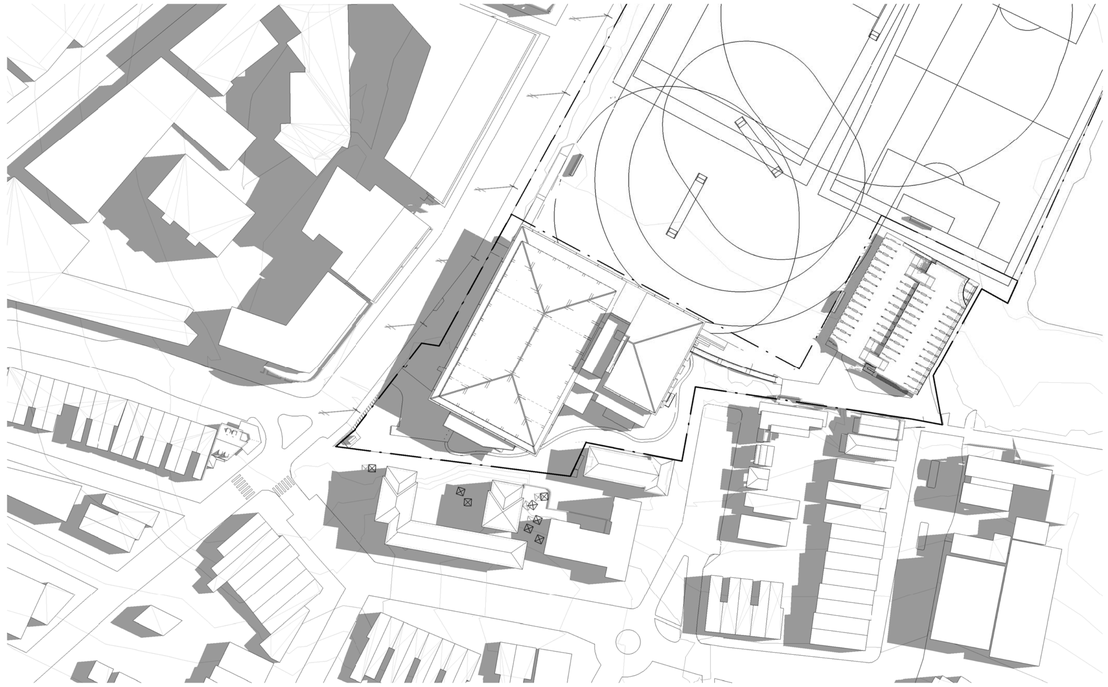
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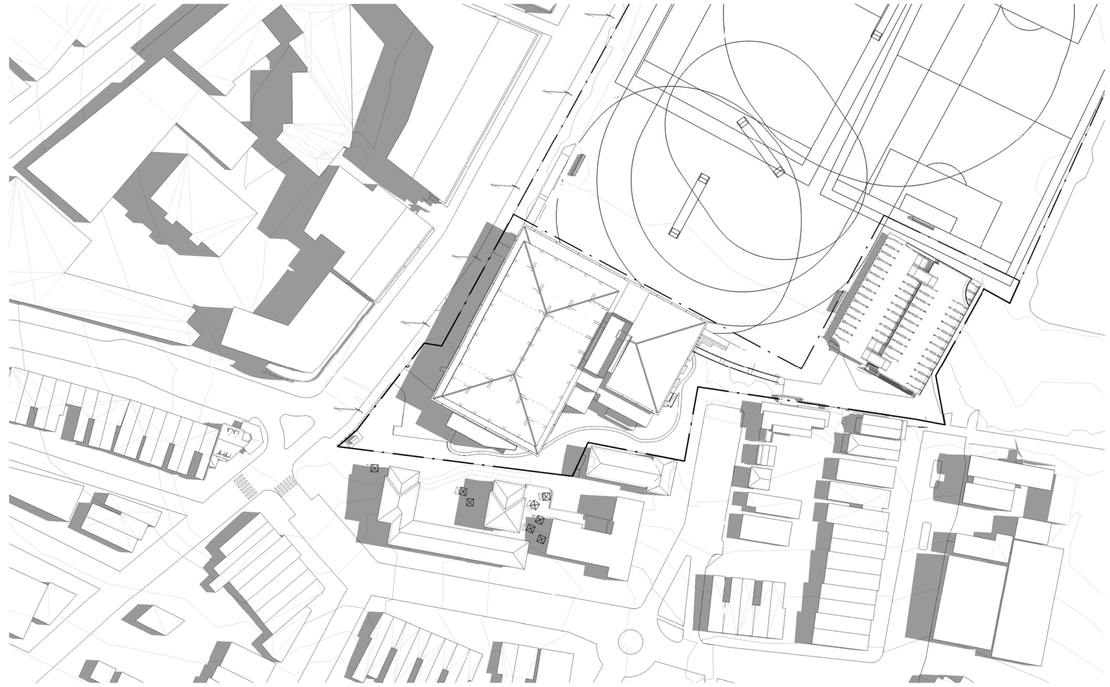
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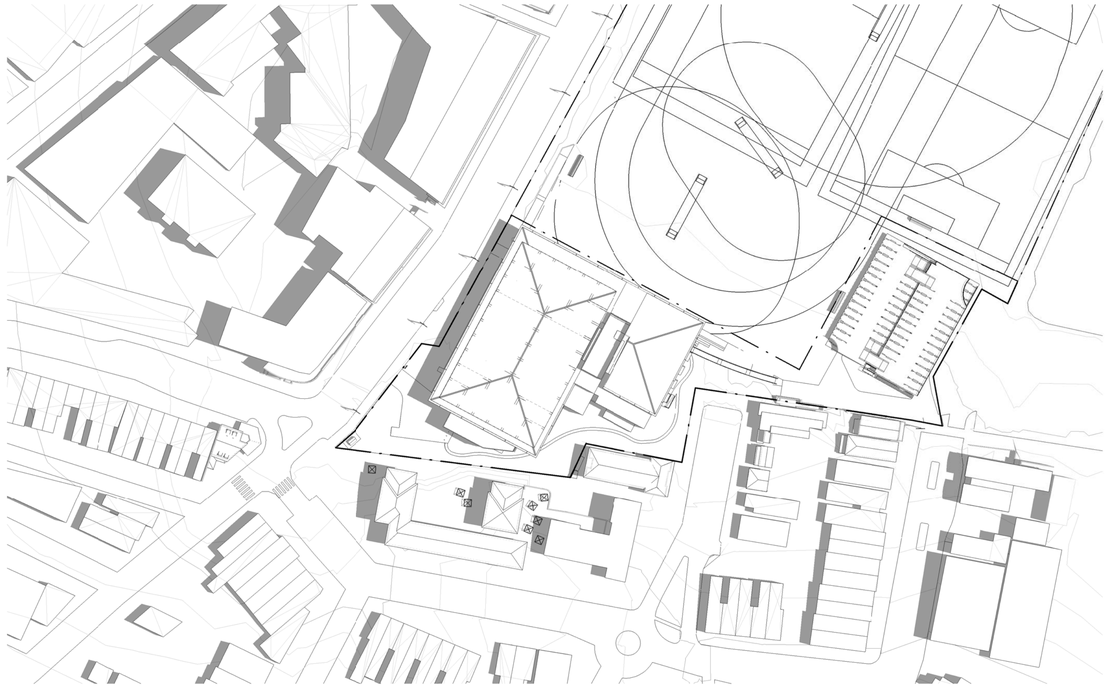
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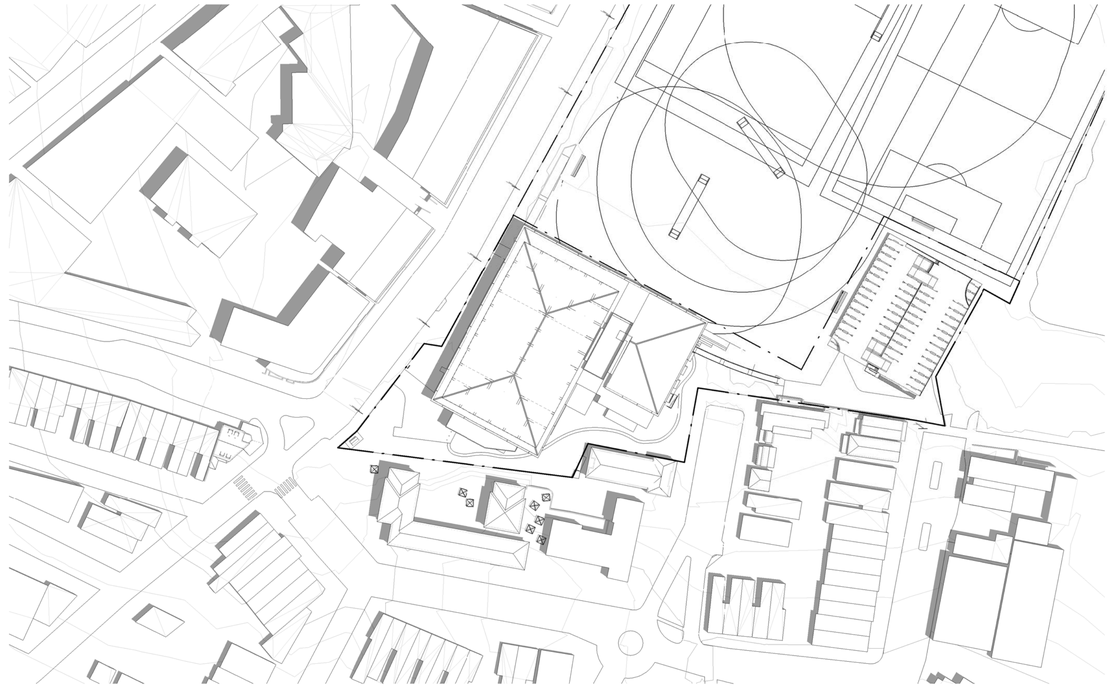
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4 21/06 12 00 PM

Revisions

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2	25/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
3	03/08/2020	95% DESIGN ISSUE	ADC	LC

Key

N

Client
Sydney Grammar School

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AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
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ABN 53 003 782 250

Project
SGS Weigall Sports Complex
6 Neild Ave, Darlinghurst
Proj. No. 19086

Drawing Title
SOLAR ACCESS STUDIES PLAN DIAGRAMS - WINTER SOLSTICE DEC 21-PROPOSED

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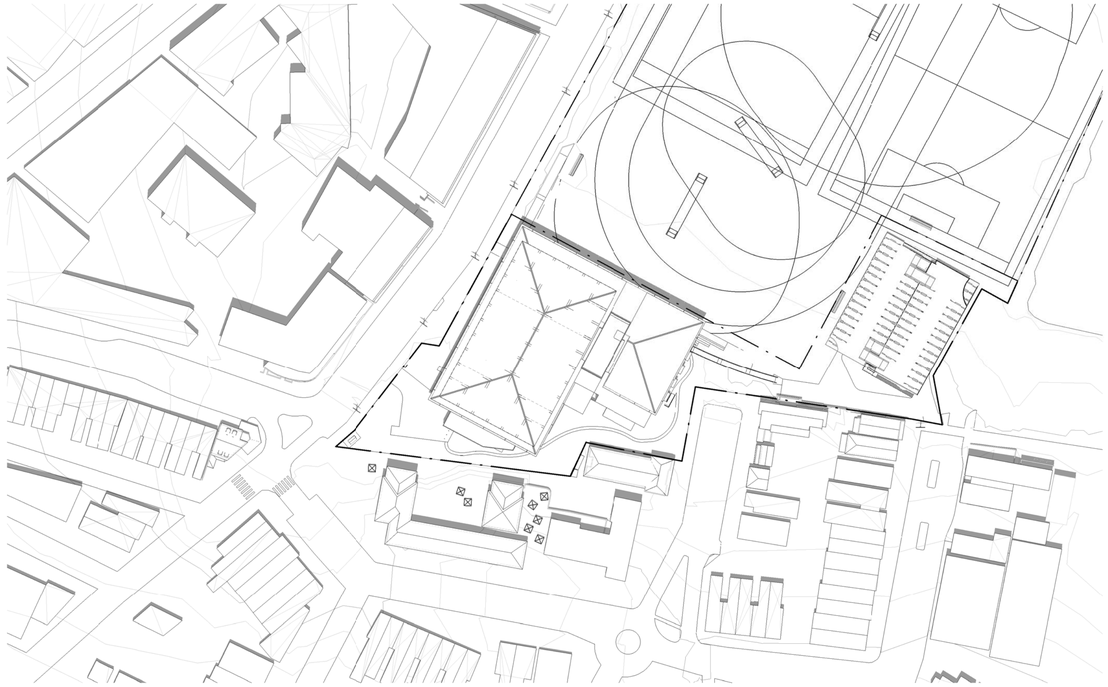
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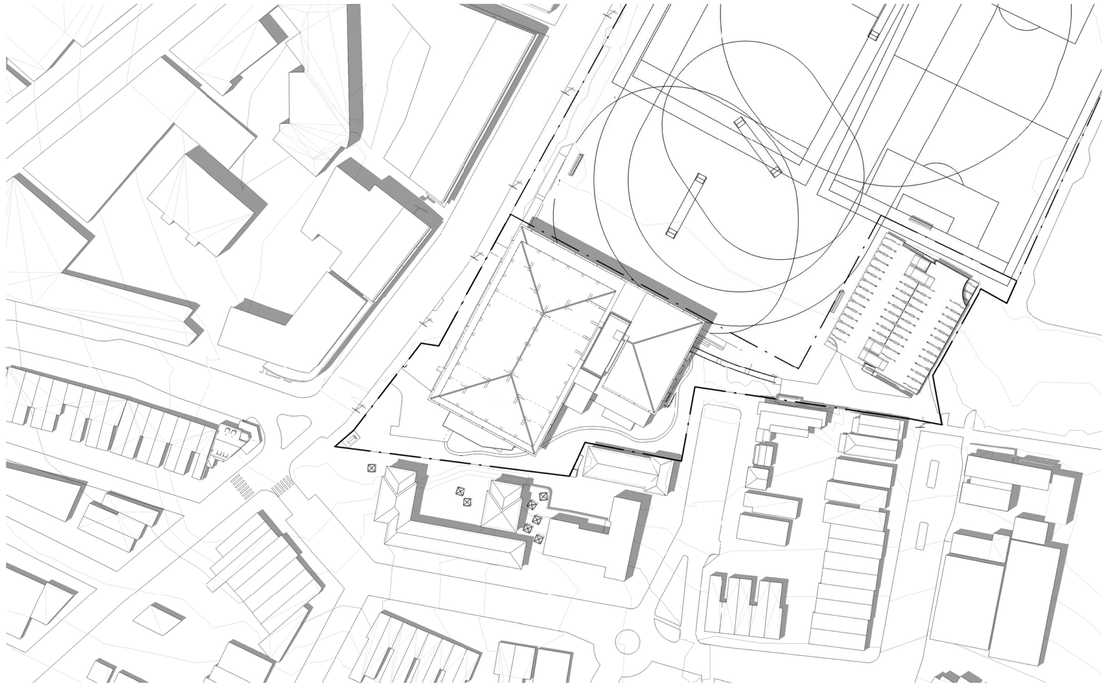
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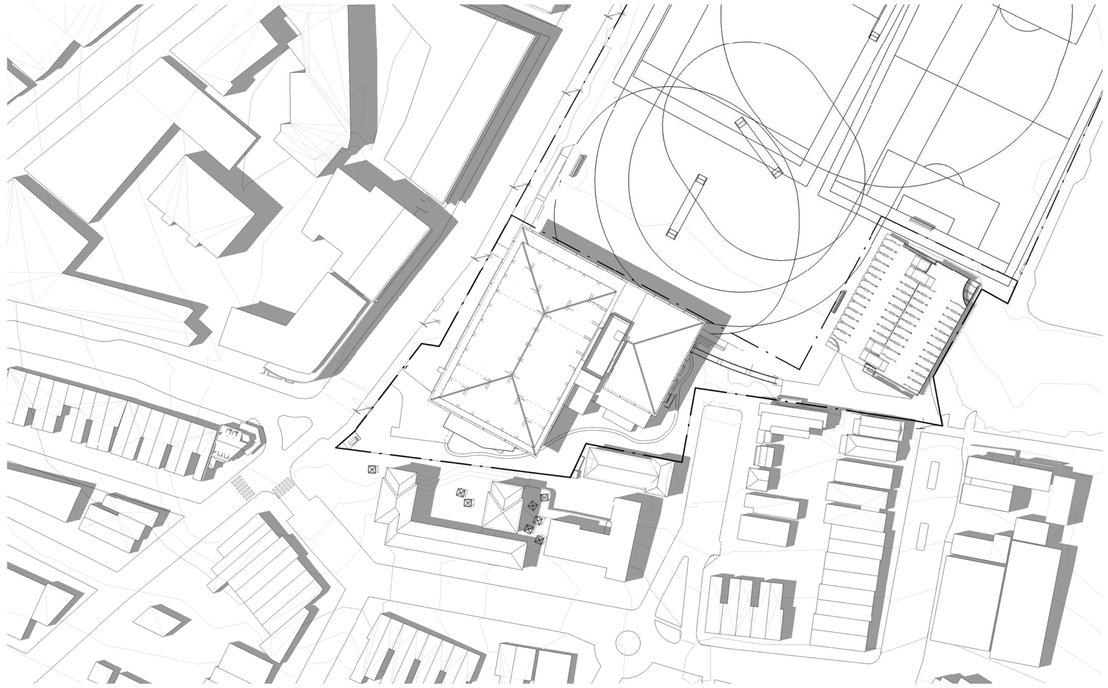
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1 21/06 13 00 PM



2 21/06 14 00 PM



3 21/06 15 00 PM

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2	26/06/2020	ISSUED TO CONSULTANTS FOR INFORMATION	ADC	LC
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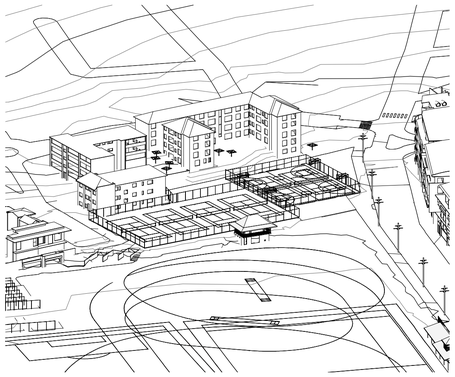
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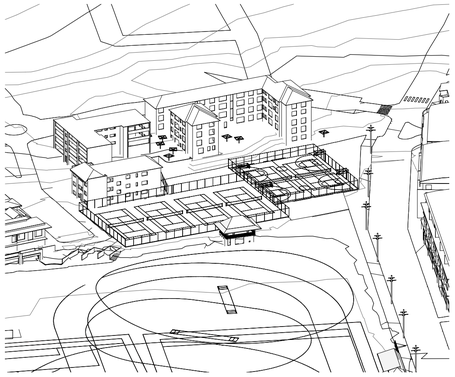
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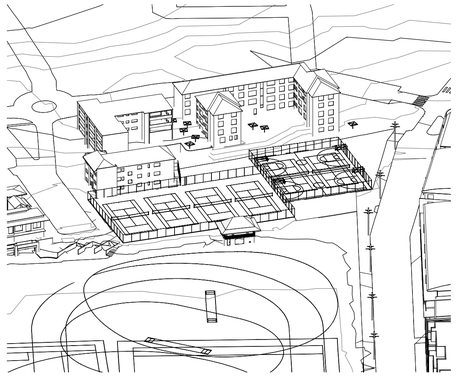
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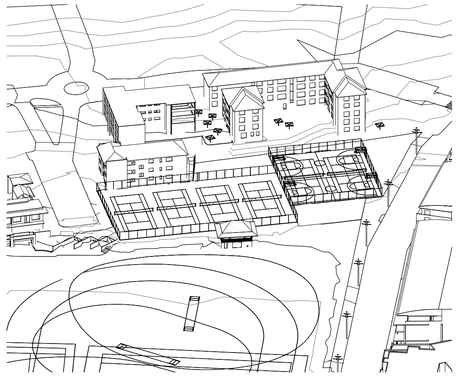
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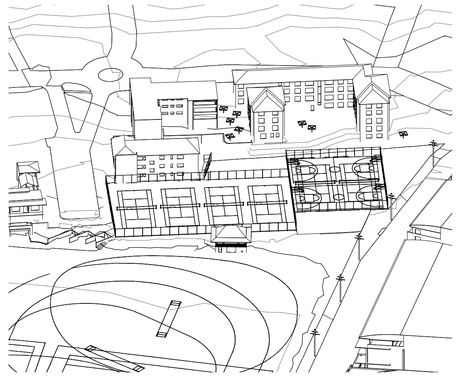
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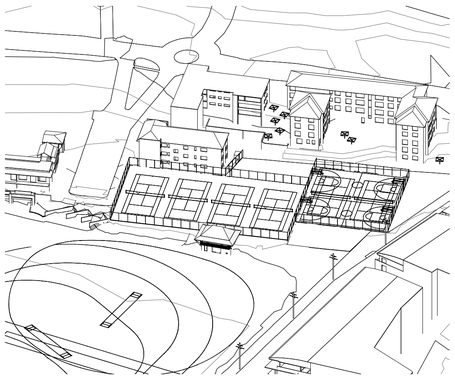
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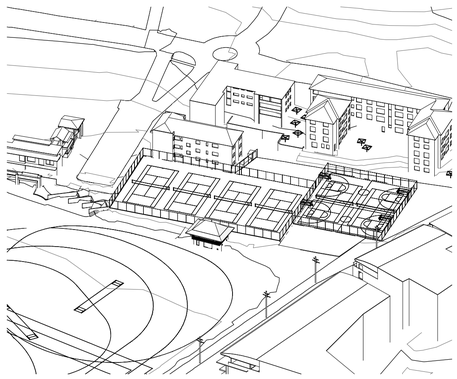
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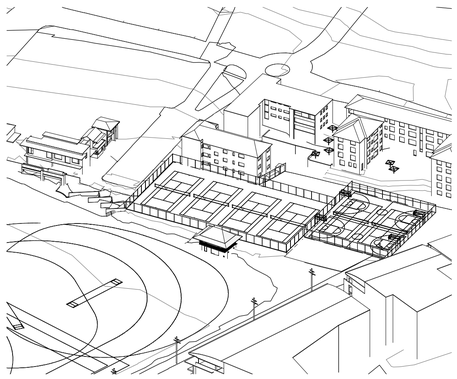
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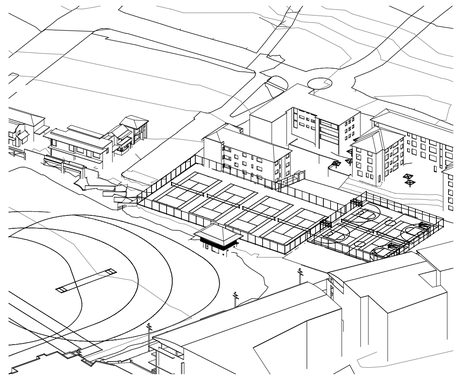
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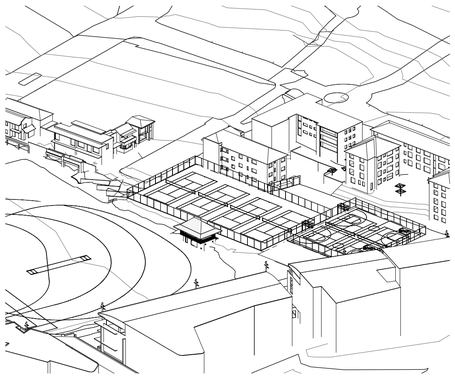
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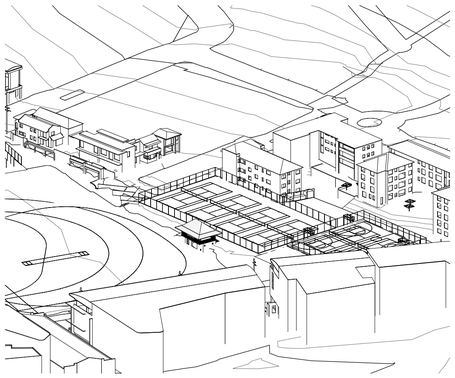
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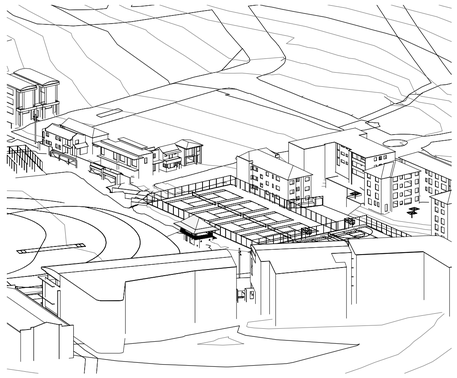
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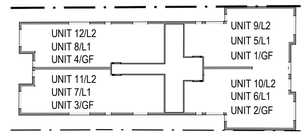
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TOTAL APARTMENT LIVING ROOMS RECEIVING 2HRS OR MORE 6/12 APTS

Revisions

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SOLAR ACCESS STUDIES SUN EYE DIAGRAMS WINTER SOLSTICE JUNE 21-EXISTING CONDITION

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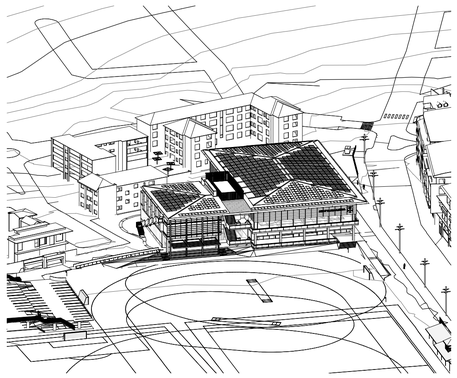
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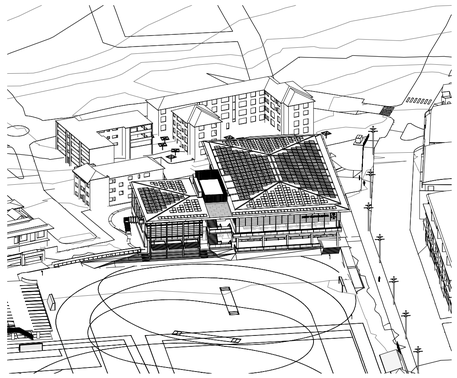
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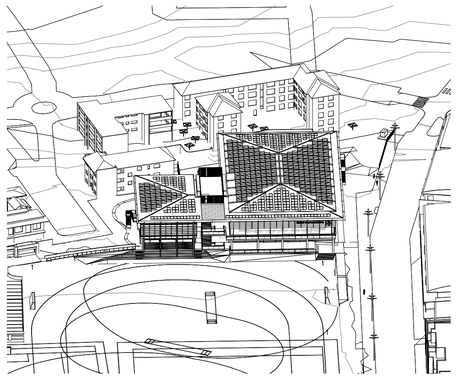
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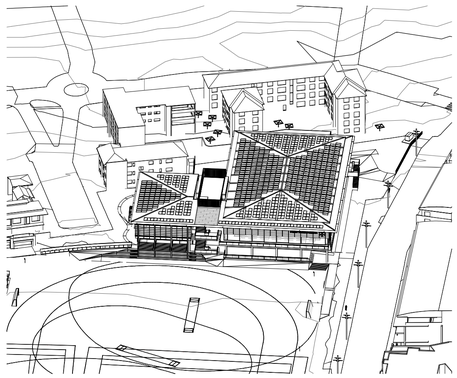
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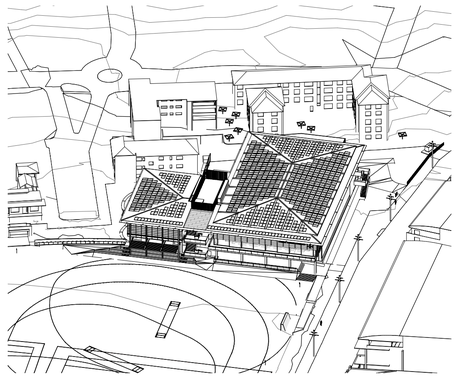
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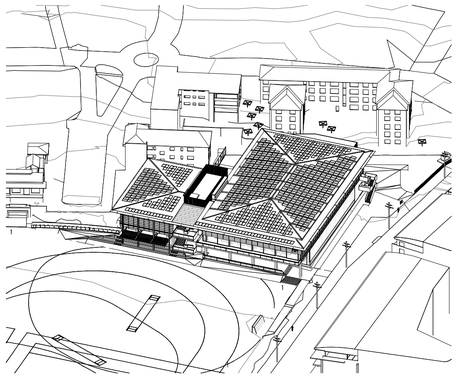
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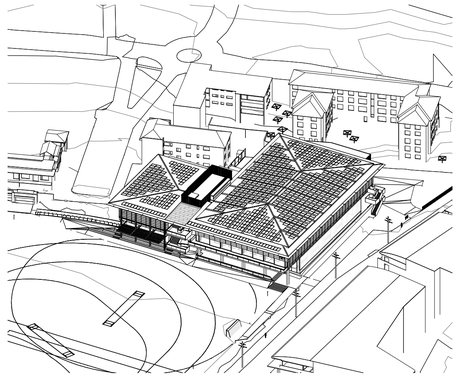
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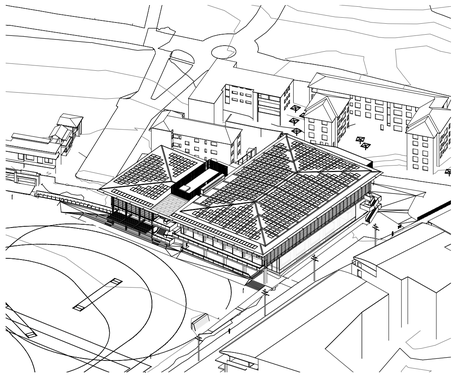
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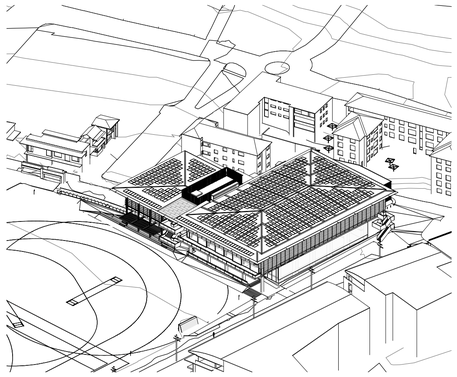
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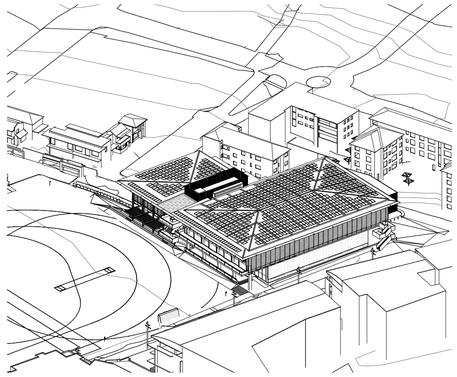
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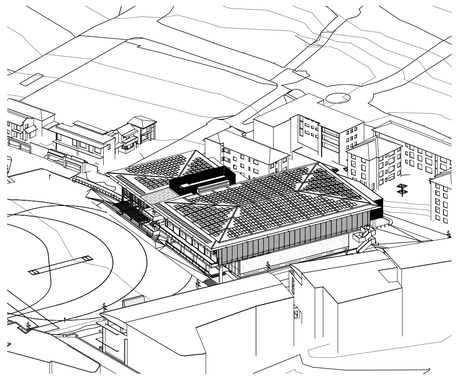
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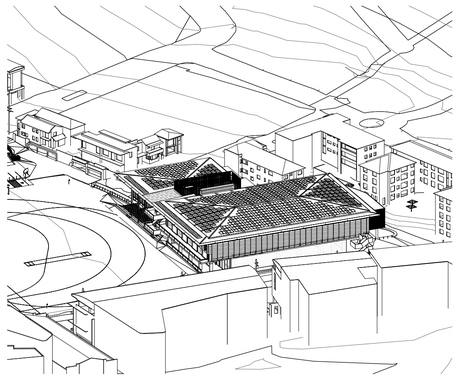
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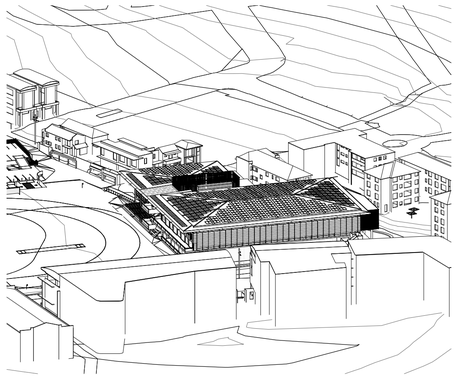
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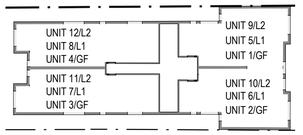
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TOTAL APARTMENT LIVING ROOMS RECEIVING 2HRS OR MORE													6/12 APTS	6/12 APTS

14 SOLAR ACESS 8 VIALOUX ST

Revisions

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Sheet Status
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Scale
As indicated @A1

Drawing No.
A9201

Issue
3

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Appendix J Monitoring Well Location Survey

STUART DE NETT
LAND SURVEYORS

11 June 2020

Our Ref: 12285

RE: MONITORING WELLS
PROPERTY: NEILD AVENUE , PADDINGTON

	MGA COORDINATES		AHD HEIGHTS		
Point	**Easting**	**Northing**	**Top of Pipe**	**Surface Level**	**Type**
BH01	336157.6	6249866.8	5.875	5.955	Flush
BH105/MW2	336214.2	6249865.6	4.045	4.21	Flush
BH106/MW3	336169.8	6249884.3	4.27	4.35	Flush
BH108/MW1	336140.0	6249859.4	5.895	6.005	Flush

Methodology: RTK GNSS (GDA2020) for position (+/-10mm)
Differential levelling for MW height (+/-3mm)

AHD Origin: SSM 53695 RL 12.06

Stuart de Nett | Registered Surveyor | E: office@landsurveyors.net.au | W: www.landsurveyors.net.au |
PH: 9526 6333 | Unit 4A, 38 Waratah Street, Kirrawee | PO Box 490, Gymea NSW 2227

Appendix K Human Health Risk Assessment (JBS&G 2020b)

Sydney Grammar School
c/ Jattca Property Solutions
Human Health Risk Assessment

Proposed SGS Weigall Sports Complex
Neild Avenue, Paddington NSW

11 August 2020
58554-130429 (Revision 0)

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Appendices

Appendix A – Risk Calculations

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List of Abbreviations

A list of the common abbreviations used throughout this report is provided below.

- B(a)P Benzo (a) pyrene
- DQO Data Quality Objectives
- DP Deposited Plan
- HIL Health Based Investigation Level
- LOR Limit of Reporting
- MAH Monocyclic Aromatic Hydrocarbon
- SAR Site Audit Report
- SAS Site Audit Statement
- PAH Polycyclic Aromatic Hydrocarbons
- Pb Lead
- PIL Phytotoxicity Based Investigation Level
- PCB Polychlorinated Biphyenyls
- PQL Practical Quantitation Limit
- QA/QC Quality Assurance/Quality Control
- RME Reasonably Maximum Exposed
- RPD Relative Percentage Difference
- TPH Total Petroleum Hydrocarbons (C_6-C_9 and C_{10}-C_{36})
- UCL_{avg} Upper Confidence Limit Average

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Jattca Property Solutions on behalf of Sydney Grammar School (SGS, the client) to undertake a human health risk assessment (HHRA) for the proposed SGS Weigall Sports Complex development at Neild Avenue, Paddington NSW (the site). The site is legally identified as Part Lot 2 in Deposited Plan (DP) 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259 and encompasses an approximate area of 1.0775 hectare (ha). The risk assessment has considered the redevelopment and future use of the site for a recreational, educational and commercial purpose. It has been assumed through the risk assessment that there are no restrictions of site user access to impacted soils.

Lead and benzo(a)pyrene (assessed as a toxicity equivalent with inclusion of several potentially carcinogenic polycyclic aromatic hydrocarbon constituents) were selected as constituents of potential concern requiring risk assessment.

A sensitivity analysis of the risk assessment process has found that the risk estimates are suitably conservative to be used as the basis for decision making on the site. It was assumed that potential construction worker exposures would be managed by existing New South Wales health and safety legislation as appropriate to construction activities and were not considered further.

In accordance with the limitations provided as **Section 9**, the levels of benzo(a)pyrene (TEF) in soils have not been found to pose a potential health risk as per the proposed redevelopment / use of the site. A potential health risk was identified for an uncontrolled exposure to the highest levels of lead impact on the site.

It is recommended that remediation and/or management works are undertaken to address lead impacted soils as present at the JBS&G sample location BH109 at a depth of 2.6 to 2.7 m to control / eliminate potential direct exposure to the impacted soils.

1 Introduction

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Jattca Property Solutions on behalf of Sydney Grammar School (SGS, the client) to undertake a human health risk assessment (HHRA) for the proposed SGS Weigall Sports Complex development at Neild Avenue, Paddington NSW (the site). The site is legally identified as Part Lot 2 in Deposited Plan (DP) 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259 and encompasses an approximate area of 1.0775 hectare (ha).

The site is currently utilised by SGS for recreational purposes and comprises multipurpose/tennis courts, pavilion, car park, cricket nets and playing field. It is understood that the proposed redevelopment of the site will comprise demolition of existing structures and buildings and construction of a sporting facility comprising of a multi-purpose hall with basement and associated aboveground car park.

Recent site investigations undertaken by JBS&G have identified impacted fill material present across the site with levels of Polycyclic Aromatic Hydrocarbons (PAHs) and heavy metals (primarily lead) reported to exceed the relevant adopted health investigation levels. The risk assessment is required to consider, by assessment of a site specific consideration, as to whether the identified soil impact will pose a potentially unacceptable soil impact to future users of the site.

The risk assessment has been undertaken by a process of considering levels of constituents in soils and conservative exposure scenarios consistent with the assessed extent of potential future uses. The risk assessment has considered the range of site uses with a potential redevelopment. This process has allowed identification of constituents and exposure scenarios that will potentially pose a human health or ecological risk.

Risk assessment is the process of estimating the potential impact of a chemical, physical, microbiological or psychosocial hazard on a specified human population or ecological system under a specific set of conditions and for a certain timeframe. The risk assessment here is restricted to the consideration of chemical constituents present in soils, soil vapour and groundwater, on the basis of reported levels in soils and groundwater, within the site and the potential interactions with current and future human populations as may occur with the proposed development of the site.

The risk assessment has been undertaken by the methodology outlined in *Environmental Health Risk Assessment Guidelines for assessing human health risks from environmental hazards*, 2012, Department of Health and Ageing and enHealth Council (enHealth 2012a) and *National Environment Protection (Assessment of Site Contamination) Measure*, 2013, National Environment Protection Council (NEPC 2013).

1.1 Objective

A site specific human health risk assessment has been undertaken to determine whether environmental impact reported in soils poses an unacceptable risk to the range of potential future human exposures that may occur with the proposed redevelopment of the site.

2 Site Identification

2.1 Site Location and Description

Site details are presented in **Table 2.1** following.

Table 2.1: Site Details

Lot/DP	Part Lot 2 in DP 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259
Address	Neild Avenue, Paddington NSW
Local Government Authority	Woollahra Municipal Council
Site Zoning	RE2 Private Recreation and R3 Medium Density Residential under the Woollahra Local Environmental Plan (LEP) 2014
Current Use **Current Owner**	Sports/recreation area Sydney Grammar School
Site Area	10 775 m^2
MGA Coordinates (Zone 56) of approximate centre of site	Easting: 336156 Northing: 6249863

2.2 Proposed Development

The site is currently utilised by SGS for recreational purposes and comprises multipurpose/tennis courts, pavilion, car park, cricket nets and playing field. It is understood that the proposed redevelopment of the site will comprise demolition of existing structures and buildings and construction of a sporting facility comprising of a multi-purpose hall with basement and associated aboveground car park.

The proposed land-uses can be characterised as recreational / education and commercial / industrial with respect to the land-use settings as nominated in NEPC (2013).

2.3 Surrounding Land Uses

The surrounding land uses have been identified as follows:

- North – the site was bound by SGS Weigall playing fields followed by Rushcutters Creek and New South Head Road further north;
- East – the site was bound by Alma Street followed by Sydney Grammar Preparatory School (southeast) and White City Tennis Club further east;
- South – the site was bound by low/medium density residential buildings followed by Lawson Street; and
- West – the site was bound by Neild Avenue and medium-high density residential buildings beyond.

2.4 Geology

Previous intrusive investigations undertaken encountered fill material across the site to a maximum depth of approximately 6.0 m below ground surface (bgs) overlying natural sand and sandstone.

Recent drilling works identified that fill contained low proportions of gravels, with anthropogenic inclusions of terra cotta and glass. Observations of ash/slag/charcoal were made in the fill material at localised areas. Where natural soils were encountered at sampling locations, two distinct soil types were noted underlying the fill material which comprised grey/brown homogeneous sand and grey clayey sand, as consistent with a sand and weathered sandstone material.

2.5 Hydrogeology

During the most recent assessment groundwater has been identified at a depth of 1.9 to 3.6 m below the site surface. Groundwater has been characterised as having a neutral pH and being fresh. No indicators of contamination were observed in site groundwater.

Beneficial uses of groundwater were reported to occur at a closest distance of 375 m south-east of the site, with groundwater extracted for irrigation purposes.

2.6 Previous Assessments

Soil and groundwater data is available from recent assessments as completed by Douglas Partners and JBS&G, and contained within the detailed site investigation as prepared for the site. Reference has been made to this data in the preparation of the HHRA.

3 Conceptual Site Model

The *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)*, National Environment Protection Council, 2013 (NEPC 2013) identifies a conceptual site model (CSM) as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments.

NEPC (2013) identifies the essential elements of a CSM as including:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination;
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air);
- Human and ecological receptors;
- Potential and complete exposure pathways; and
- Any potential preferential pathways for vapour migration (if potential for vapours identified).

3.1 Known and Potential Sources of Contamination

Based on the site history review and field observations, and from previous environmental assessments undertaken within the site, general areas of environmental concern have been categorised and are presented in **Table 3.1**.

Table 3.1: **Areas of Environmental Concern and Associated Contaminants of Potential Concern**

Area of Environmental Concern (AEC)	Contaminants of Potential Concern (COPC)
Fill materials of unknown origin used to generate current site levels.	Heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Total Recoverable Hydrocarbons (TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), Organochlorine Pesticides (OCPs), Polychlorinated Biphenyls (PCBs), Asbestos
Natural material impacted as a result of migration of COPCs in overlying fill material.	Heavy Metals, PAHs, TRHs, BTEX, OCPs and PCBs
Former market garden use, current site maintenance and associated application of pesticides	Heavy metals and OCPs
Inappropriate demolition of former site structures	Lead, PCB and asbestos
Potential off-site hydrogeologically upgradient sources of contamination	Heavy metals, TRHs and volatile organic compounds (VOCs)

As previously outlined discussed further in **Section 4**, sampling and analysis works as completed on the site have identified that site that actual site contaminants are restricted to lead and PAHs, principally occurring as benzo(a)pyrene or equivalents. This HHRA is restricted to the occurrences of lead and PAHs in site soils consequent to the reported concentrations significantly exceeding the relevant health investigation levels.

An assessment of the distribution of the impact has been undertaken to further assess the potential source. Elevated levels of PAHs, including benzo(a)pyrene are distributed across the site area. This indicates that the source of PAHs is present throughout the near surface soils on the site, considered to more than likely be ash. Variations in levels of PAHs are indicative of varying quantities of PAH containing constituents as present in the site soils.

The highest levels of lead are likely to be consequent of flaking lead based paints from current or more likely historical structures on and in proximity of the site. The highest level is located near to the site boundary.

3.2 Potentially Contaminated Media

Potentially contaminated media present at the site include:

- Potential fill materials imported to site from unknown sources; and
- Surface soils, fill material and natural soils from the historical urban uses of the site.

The source of the fill material previously identified at the site is not known and as such has the potential to be contaminated. Therefore, fill is identified as a potentially contaminated medium. In addition, surface soils (whether fill material or natural soils) are a potentially contaminated medium based on the historical urban uses of the site.

COPCs that may be present in the surface soils and/or fill material, could potentially migrate into the underlying undisturbed natural soils. Therefore natural soils are considered to be a potentially contaminated medium.

The potential for surface water and groundwater to be contaminated is dependent upon the potential mobility of any soil contamination considered to be present at the site. Sampling and analysis of groundwater has not identified elevated levels of constituents which are indicative of potential impact to groundwater. As such the potential for surface water or groundwater at the site to be potentially contaminated media is low based on the absence of any significant source of leachable contamination identified on-site, or groundwater impact identified otherwise. , in the event that significant soil contamination is identified, the potential for groundwater contamination will need to be reassessed.

3.3 Potential for Migration

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants of concern identified as part of the site history review and site inspection are generally in solid form (eg. lead) and/or likely to be bound to soil.

The ground surface of the site is generally vegetated or paved. As such, there is low potential for windblown contaminants to migrate from the site.

The potential for contaminants to migrate via surface water runoff or groundwater is low due to the absence of any significant source of contamination identified. However, in the event that significant soil contamination is identified, the potential for surface water and groundwater contamination will need to be reassessed.

3.4 Potential Human and Ecological Receptors

Potential human receptors of environmental impact present within the site include:

- Recreational site users or otherwise commercial workers who may potentially be exposed to COPCs through direct contact with impacted soils and/or inhalation of dusts associated with impacted soils. Recreational users would be associated with educational users of the site noting the site is proposed to be redeveloped by the Sydney Grammar School. Commercial workers would comprise persons employed in the sup[port of children / users of the facility and gardeners / landscapers as will maintain the site in the future; and/or
- Excavation / construction / maintenance workers conducting activities at or in the vicinity of the site, who may potentially be exposed to COPCs through direct contact with impacted soils present within excavations and/or inhalation of dusts associated with impacted soils.

On-site ecological receptors consist of plantings established within a potentially landscaped site area. Potential off-site ecological receptors are limited to impacted groundwater (if present) migrating from the site. In the absence of any significant potential for groundwater impact at the site, there is a low chance for off-site ecological receptors to be affected. If existing site structures remain enclosed (i.e. not demolished), and site surfaces remain vegetated or sealed, there is unlikely to be any unacceptable risk to off-site human receptors associated with potential contaminants in windblown dust.

It is noted that with the redevelopment of the site it is highly likely that specialised soils / imported materials will be used to establish the non-paved vegetated areas as will be associated with the playing surfaces and the garden areas. These materials are selected on the basis of a capacity to support future site flora, and generally exclude historical impacted industrial fills as may otherwise be present and are the subject of this risk assessment.

There is no current evidence of ecological impacts present on the site.

3.5 Preferential Pathways

A preferential pathway is currently present on the site associated with fill material. This preferential pathway could have a higher permeability that may allow contaminants to migrate into the underlying undisturbed natural soils.

4 Selection of Constituents of Potential Concern

Constituents of potential concern (COPCs) require to be selected to allow ensuing risk assessment calculations to be focussed to constituents for which a potential health risk may occur. To this effect, the HHRA has been targeted to PAHs and lead as based on the results of the recent investigations and comparison of maximum levels of impact to the adopted health investigation levels.

Based on a potential recreational land use of the site, concentrations of contaminants in soil were compared against NEPC (2013) health-based investigation and screening levels (HILs and HSLs) for relevant recreational / open space / educational land use scenarios.

Other reported PAH constituents which do not have readily available local criteria, and are not assessed using the benzo(a)pyrene toxicity equivalence method as described in NEPC (2013), have been assessed against the lowest residential soil criteria provided to Regional Screening Levels, US EPA, 2020 (US EPA 2020) and summarised in **Table 4.1** following.

Table 4.1: Screening of other PAH Constituents

COPC	Maximum Concentration and Sample Location (mg/kg)	US EPA (2020) Residential Soil Criteria (mg/kg)
Acenaphthene	<0.5	3500
Acenaphthylene	0.6	-
Anthracene	0.9	17,000
Fluoranthene	13	2300
Fluorene	0.7	2300
Phenanthrene	5.7	-
Pyrene	13	1700

Review of **Table 4.1** outlines that no additional PAH constituents have exceeded the relevant residential soil criteria and consequently do not require consideration in the risk assessment process. It is noted that no criteria has been made available for acenaphthylene and phenanthrene however noting that all other constituents for which criteria is available are present at least an order of magnitude lower than the adopted criteria, it can be reasonably assumed that these constituents do not require consideration in the risk assessment. Notwithstanding these constituents occur with benzo(a)pyrene. On this basis, any remedial actions undertaken to address benzo(a)pyrene will similarly cause a reduction in the associated lighter PAHs.

It is also noted that some low levels of total recoverable hydrocarbon C>16-C34 fraction have also been reported with the samples that have reported the highest levels of PAHs. The TRH C>16-C34 fraction is co-occurring with the PAH impact. Actions undertaken to address the PAH impact through the risk assessment will be sufficient to address any coincident hazards as associated with co-occurring TRH C>16-C34 impact. This is through the most toxic constituents of the TRH C>16-C34 fraction being recognised as consisting of PAH constituents.

Aesthetic impacts (e.g. odours, staining) are to be assessed during reporting consistent with NSW EPA and NEPC (2013) guidance regarding aesthetics.

5 Toxicological Review

There are two elements to the toxicological review for the human health risk assessment: hazard identification (using toxicological studies) and dose-response assessment. The Australian approach to each is discussed in detail following.

5.1 Hazard Identification

Hazard identification examines the capacity of an agent to cause adverse health effects in humans and other animals. The dose-response assessment examines the quantitative relationships between exposure and the effects of concern.

Hazard identification uses:

- Animal data. This is usually assessed by toxicological methods;
- Human data. This usually assessed by epidemiological methods when groups of people are involved, or by toxicological methods when using case studies and acute chamber studies; and
- Other data. This includes structure data such as structure activity data or in vitro data assessed by toxicologists.

Hazard identification mostly relies on the results of in vitro toxicity studies conducted according to standard protocols (e.g. OECD Test Guidelines). The following types of studies are defined:

- Acute toxicity studies are studies which investigate the effects of single doses of a substance. The standard acute toxicity studies include tests for: acute, oral, dermal and inhalational toxicity, eye irritation, skin irritation and skin sensitisation;
- Sub-chronic toxicity studies are short term repeat-dose studies. The main purpose of sub-chronic testing is to identify any target organs and to establish dose levels for chronic exposure studies;
- Chronic toxicity studies, or long-term studies, are defined as studies lasting for the greater part of the lifespan of the test animals. The protocol for these studies may cover the investigation of chronic toxicity or carcinogenicity, or both;
- Reproductive toxicity studies are studies designed to provide general information about the effects of a test substance on reproductive performance in both male and female animals;
- Developmental toxicity studies are studies which examine the spectrum of possible in utero outcomes for the conceptus, including death, malformations, functional deficits and developmental delays; and
- Genotoxicity studies are designed to determine whether test chemicals can perturb genetic material to cause gene or chromosomal mutations.

The essential purpose of toxicity studies is the detection of valid biological evidence of the hazard potential of the substance being investigated. The evaluation of the weight of evidence produced by toxicity studies is that process which considers the cumulative data pertinent to arriving at a level of concern about the potential adverse effects of a substance. In assessing toxicological studies and hazard analysis, judgement and supporting rationale are provided for:

- The acceptability of the study and its database;

- The existence of biologically important adverse effects;
- The relevance of any factors noted during the evaluation which might have had some bearing on the outcomes of the study and modified the findings in some way; and
- The likelihood that any of the observed effects were induced by the administered substance.

Toxicology assessments are often complemented with epidemiological studies in hazard assessment. Epidemiology is the direct human evidence component of the assessment. Epidemiological studies are used to investigate the cause of adverse health effects; the natural history of health conditions; the description of the health status of populations; and to evaluate the health status of populations; and to evaluate health related interventions.

5.2 Dose-Response Assessment

There are different ways of characterising dose-response relationships including:

- Effect levels (e.g. LD_{50}, LC_{50}, ED_{10}) and no observed adverse effect levels (NOELs);
- Margins of safety;
- Therapeutic indices; and
- Models to interpolate high dose experimental data to the low doses likely to be experienced in the environment.

There are often limited human exposure data, animal bio-assay data are most often used for dose-response assessment. The use of these data requires extrapolations from animals to humans and interpolations from high doses to low doses.

Dose-response assessments and calculations are generally undertaken by either of a threshold approach or a non-threshold approach. Each is described in further detail following.

5.2.1 Threshold Approaches

A threshold is considered to occur because of biological mechanisms such as the ability to metabolise or excrete a toxin to repair damage up to a certain dose.

The approach with these models is to derive exposure limits such as an ADI, Tolerable Daily Intake (TDI) or R*f*D. This approach makes no attempt to calculate a level of risk at low exposures. Rather, it derives a dose which is apparently without effect in a human population or suitable animal model, and then applies a factor to derive an exposure which has a high likelihood that no effect will occur in the general human population.

These exposure limits are first derived by first determining the No Observed Adverse Effect Level (NOAEL) or, if the NOAEL cannot be determined, the Lowest Observed Adverse Effect Level (LOAEL) and dividing the value by factors to account for:

- Interspecies differences (extrapolating from animals to humans);
- Intraspecies differences (differing sensitivities between individuals);
- The severity of the adverse effect; and
- The quantity and quality of the scientific data.

Traditionally, safety factors for intraspecies and interspecies differences have each been assigned values of ten, and the other two have been assigned values between 1 and 10. An additional factor of ten is sometimes used if the NOAEL was not established in the study.

The individual factors are then multiplied to determine an overall safety factor by which the NOAEL is divided to give the ADI, TDI or R*f*D.

Historically, the most common overall factor used by a number of regulatory bodies is 100, if a large toxicological database has been assessed, although the overall factor can range from 10 to 10,000. From the data available on humans and experimental animals, it appears that interspecies and intraspecies differences are in general less than 10, hence the often used safety factor of 100 for these two factors is conservative and adequately protective of public health.

5.2.2 Non-Threshold Approaches

These approaches do not recognise the possibility of a threshold effect and are appropriate for radiation and some genotoxic carcinogens. It is, as a science policy decision, applied to all carcinogens by the US EPA.

Non-threshold models assume linearity between the lowest experimentally derived dose and the zero dose (the origin). This implies that there is a calculable probability of an adverse effect (risk) no matter how small the dose. This does not mean that there is no dose that could be considered safe unless safety must be equated with zero risk.

Numerical estimates of risk probabilities are generated by fitting one or more mathematical models to the data in the experimental dose range and extrapolating to the low environmental exposure doses. For example, low-dose extrapolation using a linear model is a default approach for cancer risk assessment in the USA and is one approach which has been used by the WHO for genotoxic carcinogens in deriving water quality guidelines.

The outcomes are estimates of either:

- The dose at a predetermined acceptable risk level (note that this requires some judgement on what constitutes an acceptable level of risk); or
- The estimated risk level at any particular dose.

It has been recognised by IARC and other European based agencies that not all carcinogens have genotoxicity as their prime mode of action, the dose-response curve is assumed to be non-threshold for genotoxic carcinogens and threshold for non-genotoxic carcinogens. Accordingly, the Australian approach is to apply non-threshold and threshold models to genotoxic and non-genotoxic carcinogens.

5.3 Sources of Toxicological and Tolerable Intake Data

NEPC (2013) provides toxicological data sources that are considered to provide information that is compliant with Australian requirements for setting public health standards in the context of assessing potential human health risks. These sources include:

1. National Health and Medical Research Council documents (e.g. Australian Drinking Water Guidelines);
2. National Environmental Protection Council documents (e.g. NEPM Air Toxics, NEPM Ambient Air Quality and Air Quality Standard Setting Methodology);
3. Other Australian government sources of toxicity data (e.g. ADI list from the Therapeutic Goods Administration, enHealth Council documents and National Environmental Health Forum documents distributed by the Commonwealth Department of Health and Ageing);
4. South Australian Health which has published a series of workshops on risk assessment of contaminated land;

5. World Health Organisation (WHO) documents. Australia is a party to the WHO process and has incorporated their material in a variety of environmental health criteria. A range of documents include those from the WHO/ILO/UNEP International Programme on Chemical Safety (IPCS) which produces Environmental Health Criteria monographs and Concise International Chemical Assessment documents (CICADs). Documents detailing international Acceptable Daily Intakes (ADI's), Tolerable Daily Intakes (TDI) or Tolerable Weekly Intakes (TWI) may be found in evaluations by the WHO/FAO Joint Meeting on Pesticide Residues (JMPR) and by the Joint FAO/WHO Expert Committee on Food Additives (JECFA);
6. International Agency for Research on Cancer (IARC) documents;
7. US Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels and toxicological reviews;
8. Other Governmental sources of information (e.g. NICNAS, USEPA IRIS database and European Government Guidance);
9. Other sources of peer reviewed toxicity criteria (US EPA's PPRTV/HEAST, Cal EPA toxicity values and OEHHA); and
10. Peer reviewed journals for which robust justification is required if information is to be sourced as they generally are not compliant with the requirement for having carried out an extensive literature review.

Where physical and chemical data are necessary requirements in the risk assessment process, the following sources, in order, are recommended:

1. ORNL (Oak Ridge National Laboratory) Risk Assessment Information System (RAIS);
2. ATSDR toxicological profiles; and
3. Peer reviewed journals.

5.4 Review of Published Hazard Data

Available toxicological, epidemiological studies and dose-response studies have been reviewed for each of the COPC's (identified in **Section 4**) by the protocols established in **Section 5.1**. Consequently, citing the relevant agencies, there has been no requirement in this risk assessment to further review and comment upon the hazard studies reviewed by each organisation, or those that may be available elsewhere that are not endorsed by these organisations.

Instead, the pertinent toxicological effects identified for each of the COPC's by the agencies has been reviewed and summarised for each identified COPC. Risk / hazard factors and guideline values have also been identified from these sources.

A brief summary of the toxicological endpoints of each of the identified COPC's is provided in the following sections. The summaries have been generated by a review of the available data held by the toxicological data source agencies.

5.4.1 Benzo(a)pyrene

Benzo(a)pyrene has been selected as a COPC for the assessment of potential human health impacts. A brief summary of the toxicological data available for benzo(a)pyrene has been provided following. The summary has been generated by a review of the available data held by the agencies outlined in **Section 5.3**, as summarised in **Table 5.1**.

Table 5.1: Summary of Published Level 1 Hazard Data for Benzo(a)pyrene

Organisation	Availability	Reference
NHMRC	YES	NHMRC/NRMMC (2011) 'Australian Drinking Water Guidelines'
NEPC	YES	NEPC (2013) 'National Environment Protection (Assessment of Site Contamination) Measure. Schedule B7
Therapeutic Goods Administration	No	Full review of safety alerts and advisory statements, no information
WHO	YES	WHO (2011) 'Guidelines for Drinking Water Quality 4th Edition' WHO (2003) 'Polynuclear aromatic hydrocarbons in Drinking-water' WHO (2000) 'Air Quality Guidelines for Europe, 2nd Edition' (chapter 5.9)
enHealth	YES	enHealth (2001) 'Health-based Soil Investigation Levels'
NEHF	YES	NEHF (May 2003) 'Polycyclic Aromatic Hydrocarbons (PAHs) Health Review' NEHF (2004) 'National Environment Protection (Air Toxics) Measure' enHealth reported by the Australian Government Department of Health and Ageing to have replaced NEHF. Refer to enHealth (2001)
IARC	YES	Benz(a)anthracene, IARC Monograph in preparation (2010) Benzo(a)pyrene, IARC Monograph in preparation (2010) Benzo(b)fluoranthene, IARC Monograph in preparation (2010) Benzo(k)fluoranthene, IARC Monograph in preparation (2010) Chrysene, IARC Monograph in preparation (2010) Dibenz(a,h)anthracene, IARC Monograph in preparation (2010) Indeno(1,2,3-c,d)pyrene, IARC Monograph in preparation (2010)
WHO/FAO JMPR	No	
NICNAS PEC	No	
ATSDR	YES	ATSDR (August 1995) 'Toxicological Profile for Polycyclic Aromatic Hydrocarbons'
NTP	No	
OECD SIDS SIAR	No	
EPA	YES	IRIS Database (1994), benz(a)anthracene IRIS Database (1994), benzo(a)pyrene IRIS Database (1994), benzo(b)fluoranthene IRIS Database (1990), benzo(g,h,i)perylene IRIS Database (1994), benzo(k)fluoranthene IRIS Database (1994), chrysene IRIS Database (1994), dibenz(a,h)anthracene IRIS Database (1994) ,indeno(1,2,3-c,d)pyrene

NHMRC

It is reported in NHMRC (2011) that most of the toxicological literature is specific to benzo(a)pyrene with few studies available for other PAHs. It is reported that the IARC defines benzo(a)pyrene as probably carcinogenic to humans (though recently updated to a confirmed carcinogen as discussed in IARC review).

A guideline value has been presented for benzo(a)pyrene. This is reported to have been based on a WHO linear multistage model as based on the incidence of leukaemia in humans. The NHMRC/NRMMC (2011) guideline value is further noted to be based on an incremental risk of cancer of 1 in 1 000 000.

Background exposure to PAHs were not reported in NHMRC/NRMMC (2011) for Australia. It was reported that benzo(a)pyrene occurs in US drinking waters at a typical concentration of 55ng/l. The intake of PAHs from foods was reported as being at least an order of magnitude higher than from drinking water.

NEPC

NEPC (2013) reports the derivation of benzo(a)pyrene criteria in soils, assessed as a benzo(a)pyrene toxicity equivalent, as several alternate calculations undertaken using several alternate toxicity and exposure factors. The adopted soil criteria has been based on a WHO oral exposure slope factor with adjustments made to early lifetime exposures consistent with *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens*, 2005, US EPA (US EPA 2005). A dermal absorption factor of 0.06 has also been adopted by NEPC (2013).

The following factors have been adopted to assess the relative potency of other carcinogenic PAH constituents:

- Benzo(a)anthracene – 0.1;
- Benzo(a)pyrene – 1.0;
- Benzo(b&j)fluoranthene – 0.1;
- Benxo(k)fluoranthene – 0.1;
- Benzo(g,h,i)perylene – 0.01;
- Chrysene – 0.01;
- Dibenz(a,h)anthracene – 1.0; and
- Indeno(1,2,3-c,d)pyrene – 0.1.

NEPC (2013) further presents dermal absorption factors of 0.06 and 0.026 as base don scenarios of fresh and aged PAH sources respectively. Noting that the site had had no active use with respect to a potential PAH generating / contaminating presence, the dermal absorption factor of 0.026 is most appropriate to be applied to the site data.

WHO

WHO (2003) reports that benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, Dibenzo(a,h)anthracene, fluoranthene and indeno(1,2,3-c,d)pyrene are classifiable as carcinogens. Relative potencies of PAHs are summarised following:

- Benz(a)anthracene – 0.1;
- Benzo(a)pyrene – 1.0
- Benzo(b)fluoranthene – 0.1;
- Benzo(k)fluoranthene – 0.1;
- Dibenz(a,h)anthracene – 1.0; and
- Indeno(1,2,3-c,d)pyrene – 0.1.

An earlier WHO publication, WHO / IPCS (1998) 'Environmental Health Criteria Selected Non-Hetrocyclic Polycyclic Aromatic Hydrocarbons' also provides potency factors for an increased list of PAHs that includes chrysene. These are reproduced following.

- Benzo(a)pyrene – 1.0
- Benzo(a)anthracene – 0.1-0.145;

- Benzo(b)fluoranthene – 0.1-0.167;
- Benzo(k)fluoranthene – 0.01-0.02;
- Chrysene – 0.001-0.004;
- Dibenz(a,h)anthracene – 1-1.11; and
- Indeno(1,2,3-c,d)pyrene – 0.055-0.1.

It is noted that a range of potential toxicity equivalences are also provided for benzo(g,h,i)perylene of 0.01-0.022, fluoranthene of 0.001-0.1 and pyrene of 0.001-0.81. No final relative potency is recommended for these constituents as there is considered to be insufficient evidence of carcinogenicity.

It is reported that evidence that mixtures of PAHs are carcinogenic in humans comes primarily from occupational studies of workers. Cancer associated with exposure to PAH-containing mixtures in humans occurs predominantly in the lung and skin following inhalation and dermal exposure, respectively.

A guideline value has been derived by WHO (2003) for benzo(a)pyrene, described as the most carcinogenic of PAHs. It is reported that an excess lifetime cancer risk of $1*10^{-5}$ was estimated for 0.7µg/l, based on an oral carcinogenicity study and a two-stage birth–death mutation model, which incorporated variable dosing patterns and time of sacrifice. It is further reported that a study on forestomach tumour incidence in mice gave nearly identical results. This criteria and associated slope factor of 0.5 $(mg/kg/day)^{-1}$ has continued to be adopted in WHO (2011).

WHO (2000) nominated benzo(a)pyrene as an indicator chemical to represent the carcinogenic potential of PAHs in air. It is noted that that evaluation of benzo(a)pyrene solely probably underestimates the carcinogenic potential of airborne PAH mixtures. Based upon epidemiological data from studies in coke-oven workers, a unit risk for benzo(a)pyrene as an indicator in air of PAH constituents, is estimated to be $8.7*10^{-5}$ $(ng/m^3)^{-1}$. This was reported to be supported by animal data.

<u>enHealth</u>

enHealth (2001) reports that some PAHs are classified as IARC Group 2A and 2B carcinogens and the procedure for these compounds, in the absence of an ADI/PTWI, was to establish their carcinogenic potency, and then estimate a dose associated with a particular increased lifetime cancer risk.

A guideline value based on an exposure to benzo(a)pyrene of 0.8ng/kg/day was reported to have been used to derive soils criteria.

<u>NEHF</u>

NEHF (2003) contains a review of international sources of PAHs toxicological data. Most of the available toxicological data is found in this document to be available for benzo(a)pyrene. This review has been undertaken to premise the PAHs criteria as provided to the Air Toxics NEPM. An annual average of $0.3ng/m^3$ as an eight year goal is recommended for benzo(a)pyrene as a marker for PAHs.

<u>IARC</u>

IARC classifies benz(a)anthracene as a Group 2B chemical, possibly carcinogenic to humans. IARC classifies benzo(a)pyrene as a Group 1 carcinogen. IARC classifies benzo(b)fluoranthene and benzo(k)fluoranthene as Group 2B chemicals, possibly carcinogenic to humans. IARC classifies chrysene as a Group 2B chemical, possibly carcinogenic to humans. IARC classifies dibenz(a,h)anthracene as a Group 2A chemical,

possibly carcinogenic to humans. IARC classifies indeno(1,2,3-c,d)pyrene as a Group 2B chemical, possibly carcinogenic to humans.

ATSDR

ATSDR report that no inhalation exposure MRLs have been derived for PAHs (apart from naphthalene and isomers) consequent of lack of dose-response data that identify noncancer health effects for humans or animals.

No acute or chronic duration oral exposure MRLs are reported to be provided for PAHS, also consequent of a lack of data. MRLs are provided by ATSDR for naphthalene, acenaphthene, fluoranthene, fluorene and anthracene. No values are provided for benzo(a)pyrene.

US EPA

Benz(a)anthracene

Benz(a)anthracene has been reported by US EPA to be a probable human carcinogen (classification B2) based on data from animal bioassays. Benz[a]anthracene administration has been reported to cause an increase in the incidence of tumors in animals by gavage, dermal application and both subcutaneous injection and intraperitoneal injection.

Benzo(a)pyrene

Benz(a)anthracene has been reported by US EPA to be a probable human carcinogen (classification B2) based on human data from multiple animal studies in many species demonstrating benzo(a)pyrene to be carcinogenic following administration by numerous routes. Benzo(a)pyrene is also reported to have produced positive results in numerous genotoxicity assays.

Benzo(a)pyrene administered in the diet or by gavage to mice, rats and hamsters has produced increased incidences of stomach tumours. Intratracheal instillation and inhalation studies in guinea pigs, hamsters and rats have resulted in elevated incidences of respiratory tract and upper digestive tract tumours. Intraperitoneal BAP injections have caused increases in the number of injection site tumours in mice and rats.

US EPA provides an oral slope factor for benzo(a)pyrene of 7.3 per (mg/kg)/day. This data has been derived on the extrapolation of animal studies that resulted in forestomach, larynx and esophagus, papillomas and carcinoma type tumours. The slope factor has been set by the calculation of a geometric mean of a range of slope factors.

Benzo(b)fluoranthene

Benzo(b)fluoranthene has been reported by US EPA to be a probable human carcinogen (classification B2) based on data from animal bioassays. Benzo[b]fluoranthene is reported to have produced tumors in mice after lung implantation, intraperitoneal or subcutaneous injection, and skin painting.

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene has been reported as being non classifiable as to human carcinogenicity, based on no human data and inadequate data from animal bioassays.

Benzo(k)fluoranthene

Benzo(k)fluoranthene has been reported by US EPA to be a probable human carcinogen (classification B2) based on data from animal bioassays. Benzo(k)fluoranthene is reported to have produced tumours after lung implantation in mice and when administered with a promoting agent in skin-painting studies. Equivocal results have reported to have been found in a lung adenoma assay in mice. Benzo[k]fluoranthene is also reported to have been shown to be mutagenic in bacteria.

Dibenz(a,h)anthracene

Dibenz(a,h)anthracene has been reported by the US EPA to be a probable human carcinogen (classification B2) based on data from animal bioassays. Dibenz(a,h)anthracene is reported to have produced carcinomas in mice following oral or dermal exposure and injection site tumors in several species following subcutaneous or intramuscular administration and induced DNA damage and gene mutations in bacteria as well as gene mutations and transformation in several types of mammalian cell cultures.

Indeno(1,2,3-c,d)pyrene

Indeno(1,2,3-c,d)pyrene has been reported by US EPA to be a probable human carcinogen (classification B2) based on data from animal bioassays. Indeno(1,2,3-c,d)pyrene is reported to produce tumours in mice following lung implants, subcutaneous injection and dermal exposure. Indeno(1,2,3-c,d)pyrene is reported to have tested positive in bacterial gene mutation assays.

Order of Potency of PAHs

US EPA (1993) 'U.S. Environmental Protection Agency. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons' provides an order of potency for PAHs on the basis of equivalent toxicity to benzo(a)pyrene. This is summarised following:

- Benzo(a)pyrene – 1.0;
- Benzo(a)anthracene – 0.1;
- Benzo(b)fluoranthene – 0.1;
- Benzo(k)fluoranthene – 0.01;
- Chrysene – 0.001;
- Dibenz(a,h)anthracene – 1.0; and
- Indeno(1,2,3-c,d)pyrene – 0.1.

Early Life Exposures

US EPA (2005) also recommends that additional factors are taken into consideration when assessing the potential toxicity of benzo(a)pyrene to young children. Based on benzo(a)pyrene being identified as having a mutagenic mode of action for which the oral slope factor was derived, it is recommended that age dependent adjustment factors (ADAFs) are used consistent with the following guidance:

- Risk during first two years of life, ADAF = 10;
- Risk for ages 2 through <16, ADAF = 3; and
- Risk for ages 16 until 70 years, ADAF = 1.

5.4.2 Lead

Lead has been selected as a COPC for the assessment of potential human health impacts. A brief summary of the toxicological data available for lead has been provided following. The summary has been generated by a review of the available data held by the agencies outlined in **Section 5.3**, as summarised in **Table 5.2**.

Table 5.2: Summary of Published Hazard Data for Lead

Organisation	Availability	Reference
NHMRC	YES	NHMRC/NRMMC (2011) 'Australian Drinking Water Guidelines' NHMRC (2009) 'Information Paper, Blood Lead Levels for Australians'
NEPC	YES	NEPC (2013) 'National Environment Protection (Assessment of Site Contamination) Measure. Schedule B7
Therapeutic Goods Administration	No	Full review of safety alerts and advisory statements, no information
WHO	YES	WHO (2011) 'Guidelines for Drinking Water Quality 4th Edition' WHO (2003) 'Lead in Drinking Water' WHO (2000) 'Air Quality Guidelines for Europe, 2nd Edition' (chapter 6.7)
enHealth	YES	enHealth (2001) 'Health-based Soil Investigation Levels'
NEHF	No	enHealth reported by the Australian Government Department of Health and Ageing to have replaced NEHF. Refer to enHealth (2001)
S.A Health	No	
IARC	YES	IARC Monographs (1987 and 2006)
WHO/FAO JMPR	No	
NICNAS PEC	YES	NICNAS (September 2007) 'Lead Compounds in Industrial Surface Coatings & Inks'
ATSDR	YES	ATSDR (August 2007) 'Toxicological Profile for Lead'
NTP	YES	US Department of Health and Human Services (2011) '12th Report on Carcinogens'
OECD SIDS SIAR	No	
EPA	YES	IRIS database (2004)

NHMRC

NHMRC/NRMMC (2011) has recommended a daily intake of 0.0035mg/kg body weight per day of lead as based on a level which has been demonstrated to not result in an increase in lead retention in metabolic studies with infants. The recommended daily intake is reported to have been based on a WHO value. It is noted that the PTWI value cited from WHO has been withdrawn by the WHO.

NHMRC/NRMMC (2011) estimates that average Australian adult dietary intake of lead to be approximately 0.1mg/day. It is estimated that approximately 80% of the daily intake of lead is from the ingestion of food, dirt and dust.

NHMRC (2009) recommends a goal of <10 µg/dL of blood lead for all Australians.

NEPC

NEPC (2013) reports that an acceptable level of lead in soils has been derived on the basis of a target blood lead goal of <10 µg/dL for all routes and exposure sources. This has been assessed using the IEUBK blood lead model. Discussions of lead bioavailability are also provided in NEPC (2013) where it is reported to be no more than 50% bioavailable through oral ingestion and to have negligible availability through dermal absorption.

WHO

It is reported in WHO (2003) that the evidence for the carcinogenicity of lead in humans is inconclusive because of the limited number of studies, the small cohort sizes, and the failure to take adequate account of potential confounding variables. However, an

association has been demonstrated experimentally between the ingestion of lead salts and renal tumours. However as there is evidence from human studies that adverse effects other than cancer may occur at very low lead levels, the WHO drinking water guideline has been derived using the TDI approach.

The WHO (2003) drinking water guideline is based on a provisional tolerable weekly intake (PTWI) of 25 µg of lead per kg of body weight (equivalent to 3.5 µg/kg of body weight per day) for infants and children which took account of the fact that lead is a cumulative poison so that any increase in the body burden of lead should be avoided.

WHO (2011) has withdrawn the PTWI adopted in WHO (2003) however. No new value has been provided, and a provisional guideline of 0.01 mg/L has been adopted based on treatment performance and analytical achievability.

WHO (2000) reports that the guideline for lead in air has been based on the concentration of lead in blood. Critical effects in adults include elevation of free erythrocyte protoporphyrin. For children, cognitive deficit, hearing impairment and disturbed vitamin D metabolism are taken as the decisive effects. The guideline is based on a critical level in blood of 100µg/l, based on a child exposure. It is recommended that an annual average lead level in air should not exceed 0.5µg/m^3.

enHealth

enHealth (2001) describes the adopted approaches for assessing lead being the assessment for potential impacts to children by the use of a WHO PTWI of 25µg/kg/week. It was also noted that background exposures may contribute approximately 50% of the PWTI.

IARC

IARC classifies lead compounds as Group 2A chemicals, probably carcinogenic to humans. IARC classified lead as a Group 2B chemical, possibly carcinogenic to humans.

IARC (2006) notes that lead potentially has reduced bioavailability subsequent to exposure. A range of bioavailabilities are presented based on the chemical form of lead (i.e. lead sulphide, lead oxide, lead acetate etc.) and the exposure pathway. Based on the range of bioavailabilities presented, it is considered that a bioavailability of 50% (from soil, dust, food and water) is most likely suitably conservative.

NICNAS

Lead and inorganic lead compounds are reported to have diverse effects on multiple body systems including neurological, gastrointestinal, reproductive and cardiovascular systems.

Few data were reported to be available from acute exposure in humans to lead. Most data was derived from cases of accidental or intentional ingestion of dirt containing lead or lead-based paint. High acute exposure had resulted in encephalopathy, gastrointestinal and renal effects.

It was reported that lead had been shown in animals to produce a variety of cardiovascular effects. The endpoint of greatest concern to humans was possible changes in blood pressure. Although there have been numerous epidemiological studies examining the effect of low concentrations of lead on blood pressure (amongst other endpoints) no causal relationship is reported to have been demonstrated between blood pressure and low blood lead concentration in humans.

The most important confirmed effects of long term exposure to lead were reported to be neurological, including encephalopathy and neurobehavioural changes. Neurological effects were reported to be particularly important in the foetus and in children. Lead was reported to be a known developmental toxicant in humans. Blood lead levels greater than

10 µg/dL can result in decline in IQ and neurobehavioural deficits. Peripheral neuropathy has been observed in children at blood levels between 60 and 130µg/dL

The report recommended that lead is not used in industrial coatings.

ATSDR

ATSDR reports that MRLs were not derived for lead because a clear threshold for some of the more sensitive effects in humans has not been identified and data suggest that certain subtle neurobehavioral effects in children may occur at very low lead blood levels.

It is reported that blood levels as low as <10µg/dL can cause depressed aminolevulinic acid dehydratase (i.e. anemia). A range of other effects are reported at higher concentrations.

NTP

NTP reports that lead and lead compounds are reasonably anticipated to be human carcinogens based on limited evidence from studies in humans and sufficient evidence from studies in experimental animals. Lead exposure has been associated with increased risk of lung, stomach, and bladder cancer in diverse human populations. The strongest epidemiological evidence is reported to be for lung and stomach cancer, which are consistently but weakly associated with occupations and industries entailing lead exposure and with indices of individual lead exposure, including job history and biological monitoring of occupationally exposed and general populations.

US EPA

The US EPA has classified lead as a probable human carcinogen (Class B2) on the basis of ten rat bioassays and one mouse assay that have shown statistically significant increases in renal tumors with dietary and subcutaneous exposure to several soluble lead salts. Short term studies are also reported to show that lead effects gene expression. Human evidence is described as being inadequate.

US EPA further reports that health effects associated with exposure to inorganic lead and compounds include, but are not limited to, neurotoxicity, developmental delays, hypertension, impaired hearing acuity, impaired hemoglobin synthesis, and male reproductive impairment. Lead is reported to have particularly significant effects in children, well before the usual term of chronic exposure can take place.

US EPA does not provide an oral RfD for lead on the basis that some of the effects of lead exposure, particularly changes in the levels of certain blood enzymes and in aspects of children's neurobehavioral development, may occur at blood lead levels so low as to be essentially without a threshold.

An RfC is not provided for lead for the same reasoning.

5.5 Summary and Evaluation of Toxicological Data

Toxicological data has been required to be determined for each COPC for potential human health impacts. NEPC (2013) provides a list of recommended sources of chemical data. Toxicological data has been preferentially selected if it has been included in the derivation of health screening levels in NEPC (2013) and CRCCARE (2011) as considered relevant in an Australian context. It is noted for some constituents that the recommended value has been varied consequent of availability of more conservative and reliable data. This has been detailed in **Table 5.3** for benzo(a)pyrene which has been assessed by a non-threshold method, and within **Table 5.4** for lead which has been considered by a threshold based method.

Table 5.3: Toxicity Criteria for Carcinogenic / Non-Threshold Endpoints

Constituent	Inhalation Slope Factor $(mg/kg/day)^{-1}$	Oral Slope Factor $(mg/kg/day)^{-1}$	Dermal Slope Factor $(mg/kg/day)^{-1}$	Oral Bioavailability	Dermal Absorption Factor	Age Dependent Adjustment Factor	Discussion / Comments
Benzo(a)pyrene	304	0.5	0.5	1.0	0.026	10 (Child 0-2 years) 3 (Child 3-16 years) 1 (Adult)	Inhalation slope factor based on WHO unit risk of $8.7*10^{-2}$ $(\mu g/m^3)^{-1}$. Oral slope factor based on WHO, as adopted in NHRMC/NRMMC (2004). Dermal slope factor revised as per guidance from NEPC (2013) for aged sources of PAHs. No basis to present alternate oral bioavailability factor, factor of 1.0 which is likely to be highly conservative adopted.

Table 5.4: Toxicity Criteria for Threshold Endpoints

Constituent	Inhalation ADI (mg/kg/day)	Oral RfD (mg/kg/day)	Dermal RfD (mg/kg/day)	Oral Bioavailability	Dermal Absorption Factor	Discussion / Comments
Lead	$2.6*10^{-5}$	$3.5*10^{-3}$	$3.5*10^{-3}$	0.5	Negligible	Inhalation ADI based on WHO and adjusted assuming an average adult daily inhalation rate of $20m^3$/day and body weight of 78kg. Oral RfD based on NHMRC. It is noted that NEPC and other assessments adopt the blood lead model. However NEPC (2013) cites NHRMC/NRMMC (2013) as the preferred source of toxicological data and a value has been adopted consistent with used in the current Australian drinking water guideline. It is further noted that the IEUBK model is based on soil / food exposure to lead and considers children. This exposure assessment is not consistent with the exposure scenario considered most appropriate to characterise the potential direct exposures for soils. No correction for dermal factor for lead, however dermal absorption is negligible. Toxicity data based on lead exposure to children. Lead availability by dermal exposure reported in NEPC (2013) to be negligible. Lead exposure assessment also require to consider bioavailability of lead. This has been conservatively estimated as 50% as based on IARC (2006) and considered for oral (i.e. ingestion) exposures.

5.6 Aesthetics

Potential aesthetic impacts of environmental impact also require consideration. The most likely aesthetic impact will be odours from volatile constituents as reported in soil vapour. Of the COPCs adopted during this risk assessment, none are considered to be volatile and potentially malodorous. Odours have generally not been observed during site investigation works.

6 Exposure Assessment

Exposure assessment involves the determination of the magnitude, frequency, extent, character and duration of exposures currently and into the future. This includes the identification of exposed populations and potential exposure pathways. The exposure assessment has derived exposure scenarios that are the most potentially conservative for the site.

6.1 Potential Exposure Pathways

The consideration of potential exposures is restricted to the site only and the proposed recreational / educational development of the site. A review of potential exposure scenarios associated with the future uses of the site has determined that the following potentially exposed populations and exposure pathways require quantified human health risk assessment:

- Potential recreational user as associated with the school use of the property for recreational purposes / playing fields;
- Commercial worker whom will be engaged to maintain the playing fields and in an associated educational / training capacity with the recreational users;
- Potential spectator / ancillary site users as associated with support for the conduct of recreational activities;
- Construction worker occupationally engaged on the site during any proposed future development of the site; and
- Potential subsurface maintenance worker engaged within an excavation / trench placed for the installation or maintenance of sub-surface services on the site or during site development works.

Recreational and commercial / industrial users will be potentially exposed to impact present within site soils by inhalation (particulates) and direct exposure pathways (oral and dermal).

In further considering the potential for recreational exposures, it is noted that the facility will be owned and operated by a school body. To this extent, potential exposures will be associated with school aged children. To take the most conservative assessment of this, this would infer recreational exposures of children between the ages of 5 and 18 years of age (13 years total duration). There is also a potential of exposure of older populations, however these are likely to be more than adequately addressed by conservative exposure parameters over the course of each 12 month period as assumed are adopted for the student population.

It is also noted that a substantially longer exposure duration has been adopted for commercial workers as anticipated to be engaged on the site, as set at 30 years and consistent with NEPC (2013) guidance for a lifetime working exposure. These exposures would further be protective of potential ongoing adult use of the redeveloped site for recreational / sporting purposes.

A range of potentially shorter duration exposures will occur on the site as associated with ancillary / support to persons undertaken sporting / recreational activities. This may include such users as parents viewing sports, spectators to sports etc. The assessment of the substantially longer durations of the recreational and commercial users will be protective of the potential shorter-term exposures of these other site users.

Potential construction workers may also be occupationally engaged on the site as per a future redevelopment. Direct access to soils will potentially occur during site construction works with any proposed redevelopment. Potential exposures of construction workers would be managed by relevant worksite health and safety provisions as provided to relevant New South Wales Health and Safety legislation. The site workforce will be aware of the occurrence of the contaminants in site soils and relevant monitoring / management / protective procedures would be put in place.

Sub-surface excavation / intrusive workers will be potentially engaged on the site in the future. Exposures of sub-surface maintenance workers would potentially occur by oral ingestion of soils, dermal contact to soils and inhalation of particulates from non-volatile COPCs and would comprise soils over a greater vertical extent of exposure than possible for normal site users.

Notwithstanding the discussion in **Section 3.4**, for the purpose of the assessment of health risk it has been assumed that all soils as present on the site (and subject to environmental impact) are potentially present at near surface depths for exposure of site users. This is the most conservative characterisation of the potential exposure to site soils.

6.2 Assessment of Lead Risk

On the basis of the proposed 'recreational' site use and the potential significant exposure of children, there is little opportunity for a risk assessment to improve upon the outcome achieved in NEPC (2013). On that basis, a site criterion of lead of 600 mg/kg, to be assessed by a 95% UCL_{avg} and subject to no maximum concentration exceeding 2.5 times the criteria and the standard deviation being 0.5 times the criteria should be adopted for the redevelopment of the site.

The exposure to lead is averaged over a period of 12 months. On this basis, a hot-spot of lead impact at sample location BH109 at a depth of 2.6 to 2.7 m, as measured 2600 mg/kg, will require to be addressed. This may either be undertaken by remediation of affected soils, or by management of the impacted soils to prevent potential direct exposure of site users in the future.

6.3 Exposure Estimation

Exposure estimation has been undertaken by the consideration of a reasonable maximum exposure (RME) on a particular site (USEPA, 1989a). The goal of RME is to combine upper bound and average exposure factors in a manner such that the result represents an exposure scenario that is both protective and reasonable. This is not one which is the absolute worst case but that which represents a reasonable maximum exposure.

The approach for exposure assessment used here is based on the procedures developed by the US EPA (1989a and 1991). In general, assumptions employed in risk assessments are based on information presented by local authorities (i.e. enHealth (2001) 'Exposure Scenarios and Settings'), precedents established in previous risk assessments and recommendations by the US EPA.

The estimated exposure (or intake) of a person is normalised for time and body weight and is generally calculated as:

$$\text{Intake} = \frac{\text{Concentration} \times \text{Contact Rate} \times \text{Exposure Frequency} \times \text{Exposure Duration}}{\text{Body Weight} \times \text{Averaging Time}}$$

As an alternative to deriving criteria based on RME, probabilistic techniques such as Monte Carlo analysis can be used to account more realistically for variability and uncertainty.

However, there is generally insufficient information available in an Australian context to allow reliable Monte Carlo analysis to be undertaken. Monte Carlo analysis has not been undertaken here.

6.4 Exposure Factors

The exposure factors adopted for the purposes of assessing risks from the site are consistent with those adopted in enHealth (2012a) *'Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards'*, enHealth (2012b) *'Australian Exposure Factor Guidance: Guidelines for assessing human health risks from environmental hazards'* and CRCCARE (2011*) 'Technical Report no.10: Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater'* where available. For some exposure scenarios, specific or appropriate exposure factors have not been provided in enHealth (2012a and 2012b) or CRCCARE (2011). In these cases, available literature has been reviewed to determine the parameters that are most appropriate for an Australian context. Additional parameters, where required, are based on an RME receptor.

Exposure factors are summarised for each of these populations in the following **Tables 6.1** to **6.5**.

Table 6.1: Exposure Parameters – Recreational (Sporting Field User)

Exposure Parameter	Units	Factor	Reference
Exposure Frequency	days/year	365	As per NEPC (2013). Highly conservative assessment of continual use for sport / recreational activity substantially exceeding duration of school year.
Exposure Duration	years	13	As discussed in Section 6.1 and consistent with attendance at school.
Exposure Time	hours	2	NEPC (2013)
Body Weight	kg	24 37 56 78	Child 4-<8 years, enHealth (2012) Child 8-<12 years, enHealth (2012) Child 12-<16 years, enHealth (2012) Adult >16 years, enHealth (2012)
Averaging Time – non Threshold	years	70	CRCCARE (2011) (HSL-A)

Table 6.2: Exposure Parameters – Commercial Receptor

Exposure Parameter	Units	Factor	Reference
Exposure Frequency	days/year	240	As per NEPC (2013)
Exposure Duration	years	30	As per NEPC (2013)
Exposure Time	hours	8	NEPC (2013)
Body Weight	kg	78	Adult >16 years, enHealth (2012)
Averaging Time – non Threshold	years	70	CRCCARE (2011) (HSL-A)

Table 6.3: Global Parameters – Adult Sub-Surface Maintenance / Excavation Worker

Exposure Parameter	Units	Factor	Reference
Exposure Frequency	days/year	15	Assumption of maximum time spent undertaking maintenance works, three working weeks.
Exposure Duration	years	30	NEPC (2013), consistent with commercial worker exposure duration.
Exposure Time	hours	8	enHealth (2001)
Body Weight	kg	78	enHealth (2012a)
Averaging Time – non Threshold	years	70	enHealth (2012)

Table 6.4: Ingestion Parameters

Exposure Parameter	Units	Factor	Reference
Sub-Surface Maintenance Worker	mg/day	330	CRCCARE (2011), sub-surface maintenance worker
Recreational User (Soil)	mg/day	100	enHealth (2012a), outside soil reasonable maximum, child aged 1-15 years. Adopted for all recreational users
Commercial user	mg/day	50	enHealth (2012a). Higher than NEPC (2013) for soils exposure and noting that commercial use will likely be associated with support to recreational activity or otherwise gardening / landscaping

Table 6.5: Dermal Contact Parameters

Exposure Parameter	Units	Factor	Reference
Exposed skin surface – recreational user	cm^2	3300 5000 7300	Child 4-<8 years, enHealth (2012), 95% UCL_{avg} Child 8-<12 years, enHealth (2012), 95% UCL_{avg} Child >12 years, enHealth (2012), 95% UCL_{avg}
Exposed skin surface – commercial user	cm^2	3800	As per NEPC (2013), for commercial / industrial worker
Soil adherence	mg soil/cm^2 skin	0.5	enHealth (2012a), average value

6.5 Estimation of Inhalation Exposures

Inhalation exposures have been estimated by the approach outlined in NEPC (2013) and using the default parameters for recreational and commercial receptors as provided to NEPC (2013). It is noted that risk estimates for the COPC's and populations assessed are substantially controlled by the risk estimates through the oral and dermal exposure pathways.

6.6 Risk Measurement

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen. The slope factor (SF) converts estimated daily intakes averaged over a lifetime of exposure directly to incremental risk of an individual of developing cancer. Because relatively low intakes (compared to those experienced by test animals) occur with exposures on most contaminated sites it can generally be assumed that the dose response relationship is linear in the low-dose portion of the multistage model dose-response curve. Under this assumption the slope factor is constant and risk is directly related to intake. Thus the following linear based carcinogenic risk equation is used:

Risk = CDI * SF

where: Risk – unitless probability of an individual developing cancer;

CDI – chronic daily intake averaged over 70 years (mg/kg-day); and

SF – slope factor expressed in $(mg/kg\text{-}day)^{-1}$.

The slope factor is often an upper 95% percentile confidence limit of the probability of response based on experimental animal data used in the multistage model. Consequently the carcinogenic risk estimate will often be an upper bound estimate (US EPA, 1989a).

The measure used to describe the potential for non carcinogenic toxicity to occur in an individual is not expressed as the probability of an individual suffering an adverse effect. Instead the potential for non carcinogenic effects is evaluated by comparing an exposure level over a specific time period with a reference dose derived for a similar exposure period. The ratio of exposure to toxicity is called a hazard quotient and is calculated as:

Noncancer hazard quotient = E / RfD

where: E – exposure level (or intake); and

RfD – reference dose (E and RfD are expressed in the same units (US EPA, 1989a).

At most sites the potential health effects of more than one chemical require to be assessed. Potential additive effects of exposure to multiple chemicals requires to be considered in risk assessment. US EPA (1989a) recommends that carcinogenic risks are added.

To assess the overall potential for non-carcinogenic effects posed by more than one chemical a hazard index approach is used. This is undertaken by summing of all hazard quotients to determine a hazard index.

6.7 Adopted Risk Criteria

Acceptable risk guidelines are available from a range of national and international environmental agencies. These include:

- US EPA (1991) states that "Where the cumulative site risk to an individual based on an reasonable maximum exposure for both current and future land use is less than 10^{-4},…. action is generally not warranted unless there are adverse environmental impacts". Where the level of risk exceeds 10^{-4} it is recommended that remediation goals are developed based on a 10^{-6} cancer risk;
- WHO (2004b) 'Guidelines for Drinking Water Quality' are based on a risk of 1 in 100,000 (1×10^{-5}); and
- NHMRC/ARMCANZ (1996) 'Australian Drinking Water Guidelines' nominate a negligible level of risk of 1 in 1,000,000 (1×10^{-6}).

No formal policy exists for the acceptable level of cancer risk, however it has been the experience of JBS&G that Environmental Auditors across Australia generally consider risks in the range of 1 in 100,000 (1×10^{-5}) to be acceptable. This level of risk has been adopted in risk calculations undertaken in CRCACRE (2011) and NEPC (2013). This level of acceptable risk will be adopted for this site.

For the purposes of this risk assessment an acceptable level of risk is defined as risk less than 1 x 10^{-5} incremental lifetime risk of cancer.

6.8 Dose Estimation and Risk Calculations

Human health risk calculations have been completed using the calculation spreadsheets as provided to the NEPC (2013) toolbox. These calculations spreadsheets have been adjusted using the exposure parameters and toxicological data as adopted in this risk assessment. This has comprised several calculations, as specific to each of the age ranges as characterised for the recreational users, and further each of the receptors of commercial workers and sub-surface maintenance workers.

Each of the calculation spreadsheets have been prepared and are summarised in **Appendix A**. The spreadsheets are noted to present an outcome of a site-specific criterion for benzo(a)pyrene (TEQ) as based on the input parameters. For exposure durations which comprise assessment for several sub-periods, these criteria require to be combined to form a criterion as based on the total period of the exposure duration. This is undertaken as per the following relationship.

$$C_t^{-1} = C_1^{-1} + C_2^{-1} + C_3^{-1} + \ldots + C_n^{-1}$$

It is further noted that the criteria as estimated in the calculation spreadsheets for exposures for receptors under an age of 16 years have further required to be reduced by a factor of three so as to account for the adjustment of the toxicological estimates by the age dependent factor as discussed in **Section 5**.

The following benzo(a)pyrene (TEQ) criteria are estimated for each of the receptors assessed:

- Recreational user – 9.1 mg/kg;
- Commercial receptor – 56 mg/kg; and
- Sub-surface maintenance / excavation worker – 233 mg/kg

All available benzo(a)pyrene (TEQ) data for the site has been provided in **Table 6.6** following.

Table 6.6: Summary of Benzo(a)pyrene (TEQ) Data

Sample ID	Units	Level	Source
BH101_0.2-0.3	mg/kg	3.2	DP (2020)
BH102_0.2-0.3	mg/kg	6.6	DP (2020)
BH102_0.7-0.8	mg/kg	4.7	DP (2020)
BH103_0.9-1.0	mg/kg	<0.5	DP (2020)
BH103_0-0.1	mg/kg	<0.5	DP (2020)
BH104_0.3-0.4	mg/kg	<0.5	DP (2020)
BH107_0.9-1.0	mg/kg	9.3	DP (2020)
BH107_0-0.1	mg/kg	<0.5	DP (2020)
MW1_0.5-0.6	mg/kg	11.3	DP (2020)
MW1_3.5-3.6	mg/kg	<0.5	DP (2020)
MW2_0.2-0.3	mg/kg	2.9	DP (2020)
BH109 0-0.1	mg/kg	<0.5	JBS&G (2020)
BH109 2.6-2.7	mg/kg	9.4	JBS&G (2020)
BH110 0.5-0.6	mg/kg	<0.5	JBS&G (2020)
BH111 0.1-0.2	mg/kg	<0.5	JBS&G (2020)
BH111 1.5-1.6	mg/kg	<0.5	JBS&G (2020)
BH112 0.3-0.4	mg/kg	5.7	JBS&G (2020)
BH113 0.4-0.5	mg/kg	<0.5	JBS&G (2020)
BH113 2.6-2.7	mg/kg	<0.5	JBS&G (2020)
BH114 0.2-0.3	mg/kg	2.4	JBS&G (2020)
BH115 0.9-1.0	mg/kg	1.5	JBS&G (2020)
BH115 2.5-2.6	mg/kg	0.6	JBS&G (2020)
BH116 1.5-1.6	mg/kg	<0.5	JBS&G (2020)
BH117 0-0.1	mg/kg	<0.5	JBS&G (2020)
BH117 1.5-1.6	mg/kg	<0.5	JBS&G (2020)
BH118 0.3-0.4	mg/kg	6.4	JBS&G (2020)

The comparison of the data to the derived criteria requires to be cognisant of the extent and nature of exposure as relevant for each receptor. The recreational and commercial exposures would be anticipated to range over the extent of the facility for the period of exposure assessed. On this basis, and further following the guidance in *Sampling Design Guidelines*, 1995, NSW EPA a statistically estimated 95% UCL_{avg} of the analytical data requires to be compared to the criteria.

A sub-surface excavation / maintenance worker is most appropriately assessed to the maximum level of the constituent in soils, noting the potential that these works will be localised to the area of services maintenance only.

Statistical analysis of the benzo(a)pyrene (TEQ) dataset has been undertaken and is summarised in **Appendix B**. The whole dataset has been included noting the likelihood that soil will be reworked with the proposed redevelopment works, and observations of highest levels of impact being present at deeper depths. This has ensured a conservative representation of the analytical data. Summarised results are provided in **Table 6.7** following.

Table 6.7: Summary of Statistical Analysis of Benzo(a)pyrene (TEQ) Data (mg/kg)

Measure	Result	Notes
95% UCL_{avg}	3.9	95% KM (t) UCL
Maximum	11.3	
Mean	2.7	KM Mean
Standard Deviation	3.3	KM standard deviation
Number	26	Including 12 detects

The statistically derived 95% UCL_{avg} level of benzo(a)pyrene (TEQ) is well below the site specific risk based criteria for each of the receptors assessed for the site. The maximum level of benzo(a)pyrene (TEQ) is further well below the commercial and sub-surface maintenance worker risk based criteria. On this basis, the level of benzo(a)pyrene (TEQ) is not considered to pose a potential heath risk for future users of the site as per the proposed development.

7 Sensitivity Analysis

An assessment has been required to be undertaken of the sensitivity of the risk assessment outcomes. Risk assessment calculations can be observed to have been based on:

- Levels of COPCs as estimated by soil sampling programs completed on the site;
- Toxicological parameters used to characterise COPCs;
- Potential future land-uses;
- Exposure parameters used to characterise potential future population behaviours on the site;
- Physical parameters used to characterise site areas where exposures may occur; and
- Equations and related relationships used to estimate levels of COPCs from reported levels in soils to points of exposure.

Each of these is discussed further following.

7.1 Sampling Programs

Soil data used for the risk assessment have been obtained from sampling programs recently completed by JBS&G and others. The data has been used for the selection of COPCs and to characterise potential maximum levels of impact. The analysis data is required to be appropriately representative of site conditions. Soil data are considered to more than likely overstate the extent of impact on the site because a significant amount of the assessment locations have been targeted only to areas of the site where site impact is most likely (i.e. areas of fill materials). This caused the extent of the data to positively bias the actual extent of impact that may be present on the site.

The use of maximum concentrations for sub-surface maintenance worker exposures is likewise conservative. It is most likely that mixing of soils and associated dilution of maximum levels of impact will occur with soil handling works that will cause dilution of the maximum levels of impact, reducing intrusive / excavation worker exposures.

7.2 Toxicological Parameters

Toxicological data are generally derived by the conversion of dose factors as developed based on animal studies to appropriate levels for human exposure. The conservatism of these values is achieved through the use of uncertainty factors. An uncertainty factor of 100 is commonly applied in converting measured animal toxicity data for use for humans, comprising:

- A factor of 10 to allow for differences that affect the way a chemical behaves in humans rather than the animal species tested; and
- Another factor of 10 adequate to allow for differences in the way the chemical might affect different people, to allow for the most sensitive individuals.

Though the two processes most likely act in two separate ways, indicating a summed factor of 20 should be used, the factors are multiplied to generate an uncertainty factor of 100. It is also noted that most agencies will incorporate an additional factor of 10 where long term toxicity data are not available for a particular constituent, resulting in a total factor of 1,000.

Published toxicity data from recognised agencies, or agencies cited in Australian guideline publications, have only been used by the risk assessment. Toxicological data used in the risk assessment has incorporated these uncertainty factors. This is considered an appropriately conservative process for the site.

7.3 Land-Use

The risk assessment outcomes are only valid for the assumed future land-use of the site. Potentially sensitive land-uses such as the use of the site for agricultural or residential purposes have not been considered. The risk assessment would require to be revised where the site was proposed to be used for an alternate future use other than the recreational, educational and commercial use as proposed with the site redevelopment.

7.4 Exposure Parameters

Exposure parameters have been derived for the range of receptors as based on published guidance provided in Australian guidelines. Exposure parameters are based on reasonably maximum exposed persons and are considered to be conservative. For example, for the sub-surface maintenance worker scenario, it has been assumed that the worker will return to the same locations and undertake sub-surface works for a duration of three working weeks, a total of 30 separate times over their lifetime.

Other exposure parameters as adopted for the commercial worker exposure have been summarised in **Table 7.1** with a summary of the interrelationship between the parameter and the risk estimate for each of the exposure scenarios. The guidance for commercial receptors can readily be translated to the recreational receptors assessed

Table 7.1: Summary of Exposure Parameters and Effect on Risk Estimates

Exposure Parameter	Commercial Worker
Exposure Duration	30 years adopted. Increased exposure duration will cause minor changes to risk estimates for non-threshold constituents on a linear based relationship.
Exposure Frequency	240 days/year adopted. Maximum increase = 365 days / year, which causes increase in risk estimates of approximately 50%.

7.5 Modelling Equations

Modelling for the risk assessment has been undertaken using the spreadsheets as provided for the calculation of the risk-based criteria as informed to NEPC (2013). There are Regulator endorsed spreadsheets, and adjustment of all parameters has been defined and discussed throughout the risk assessment document.

7.6 Conclusion

There are several factors which may have caused the risk estimates (and associated risk based criteria derived) provided in this risk assessment to be underestimated. However, it is more than likely that any underestimation caused by the risk assessment process and limitations of available data and modelling techniques has been overcome by the use of conservative assumptions throughout the assessment. Examples of conservative assumptions provided in this assessment include:

- Consideration of the maximum / 95%UCL concentrations of each COPC;
- Use of RME (reasonable maximum exposed) based exposure parameters for receptors where locally available data is not present; and
- Assumption of all potential pathways with incorporation of conservative exposure settings.

It is concluded that the risk estimates provided have been based on overestimates of actual risk levels for the site and are appropriate for future decision making for the site.

8 Conclusions and Recommendations

A human health risk assessment has been undertaken on the site as legally identified as Part Lot 2 in Deposited Plan (DP) 547260, Part Lot 1 in DP 311460 and Lot 1 in DP 633259 and encompasses an approximate area of 1.0775 hectare (ha). The risk assessment has considered the redevelopment and future use of the site for a recreational, educational and commercial purpose. It has been assumed through the risk assessment that there are no restrictions of site user access to impacted soils.

Lead and benzo(a)pyrene (assessed as a toxicity equivalent with inclusion of several potentially carcinogenic polycyclic aromatic hydrocarbon constituents) were selected as constituents of potential concern requiring risk assessment.

A sensitivity analysis of the risk assessment process has found that the risk estimates are suitably conservative to be used as the basis for decision making on the site. It was assumed that potential construction worker exposures would be managed by existing New South Wales health and safety legislation as appropriate to construction activities and were not considered further.

In accordance with the limitations provided as **Section 9**, the levels of benzo(a)pyrene (TEF) in soils have not been found to pose a potential health risk as per the proposed redevelopment / use of the site. A potential health risk was identified for an uncontrolled exposure to the highest levels of lead impact on the site.

It is recommended that remediation and/or management works are undertaken to address lead impacted soils as present at the JBS&G sample location BH109 at a depth of 2.6 to 2.7 m to control / eliminate potential direct exposure to the impacted soils.

9 Limitations

This advice is provided for use by the client who commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties. The advice has been prepared specifically for the client for the purposes of the commission. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this advice by any third party.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G.

Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, that were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the advice provided herein, through natural processes or through the intentional or accidental addition of contaminants. The advice is based on the information obtained or available at the time the advice is provided.

This advice is not a complete assessment of the status of the site, and it is limited to the scope of works commissioned. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the advice in the context of the additional information.

Appendix A – Risk Calculations

Risk Assessment Calculation 1
Recreational Receptor - Ages 5-<8 (3 years)

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IR_{SA}	mg/day	100	Table 6.4
Surface Area of Skin	SA_A	cm^2/day	3300	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm^2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	2	Table 6.1
Time Spent Indoors	ETi	hours	0	N/A
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m^3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m^3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	1	adopted
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight	BW_C	kg	24	Table 6.1
Exposure Frequency	EF	days/year	365	Table 6.1
Exposure Duration	ED_C	years	3	Table 6.1
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) (mg/kg/day)$^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) (mg/kg/day)$^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3)$_1$		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	1.1E+02	2.6E+02	3.1E+06			78.4	**80**

Risk Assessment Calculation 2
Recreational Receptor - Ages 8-<12 (4 years)

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IRSA	mg/day	100	Table 6.4
Surface Area of Skin	SAA	cm2/day	5000	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	2	Table 6.1
Time Spent Indoors	ETi	hours	0	N/A
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	1	adopted
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight	BWC	kg	37	Table 6.1
Exposure Frequency	EF	days/year	365	Table 6.1
Exposure Duration	EDC	years	4	Table 6.1
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) ($mg/kg/day)^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) ($mg/kg/day)^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3)$_1$		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	1.3E+02	2.0E+02	2.4E+06			78.5	**80**

Risk Assessment Calculation 3
Recreational Receptor - Ages 12-<16 (4 years)

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IRSA	mg/day	100	Table 6.4
Surface Area of Skin	SAA	cm2/day	7300	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	2	Table 6.1
Time Spent Indoors	ETi	hours	0	N/A
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	1	adopted
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight	BWC	kg	56	Table 6.1
Exposure Frequency	EF	days/year	365	Table 6.1
Exposure Duration	EDC	years	4	Table 6.1
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) ($mg/kg/day)^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) ($mg/kg/day)^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3) [1]		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	2.0E+02	2.1E+02	2.4E+06			100.6	**100**

Risk Assessment Calculation 4
Recreational Receptor - Ages >16 years (2 years)

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IRSA	mg/day	100	Table 6.4
Surface Area of Skin	SAA	cm2/day	7300	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	2	Table 6.1
Time Spent Indoors	ETi	hours	0	N/A
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	1	adopted
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight	BWC	kg	78	Table 6.1
Exposure Frequency	EF	days/year	365	Table 6.1
Exposure Duration	EDC	years	2	Table 6.1
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) ($mg/kg/day)^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) ($mg/kg/day)^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3) [1]		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	5.5E+02	5.8E+02	4.8E+06			280.1	**300**

Risk Assessment Calculation 5
Commercial Receptor - (30 years)

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IR_{SA}	mg/day	50	Table 6.4
Surface Area of Skin	SA_A	cm^2/day	3800	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm^2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	8	Table 6.2
Time Spent Indoors	ETi	hours	0	N/A
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m^3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m^3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	0.5	N/A
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight - Adults	BW_C	kg	78	Table 6.2
Exposure Frequency	EF	days/year	240	Table 6.2
Exposure Duration - Adults	ED_C	years	30	Table 6.2
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) (mg/kg/day)$^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) (mg/kg/day)$^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3)$_1$		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	1.1E+02	1.1E+02	1.2E+05			55.7	**60**

Risk Assessment Calculation 6
Sub-Surface Maintenance / Excavation Receptor

Summary of Exposure Parameters	Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	IR_{SA}	mg/day	330	Table 6.4
Surface Area of Skin	SA_A	cm^2/day	3800	Table 6.5
Soil-to-Skin Adherence Factor	AF	mg/cm^2/day	0.5	Table 6.5
Time Spent Outdoors	ETo	hours	8	Table 6.3
Time Spent Indoors	ETi	hours	0	Table 6.3
Lung Retention Factor	RF	-	0.375	NEPC (2013)
Particulate Emission Factor	PEFo	(m^3/kg)	3.7E+10	NEPC (2013)
Indoor Air Dust Factor	PEFi	(m^3/kg)	2.6E+07	N/A
Fraction of indoor dust comprised of outdoor soil	TF	-	0.5	N/A
Indoor Air-to-Soil Gas Attenuation Factor	α	-	0.1	N/A
Body weight - Adults	BW_C	kg	78	Schedule B7, Table 5
Exposure Frequency	EF	days/year	15	Schedule B7, Table 5
Exposure Duration - Adults	ED_C	years	30	Schedule B7, Table 5
Averaging Time (non-carcinogenic)	AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)	AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Non-Threshold Effects - Lifetime Exposures [adult]

Compound	Toxicity Reference Value Oral (TRV_O) ($mg/kg/day)^{-1}$	GI Absorption (GAF) (unitless)	Non-Threshold Slope Factor Dermal (SFd) ($mg/kg/day)^{-1}$	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)		Toxicity Reference Value Inhalation (TRV_I) (mg/m^3) [1]		Target Risk (TR)	Pathway Specific HILs (mg/kg)			Soil Vapour HIL (mg/m^3) (eqns 13 and 14)	Derived Interim Soil Gas IL - Threshold (to 1 or 2 s.f.) (mg/m3)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)	Derived Soil HIL (to 1 or 2 s.f.) (mg/kg)
										Soil Ingestion (eqns 4 and 5)	Dermal (eqns 7 and 8)	Dust (eqns 10 and 11)				
benzo(a)pyrene	0.5	1	0.5	100%	0.026		8.70E+01		1E-05	2.7E+02	1.8E+03	1.9E+06			233.4	**200**

Appendix B – Statistical Analysis

	0	1
	B(a)P	d_B(a)P
1	3.2	1
2	6.6	1
3	4.7	1
4	0.5	0
5	0.5	0
6	0.5	0
7	9.3	1
8	0.5	0
9	11.3	1
10	0.5	0
11	2.9	1
12	0.5	0
13	9.4	1
14	0.5	0
15	0.5	0
16	0.5	0
17	5.7	1
18	0.5	0
19	0.5	0
20	2.4	1
21	1.5	1
22	0.6	1
23	0.5	0
24	0.5	0
25	0.5	0
26	6.4	1

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation	ProUCL 5.116/06/2020 1:30:12 PM										
5	From File	WorkSheet.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10	B(a)P											
11												
12	General Statistics											
13	Total Number of Observations	26					Number of Distinct Observations	13				
14	Number of Detects	12					Number of Non-Detects	14				
15	Number of Distinct Detects	12					Number of Distinct Non-Detects	1				
16	Minimum Detect	0.6					Minimum Non-Detect	0.5				
17	Maximum Detect	11.3					Maximum Non-Detect	0.5				
18	Variance Detects	11.58					Percent Non-Detects	53.85%				
19	Mean Detects	5.333					SD Detects	3.402				
20	Median Detects	5.2					CV Detects	0.638				
21	Skewness Detects	0.37					Kurtosis Detects	-0.928				
22	Mean of Logged Detects	1.41					SD of Logged Detects	0.859				
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic	0.953					Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value	0.859					Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic	0.151					Lilliefors GOF Test					
28	5% Lilliefors Critical Value	0.243					Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean	2.731					KM Standard Error of Mean	0.67				
33	KM SD	3.272					95% KM (BCA) UCL	3.865				
34	95% KM (t) UCL	3.875					95% KM (Percentile Bootstrap) UCL	3.804				
35	95% KM (z) UCL	3.833					95% KM Bootstrap t UCL	4.12				
36	90% KM Chebyshev UCL	4.741					95% KM Chebyshev UCL	5.652				
37	97.5% KM Chebyshev UCL	6.916					99% KM Chebyshev UCL	9.398				
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic	0.224					Anderson-Darling GOF Test					
41	5% A-D Critical Value	0.741					Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic	0.129					Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value	0.248					Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)	2.048					k star (bias corrected MLE)	1.592				
48	Theta hat (MLE)	2.604					Theta star (bias corrected MLE)	3.351				
49	nu hat (MLE)	49.15					nu star (bias corrected)	38.2				
50	Mean (detects)	5.333										
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)										
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs										
56	This is especially true when the sample size is small.										
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
58					Minimum	0.01			Mean	2.509	
59					Maximum	11.3			Median	0.481	
60					SD	3.497			CV	1.394	
61					k hat (MLE)	0.285			k star (bias corrected MLE)	0.277	
62					Theta hat (MLE)	8.817			Theta star (bias corrected MLE)	9.046	
63					nu hat (MLE)	14.79			nu star (bias corrected)	14.42	
64					Adjusted Level of Significance (β)	0.0398					
65					Approximate Chi Square Value (14.42, α)	6.861			Adjusted Chi Square Value (14.42, β)	6.517	
66					95% Gamma Approximate UCL (use when n>=50)	5.273			95% Gamma Adjusted UCL (use when n<50)	5.551	
67											
68	Estimates of Gamma Parameters using KM Estimates										
69					Mean (KM)	2.731			SD (KM)	3.272	
70					Variance (KM)	10.7			SE of Mean (KM)	0.67	
71					k hat (KM)	0.697			k star (KM)	0.642	
72					nu hat (KM)	36.23			nu star (KM)	33.38	
73					theta hat (KM)	3.919			theta star (KM)	4.254	
74					80% gamma percentile (KM)	4.498			90% gamma percentile (KM)	6.994	
75					95% gamma percentile (KM)	9.59			99% gamma percentile (KM)	15.83	
76											
77	Gamma Kaplan-Meier (KM) Statistics										
78					Approximate Chi Square Value (33.38, α)	21.17			Adjusted Chi Square Value (33.38, β)	20.53	
79					95% Gamma Approximate KM-UCL (use when n>=50)	4.306			95% Gamma Adjusted KM-UCL (use when n<50)	4.441	
80											
81	Lognormal GOF Test on Detected Observations Only										
82					Shapiro Wilk Test Statistic	0.923			Shapiro Wilk GOF Test		
83					5% Shapiro Wilk Critical Value	0.859			Detected Data appear Lognormal at 5% Significance Level		
84					Lilliefors Test Statistic	0.15			Lilliefors GOF Test		
85					5% Lilliefors Critical Value	0.243			Detected Data appear Lognormal at 5% Significance Level		
86	Detected Data appear Lognormal at 5% Significance Level										
87											
88	Lognormal ROS Statistics Using Imputed Non-Detects										
89					Mean in Original Scale	2.74			Mean in Log Scale	0.152	
90					SD in Original Scale	3.339			SD in Log Scale	1.447	
91					95% t UCL (assumes normality of ROS data)	3.859			95% Percentile Bootstrap UCL	3.91	
92					95% BCA Bootstrap UCL	4.02			95% Bootstrap t UCL	4.124	
93					95% H-UCL (Log ROS)	8.215					
94											
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution										
96					KM Mean (logged)	0.278			KM Geo Mean	1.32	
97					KM SD (logged)	1.188			95% Critical H Value (KM-Log)	2.76	
98					KM Standard Error of Mean (logged)	0.243			95% H-UCL (KM -Log)	5.152	
99					KM SD (logged)	1.188			95% Critical H Value (KM-Log)	2.76	
100					KM Standard Error of Mean (logged)	0.243					
101											
102	DL/2 Statistics										
103					DL/2 Normal				DL/2 Log-Transformed		
104					Mean in Original Scale	2.596			Mean in Log Scale	-0.0955	
105					SD in Original Scale	3.431			SD in Log Scale	1.532	
106					95% t UCL (Assumes normality)	3.746			95% H-Stat UCL	7.986	

	A	B	C	D	E	F	G	H	I	J	K	L
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					3.875						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

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