St George Community Housing

Data Gap Investigation

9-11 Gibbons Street
Redfern NSW

28 June 2018

54877/115498 Rev 0

JBS&G Australia Pty Ltd

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Abbreviations

Term	Definition
°C	Degrees Celcius
ACM	Asbestos Containing Material
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ASS	Acid Sulfate Soils
B(a)P	Benzo(a)Pyrene
BGL	Below Ground Level
CES	Consulting Earth Sciences Pty Ltd
COC	Chain of Command
COPC	Contaminant of Potential Concern
CT	Contaminant Threshold
DEC	Department of Environment and Conservation
DGA	Data Gap Assessment
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EPA	Environmental Protection Authority
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
MGT	Management Limit
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 and Completeness
PCB	Polychlorinated Biphenyl
QA/QC	Quality Assurance / Quality Control
RAP	Remedial Action Plan
RPD	Relative Percent Difference
SAQP	Soil Analytical Quality Plan
SCC	Specific Contaminant Concentration
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxic Equivalence Quotient
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
VOC	Volatile Organic Compounds

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by St George Community Housing Ltd (SGCH, the client) to undertake a data gap assessment at 9-11 Gibbons Street, Redfern NSW (the site), as shown in **Figure 1** and **2**. The site is legally identified as Lots 1 – 11 in Deposited Plan (DP) 4209 and occupies an area of approximately 1580 m^2.

The site has historically been used for commercial/industrial purposes including a storage depot by The City of Sydney Council (CoS) and is currently occupied by two commercial/workshop buildings and asphalt/concrete surfaced areas. It is understood that the site is proposed for redevelopment for community housing purposes consisting of a high density residential development with commercial/retail use on ground floor, on-grade car parking and landscaped areas.

As part of the proposed redevelopment, the site has been subject to a preliminary site investigation (PSI) and a hazardous material survey (HMS). The PSI (CES 2018) identified impacts associated with the shallow fill material which extended to maximum depth of 1.6 m bgs, with impacts predominantly related to heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs) and Total Recoverable Hydrocarbons (TRHs) in soil. Additionally, potential heavy metal and PAH impacts have been detected in groundwater (CES 2018). Further, hazardous building materials have been identified within the site structures as documented in Greencap (2018).

Previous investigations did not address the source of high PAHs in soil, potential off-site migration issues and potential sub-slab vapour intrusion issues. Further, two suspected underground storage tanks (USTs) were identified, however soil classification in vicinity of these areas were not undertaken. As such, further assessment was required to enable development a robust remedial strategy to render the site suitable for the proposed land use.

The objective of the investigation was to undertake further investigations to address data gaps at the site, to enable conclusions to be drawn regarding the suitability of the land for future land uses, or make recommendations to enable such conclusions.

The scope of the investigation included a review of previous investigation reports, Preparation of a Sampling and Analysis Quality Plan (SAQP), Development and documentation of a conceptual site model (CSM), implementation of the plan inclusive of field sampling of potentially impacted media and subsequently laboratory analysis of samples; evaluation of the resulting data against site specific health and ecological assessment criteria; and documentation of the resulting outcomes as this assessment report.

Based on the scope of works completed for this assessment and subject to the limitations stated in **Section 12**, the following conclusions have been drawn with regard to the site conditions:

- Previous investigations (Greencap 2018) have identified the presence of hazardous building materials including asbestos, lead paint, ODS and SMF within existing site structures that require appropriate removal/management during proposed demolition works.
- Previous investigations (CES 2018) have identified the presence of potential fuel infrastructure in the northern portion of the site, considered to represent a potential contamination source and as such requiring management/removal pursuant to DECCW (2010).
- Fill material at the site has previously been identified as variously impacted with heavy metals, PAHs and TRH. Further characterisation of conditions within the site has identified contaminant levels generally consistent with CES (2018), with the following impacts identified as requiring management/remediation:

- Fill material across the site identified as impacted with B(a)P TEQ in exceedance of the adopted health based investigation criteria. The elevated B(a)P TEQ concentrations are interpreted to be associated with ash/metalliferous slag inclusions in the fill material. As such, the fill material will require management to address the potential exposure risk with respect to B(a)P TEQ prior to utilization of the site for the proposed land use and during the proposed redevelopment.
- B(a)P TEQ, naphthalene, total PAH and light to mid fraction TRH (>C10-C16 and >C16-C34) impacts identified in the shallow fill material at BH103 0.3-0.5 with respect to human health. This impact is interpreted to be associated with ash/metalliferous slag inclusions, with the TRH concentrations expected to be associated with the high PAH concentrations within the soils rather than a fuel or oil related hydrocarbon source. The material in the vicinity of BH103 0.3-0.5 will require management to address the potential exposure risk prior to utilization of the area for the proposed land use and during the proposed redevelopment.
- Concentrations of copper, zinc), B(a)P and TRH >C16-C34 fractions were reported in various samples in exceedance of the adopted ecological criteria for the proposed landuse. As such, site won fill material are not considered suitable for utilisation as growing media. JBS&G notes that the shallow fill material at the site is unlikely to be used as a growing medium in the proposed development of the site. As part of the site management strategy, growing media will be required to be imported to the site. Therefore, JBS&G do not consider these impacts to constitute a risk to future plant growth or inhibit the future development of the site. JBS&G consider that the ecological impacts identified (where not concurrent with health-based impacts) do not warrant further assessment and/ or management.

- Groundwater conditions at the site are considered indicative of typical inner-Sydney industrial areas, with elevated concentrations of copper, zinc, lead and nickel in groundwater passing across the site. Low level petroleum hydrocarbon impacts and VOC compounds were also identified in inferred up-gradient locations, reported at concentrations below the adopted assessment criteria. There are no identified off-site migration issues relating to groundwater at the site.
- Assessment of potential soil vapour conditions identified the absence of unacceptable volatile contaminant risks associated with the site.
- Based on the available data set from past and present investigations (CES 2018 and JBS&G 2018) and observations made during the current investigation, fill material at the site is provisionally classified General Solid Waste (Non-putrescible). Previous investigations (CES 2018) have provisionally classified natural soils underlying the fill material as Virgin Excavated Natural Material (VENM) with the exception of the natural soils surrounding BH11 which have been provisionally classified as Hazardous Waste on the basis of arsenic concentration.
- Subject to interim retention of existing site pavements (i.e. asphaltic/concrete hardstand and building concrete slabs within the site), there are considered to be no outstanding aesthetic concerns. Future management/remediation will be required to address the fuel infrastructure and anthropogenic inclusions identified within the fill glass, ceramic, brick fragments, ash, slag and coal in the absence of pavements.
- A remedial action plan (RAP) should be prepared to address the identified site contamination issues at the site via remediation/management such that the site can be considered suitable of the proposed residential with minimal soil access landuse scenario.

1. Introduction and Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by St George Community Housing Ltd (SGCH, the client) to undertake a data gap assessment at 9-11 Gibbons Street, Redfern NSW (the site), as shown in **Figure 1** and **2**. The site is legally identified as Lots 1 – 11 in Deposited Plan (DP) 4209 and occupies an area of approximately 1580 m^2.

The site has historically been used for commercial/industrial purposes including a storage depot by The City of Sydney Council (CoS) and is currently occupied by two commercial/workshop buildings and asphalt/concrete surfaced areas. It is understood that the site is proposed for redevelopment for community housing purposes consisting of a high density residential development with commercial/retail use on ground floor, on-grade car parking and landscaped areas.

As part of the proposed redevelopment, the site has been subject to a preliminary site investigation (PSI) and a hazardous material survey (HMS) as documented in CES (2018[1]) and Greencap (2018[2]) respectively. The PSI (CES 2018) identified impacts associated with the shallow fill material which extended to maximum depth of 1.6 m bgs, with impacts predominantly related to heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs) and Total Recoverable Hydrocarbons (TRHs) in soil. Additionally, potential heavy metal and PAH impacts have been detected in groundwater (CES 2018). Further, hazardous building materials have been identified within the site structures as documented in Greencap (2018).

Previous investigations did not address the source of high PAHs in soil, potential off-site migration issues and potential sub-slab vapour intrusion issues. Further, two suspected underground storage tanks (USTs) were identified, however soil classification in vicinity of these areas were not undertaken. As such, further assessment was required to enable development a robust remedial strategy to render the site suitable for the proposed land use.

SGCH has requested that JBS&G perform additional services required to address these data gaps to inform a remedial action plan (RAP) suitable for the remediation/management of contamination, as such, the investigation documented herein has been undertaken to support the development of a remediation and/or management strategy.

1.1 Objective

The objective of this data gap investigation (DGI) was to undertake further investigations to address data gaps at the site, to enable conclusions to be drawn regarding the suitability of the land for future land uses, or make recommendations to enable such conclusions.

1.2 Scope of Works

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

- Review of the PSI (CES 2018) and HMS (Greencap 2018) to identify areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs);
- Preparation of a Sampling and Analysis Quality Plan (SAQP) for the works, developed using the Data Quality Objectives (DQO) project planning process;
- Development and documentation of a conceptual site model (CSM) based on the available information;

[1] Preliminary Site Investigation Report, 9-11 Gibbons Street, Redfern NSW, Consulting Earth Scientists Pty Ltd, reference: CES180204-SGC-AD, 29 March 2018 (CES 2018).

[2] Demolition/ Refurbishment Hazardous Material Risk Assessment, 9-11 Gibbons Street, Redfern NSW 2016, Greencap Pty Ltd, ref: C122647:J155653, 15 March 2018 (Greencap 2018).

- Implementation of the DGI program including collection of soil samples from six borehole locations; installation and monitoring of two groundwater monitoring wells; and sub-slab vapour monitoring at 10 locations (**Figure 2**);
- Laboratory analysis of selected samples for a range of COPCs;
- Comparison of collected soil, vapour and groundwater data against relevant endorsed criteria in relation to assessment, from a contamination perspective, of land use suitability; and
- Preparation of a DGI report in accordance with the EPA guidelines including conclusions regarding the potential contamination status of the site.

1.3 Proposed Development

JBS&G were provided with architectural design plans dated June 2018 (**Appendix I**) and it is understood that the proposed development will comprise demolition of existing site structures, and construction of a multi-storey building with ground floor retail/ commercial space and residential units above retail/commercial level. It is noted that basement levels are not proposed as part of the current development.

Development plans for the proposed development had not been finalised at the time of preparation of this DGI and as such, the proposed redevelopment details discussed herein has been documented based on communications with SGCH and may be subject to change prior to implementation.

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

Lot / DP	Lots 1 – 11 in Deposited Plan (DP) 4209
Address	9-11 Gibbons Street, Redfern NSW
Local Government Authority	City of Sydney Council
Approximate MGA Coordinates of Corners (MGA 56)	Northeast: E 333514.47/ N 6248236.98 Northwest: E 333482.76/ N 6248241.24 Southeast: E 333495.83 / N 6248188.98 Southwest: E 333465.11/ N 6248193.14
Site Zoning	(E) Business Zone – Commercial Core, SEPP (State Significant Precincts) 2005
Current Use	Vacant Council Depot and Artist Workshop
Previous Use	Council Depot
Proposed Use	Mixed commercial and residential with minimal opportunities for soil access
Site Area	1,556 m^2

2.2 Site Description

At the time of the recent JBS&G site inspection on 11 May 2018, the site appeared similar to the previous site inspections completed by CES (2018). The site comprised a rectangular parcel of land with two distinct portions: The CoS depot area in the north (Northern Portion) including a two-storey brick/concrete building and asphalt/concrete paved car park area; and a tenanted workshop area in the south (Southern Portion). The north and south portions of the site were separated by a brick wall, approximately 4m in height. The site boundary was secured by a combination of building frontage and two points of gated access located on Gibbons Street and William Lane.

Northern Portion

The CoS depot area located in the northern portion of the site was vacant at the time of the inspection.

The car park was covered in asphaltic pavement which was generally in good condition with a crack observed in the central portion. Two areas of cut-out and replacement were observed on the asphaltic pavement in the north-eastern extent of the site. However, it is noted that the potential USTs identified during the previous GPR survey (CES 2018) are not in alignment with these cuttings.

The CoS building comprised 3 garage spaces, a toilet, storerooms and office space on the ground floor with a kitchen area, showers and storerooms on the first floor. A detailed inspection of the interior of the CoS building was undertaken during the previous investigation (CES 2018), with relevant observations summarised below:

- The ground floor was occupied by the following, described from east to west:
  - Garage 1 contained a flammable storage cabinet (empty), a spill trough with evidence of staining and use of absorbent material on the concrete floor. The concrete floor was intact with evidence of spill from first floor observed on the ceiling.
  - Garage 2 contained book shelves and wooden tables. The concrete floor was intact with minor staining observed.
  - Garage 3 contained equipment storage cupboards containing hand equipment.

- Room 4 appeared to be used for tool storage and equipment maintenance and comprised a workbench, caged area, metal shelves. The concrete slab was reported to be intact and peeling paint was observed on the ceiling corner.
- Room 5 was identified as a Cleansing Store Room, which contained potential vinyl floor tiles and furniture.
- The office space located on the western extent of the ground floor comprised vinyl floor tiles, two wall mounted air conditioning units, office furniture, kitchenette area and fuse box.

- The first floor was occupied by tiled floor, some peeling grey/off-white paint, kitchen area, showers, toilets, one locked room, change rooms, cleaning supply room with cleaning fluids. The cleaning supply room is above Garage 1 where staining was observed on the ceiling.

Southern Portion

The southern portion was occupied by a two-storey brick/concrete structure over the majority of the footprint. The building was being utilised as an artist's workshop at the time of the inspection, with the balance of the area covered by concrete hardstand.

A detailed inspection of the interior of the workshop building was undertaken during the previous investigations (CES 2018 and Greencap 2018), with relevant observations summarised below:

The workshop building contained working equipment, materials supply and storage, shelving, work benches, kitchenette, shower and photography developing area on the ground floor, and office space on the upper floor. Peeling paint was observed on one area of ground floor ceiling. The interior of the building had an intact concrete slab floor with no visible evidence of staining but minor observation of spilled metal shavings. Timber, wooden planter boxes, metal sculpture, some stacked manufactured chairs, a pizza oven, two soil bags filled with soil and some spillage, a stormwater drain along the entire length of the building, and an overhead gantry crane were observed on the outside of the building. The gantry extended into and along the majority of the building. A short ramp from the Gibbons Street entrance extended into the site approximately 5 m and indicated that the site is slightly lower than the Gibbons Street elevation.

Anecdotal information obtained by the site occupier, Mr Damien Butler, indicated that current site activities included machining, welding, cutting, grinding, photography development and enclosed vacuum casting. Further, it was noted that roof modifications and internal painting from green to white had occurred in the past. A waste oil pit was located near the west internal area of the building. A geophysics study by CoS at the site (approx. 9 months prior) identified tanks or possible distortion under an area of the slab inside the building. However, the GPR survey undertaken by CES 2018, did not identify the presence of USTs in the southern workshop building.

Various hazardous materials have been identified within the site structures as documented in the hazardous material register prepared for the site (Greencap 2018).

No surface water existed at the site at the time of the investigation. No evidence of mass storage of waste or storage tanks were observed at the site. No evidence of pesticide or herbicides was observed and no asbestos containing materials were observed on the ground surfaces.

2.3 Surrounding Land Use

The current land uses of adjacent properties or properties across adjacent roads are summarised below.

- North – Marian Street and high density mixed commercial/residential tower beyond;
- West – Gibbons Street and Gibbons Street Reserve beyond, after which is the Redfern Station and railway line;

- East – William Lane and commercial premises fronting Regent Street beyond (café, computer repair store, printing store and medical centre), and automotive garage to the east of Regent Street;
- South – High density residential tower, and Margaret Street beyond. BP branded service station is located 20m to the south east and the Australian Technology Park is located approximately 200m to the south west of the site.

Inspection of nearby properties did not indicate that any significantly contaminating activities were being undertaken which may affect the suitability of the site for the allowable land uses.

2.4 Topography

Review of topographic information obtained from the NearMap spatial information database indicated that the site has an elevation of approximately 27-29 m Australian Height Datum (AHD).

The site inspection identified the site was relatively flat and slightly sloped to the south, consistent with the general topography of the area. The site was generally level with its surrounds. The ground surface in the northern car park area was observed to be split along the middle and graded to the southeast and southwest.

2.5 Geology and Soils

A review of the 1:250 000 scale Sydney Geological Map[3] identified the site is located in an area of Triassic Bringelly Shale, Minchinbury Sandstone and Ashfield Shale, part of the Wianamatta Group comprising Shale with some Sandstone beds.

Reference to the online ESPADE 2.0 tool hosted by the NSW Office of Environment and Heritage (OEH) (2017[4]) indicates that the site is underlain by residual Tuggerah soils. The typical Tuggerah landscape is characterised by gently undulating to rolling coastal dunefields. Local relief to 20 m, slope gradients generally 1-10%, but occasionally up to 35%. North— south oriented dunes with convex narrow crests, moderately inclined slopes and broad gently inclined concave swale and extensively cleared open-forest and eucalypt/apple woodland. Limitations of soils in the Tuggerah group include extreme wind erosion hazard, noncohesive, highly permeable soil, very low soil fertility, localised flooding and permanently high watertables.

The site appeared to have been subject to previous cut and fill activities to create existing ground surface levels. It is noted that previous reports identified fill materials with anthropogenic inclusions of concrete, glass, slag ranging to depths of 1.1-1.6 m bgs. underlying the concrete hardstand present at the site.

2.6 Hydrology

The nearest surface water receptor is Sheas Creek located approximately 1.4 km to the southwest. Sheas Creek has been converted to a concrete lined stormwater channel which flows to the southwest and eventually into Alexandra Canal, approximately 2 km from the site.

As discussed in **Section 2.2**, the site footprint comprises sealed asphaltic hardstands and building footprints with engineered stormwater drainage. As such, surface water generated during periods of rainfall is anticipated to migrate from the site via discharge into onsite stormwater catchment infrastructure.

Surface water leaving the site is anticipated to enter the regional stormwater system and ultimately discharge to the Alexandra Canal before flowing into the Cooks River, further to the southwest of

[3] Sydney 1:250 000 Geological Sheet SI/56-05, 3rd edition, Geological Survey of New South Wales, Sydney.
[4] 'ESAPDE 2.0', NSW Office of Environment and Heritage, Accessed 23 October 2017, OEH (2017

the site, and then into Botany Bay. The Alexandra Canal is a brackish surface water body, flowing into a marine environment.

2.7 Hydrogeology

The site is identified to be located on Botany Sands Aquifer Management Area 2, where extraction of groundwater is prohibited for human consumption, consumption by animals, domestic purposes and any other purpose. The Botany Sand Beds Aquifer is reported as often less than 1-2 metres below the natural ground surface in low-lying areas, with the level varying in relation to rainfall and evaporation.

Aquifers underlying the site are described as porous, extensive, and highly productive aquifers. It is expected that groundwater would flow towards Alexandra Canal located approximately 1.8 km to the south/southwest of the site.

Registered groundwater bore information was obtained from the NSW Department of Primary Industries groundwater mapping tools (NSW DPI 2017[5]). A review of the registered bore information indicated that there were 49 bores within a 1 km radius of the site. The registered bore searches and summary table are included in **Appendix A**.

All bores on the database within 1km of the site are currently licensed for use as monitoring wells. The monitoring wells are installed to depths of between 6.0 and 180.0 m, with standing water levels reported at depths of approximately 2.95 and 11.6 m below ground surface (m bgs). Where the geology encountered was reported, it consisted of clay, shale and sandstone.

Review of CES (2018) indicated that the standing water levels (SWL) at the site was reported between 1.3 and 7.9 m bgs. CES (2018) reported the following in relation to the large variance reported in the eastern and western extent of the site:

- At borehole BH01 (see **Figure 3**), silty clay was encountered from 2.5m to 8.5 m bgs, with no overlying more permeable deposits (sand) and as a result, the low permeability of the underlying geology is likely to have precluded the presence of shallow groundwater.
- At boreholes BH03 and BH04, silty clay was encountered at a greater depth (4.5 m bgs), with permeable sands overlying and as a result, groundwater is likely to be present in the more permeable sands overlying the clays, with groundwater perching on top of the silty clays.
- The groundwater encountered in BH01 is likely to be derived from water within the underlying silty clays, whereas the groundwater encountered in BH03 and BH04 is likely to be perched groundwater on top of the silty clays.

2.8 Acid Sulfate Soils

Review of the Acid Sulfate Soil Risk Map for Botany Bay[6] indicates that the subject 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. This is consistent with the topographic and geological setting of the site.

No indicators of ASS were observed during intrusive soil investigations. On this basis, it is considered that there are no further requirements for assessment or management of ASS.

[5] NSW Department of Primary Industries, 2015. Groundwater Monitoring Overview Map. Http://allwaterdata.water.nsw.gov.au/water.stm. Accessed 30 May 2018.

[6] *'Acid Sulphate Soil Risk Map – Botany Bay, Edition 2',* 1997 1:25 000, NSW Department of Land and Water Conservation (DLWC), Ref 9130S3 (NSW DLWC)

2.9 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Sydney Observatory Hill[7]) indicates the site is located within the following meteorological setting:

- Average minimum temperatures vary from 8.1 ^{o}C in July to 18.8 ^{o}C in January and February;
- Average maximum temperatures vary from 16.4 ^{o}C in July to 26.0 ^{o}C in January;
- The average annual rainfall is approximately 1215.7 mm, with rainfall greater than 1 mm occurring on an average of 99.9 days per year; and
- Monthly rainfall varies from 67.9 mm in September to 133.2 mm in June with the wettest periods occurring on average in January to June.

[7] http://www.bom.gov.au/climate/averages/tables/cw_066062.shtml, Commonwealth of Australia, 2013 Bureau of Meteorology, Product IDCJCM0028 prepared on 29 December 2016 and accessed by JBS&G on 30 March 2017

3. Previous Environmental Investigations and Reports

3.1 Previous Reports and Data

JBS&G has reviewed previous reports made available at the time of this investigation.

3.2 Preliminary Site Investigation (CES 2018)

Consulting Earth Scientists Pty Ltd (CES) was engaged by SGCH to conduct a preliminary site investigation at the site. The objectives of this assessment were to establish the environmental conditions at the site with respect to soil and groundwater, confirm the suitability of the soil and groundwater for the proposed high density residential development and provide a preliminary waste classification for site soils.

The scope of works included a desktop assessment and soil and groundwater investigation at the site, comprising advancement of 11 boreholes and installation/sampling of 3 groundwater monitoring wells. As discussed above in above in **Section 2.2**, the site was primarily covered in building floor slabs and/or concrete pavements. Fill material was encountered in all locations, to depths below pavement ranging from 0.2 to 1.3 m, to a maximum depth of 1.6 m bgs. Natural material encountered was generally comprised of silty sand and silty clay underlain by shale.

CES (2018) reported that anecdotal information indicated the potential presence of a UST within the southern building. A ground penetrating radar (GPR) investigation during CES 2018 did not identify any USTs within the southern building, however, two anomalies consistent with USTs were identified in the northern portion of the car park (**Figure 2**).

Analysis of selected samples of surficial and sub-surface soils for a broad range of contaminants of potential concern (COPCs) including heavy metals, PAH, TRH, Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Halogenated Compounds, (VHCs), Polychlorinated Biphenyls (PCBs), Organochlorine and Organophosphate Pesticides (OCP/OPP), Per-and polyfluoroalkyl substances (PFAS), phenols and asbestos was undertaken. A number of samples were reported to have concentrations of Contaminants of Potential Concern (COPCs) above the health based assessment criteria. Impacts were reported in the fill material (PAH, TRH and heavy metals) in various locations and in natural material (arsenic) at BH11 (see **Figure 3**). Asbestos containing material (ACM) were not observed at the site or detected during laboratory analysis.

Analysis of water samples for a range of COPCs including heavy metals, PAHs, TRHs, BTEX, VHCs, Phenols and PFAS was undertaken. Concentration of zinc was reported at BH1 (41 µg/L) and BH3 (85 µg/L) exceeding the adopted groundwater investigation level (GIL) of 15 µg/L. Further, fluoranthene and benzo(a)pyrene (B(a)P) concentrations were reported at BH4, marginally exceeding the adopted GIL of 1.4 µg/L and 0.2 µg/L respectively. JBS&G note that GILs adopted in CES 2018 for fluoranthene and B(a)P are considered as interim indicative working levels only.

PFAS was reported in soil and groundwater samples, albeit below the screening criteria adopted consistent with the PFAS National Management Plan (HEPA 2018) and therefore, was not considered to pose an unacceptable risk to future site users.

Preliminary waste classification of site materials provided in CES (2018) is summarised as below:

- Fill material on-site is classified as General Solid Waste (GSW), with the exception of soils surrounding BH6 and BH10 which have a preliminary waste classification of Hazardous (HW) Waste, and the soils surrounding BH11 which have a preliminary waste classification of Restricted Solid Waste (RSW); and
- Natural soils underlying the site fill is Virgin Excavated Natural Material (VENM) with the exception of the natural soils surrounding BH11 which are preliminarily classified as Hazardous Waste on the basis of arsenic concentration.

Previous soil and groundwater analytical results presented in CES (2018) are included in **Appendix B**.

Based on the findings of the investigation, CES concluded that remediation/management of contamination issues was likely required to render the site suitable for the proposed use. A number of additional works were recommended to inform the remedial strategy including further delineation of the soil impacts and hazardous/restricted solid waste classified areas, completion of a hazardous building material survey, confirmation on the presence/absence of USTs at the site, subsequent decommissioning, further assessment of groundwater to infer flow regime and groundwater condition downgradient of the USTs.

3.3 Demolition/ Refurbishment Hazardous Material Risk Assessment (Greencap 2018)

Greencap was engaged by SGCH to undertake a hazardous building material survey to identify types of hazardous materials and their condition including asbestos, synthetic mineral fibres (SMF), ozone depleting substances (ODS) PCB, lead paint and lead dust in accessible areas of the site, to identify the likelihood of hazardous materials in inaccessible areas, to assess the risk posed by the materials and to complete a hazardous and flammable/combustible materials register for the site in line with the proposed refurbishment/demolition works.

Based on the scope of works completed, field screening, laboratory testing and/or visual identification, hazardous building material was encountered, including asbestos, lead paint, ODS and SMF, as summarised in the hazardous material register provided in Greencap (2018).

The Greencap 2018 report further noted that potential tanks or voids were present beneath the floor slab of the 'Mowers Shed', however were inaccessible at the time.

3.4 Previous Investigation Conclusions

- The site has historically been used for commercial/industrial and most recently as a council depot;
- Intrusive investigations comprising a soil and groundwater assessment and a hazardous building material survey have been completed at the site;
- Fill material was observed to exist at the site to a maximum depth of 1.6 m bgs;
- Fill material at the site are impacted to varying degrees by PAH, TRH and heavy metals in various locations, and arsenic impact identified in the underlying natural soils at one location (BH11);
- Fill material has been identified as requiring remediation/management prior to utilisation of the site for the proposed uses;
- Fill material has been preliminarily classified as GSW, with the exception HW classified soils surrounding BH6 and BH10 and RSW classified soils surrounding BH11.
- Natural soils underlying the site have been preliminarily classified as VENM with the exception of the natural soils surrounding BH11 which were preliminarily classified as Hazardous Waste.
- Two potential USTs have been indicated in the northern car park area of the site that require decommissioning;
- Hazardous building materials including asbestos, lead paint, ODS and SMF have been identified within existing site structures that require management during proposed demolition works;
- A complex groundwater flow regime has been identified at the site with SWLs in monitoring wells ranging between 1.3 and 7.9 m bgs; and

- The groundwater underlying the site is impacted by heavy metals and low concentrations of PAHs, however, further groundwater investigation is required to understand groundwater condition downgradient of the potential USTs.

4. Data Gaps

Data gaps identified during a review of the existing environmental investigations are presented in **Section 4.1** to **Section 4.4** below. The data gaps have formed the basis of the scope of work undertaken in this assessment.

4.1 Fill Material Characterisation

Previous investigation works encountered fill material in all sample locations, to depths ranging from 0.2 to 1.6 m bgs, with heavy metal, PAH and TRH impacts identified in a number of samples collected within the fill material at levels posing a potentially unacceptable risk to future human health receptors at the site. Impact to underlying natural material has been reported to be low, with concentration of arsenic reported exceeding the adopted site assessment criteria at 1.3-1.6 m bgs. Therefore, the leachability of the identified COPCs under site conditions is anticipated to be low. Fill material has been preliminarily classified in CES (2018) as GSW, with the exception HW classified soils surrounding BH6 and BH10 and RSW classified soils surrounding BH11. Anthropogenic inclusions of glass, concrete, timber fragments were reported within the fill material in a number of soil bores, however, the source of elevated COPC in fill material is unknown.

4.2 Potential Presence of Underground Storage Tanks

Anecdotal information collected during the PSI (CES 2018) indicated that historical geophysical investigations identified a distortion potentially indicating the presence of a UST within the southern building. Further, Greencap (2018) reported that potential tank/void was present beneath the floor slab of the 'Mowers Shed' (the southern workshop building). However, the Ground Penetrating Radar (GPR) survey completed in all accessible areas of the site during CES (2018) did not identify potential USTs within the southern building footprint. The GPR identified two anomalies consistent with USTs in the northern car park area (**Figure 2**). These USTs require decommissioning pursuant to Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014 (UPSS Regulation). Soil contamination issues associated with the USTs is a data gap. Characterisation of soils in the vicinity of the USTs is required to assist development of a remediation strategy relating to the USTs as part of site redevelopment.

4.3 Sub-Slab Vapour Intrusion Risk

Former commercial/industrial site uses including potential storage/use of fuel, volatile contaminants (TRH) identified in the site fill soils, and the potential presence of USTs in the northern car park area, have the potential to result in soil vapour impacts. No soil vapour sampling has occurred and the potential vapour intrusion risk at the site is a data gap.

4.4 Groundwater Characterisation

During the previous investigation (CES 2018), SWLs at the site were reported between 1.3 and 7.9 m bgs. The reported range of SWLs was attributed to complex hydrogeological conditions, including perched groundwater occurring within low permeable materials overlying silty clays in the eastern extent of the site. The groundwater flow direction was not confirmed during the CES (2018) investigation.

Concentration of zinc was reported at BH1 and BH3 exceeding the adopted GIL of 15 µg/L. Further, fluoranthene and benzo(a)pyrene concentrations were reported at BH4, marginally exceeding the adopted GIL of 1.4 µg/L and 0.2 µg/L respectively. However, JBS&G note that these GILs adopted in CES 2018 relating to PAH compounds are considered to be ANZECC/ARMCANZ 2000 interim indicative working levels only. Potential downgradient impacts associated with the USTs identified during the PSI and potential off-site migration issues impacts arising from groundwater conditions underlying the site is a data gap.

5. Conceptual Site Model

5.1 Potential Areas of Environmental Concern

As discussed in **Section 3.4**, results from CES (2018) and Greencap (2018) indicated several contamination impacts were present at the site. In addition to these known contaminated media, based on the review of available historical reports, areas of environmental concern (AECs) have been identified relating to the data gaps identified above in **Section 4**.

AECs and associated contaminants of potential concern (COPCs) are presented in **Table 5.1**.

Table 5.1: 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 including fill material underlying structures.	Heavy metals, PAHs, TRH, OCPs, PCB and asbestos
Former depot use (storage/use of fuel, waste oils, pesticides, paints)	Heavy metals, TRH, VOCs, PAH, OCP, PCB, PFAS.
Natural material impacted as a result of migration of COPCs in overlying fill material.	Heavy Metals, PAHs, TRHs, BTEX, OCPs and PCBs
Potential USTs in northern car park	TRH, VOCs, PAH and lead.
Groundwater downgradient of the potential underground fuel infrastructure located in the northern carpark	Heavy metals, PAH, TRH, VOCs
Off-site sources (including service station 20m to the south east)	Heavy metals, TRH, VOCs, PAH, OCP, PCB, PFAS.

5.2 Potentially Contaminated Media

Based on the review of previous environmental investigations, as discussed in **Section 3**, fill material is known to be impacted, to varying degrees, by heavy metals, PAHs and TRHs. Anthropogenic fill material was encountered immediately below the ground surface to a maximum depth of 1.6 m bgs in previous investigations. Anthropogenic materials were commonly present in impacted fill materials and can be used as an indication of the depth of disturbance.

Based on a potential leachability of contaminants within surface soils/fill material vertical migration of contamination from the fill material/surface soils into the underlying natural soils may have occurred. As such, the natural soils are considered to be potentially contaminated media. Natural material is known to be impacted by heavy metals, with an isolated arsenic exceedance reported at BH11.

Groundwater is considered to be a potentially contaminated media, given the identified impacts in overlying fill, presence of USTs in the northern car park and off-site sources. As documented in CES (2018), groundwater was encountered at the site between 1.3 and 7.9 m bgs. Groundwater at the site has been documented as impacted with zinc, with low concentrations of PAH reported at one monitoring well (BH4).

Contaminants including VOCs and TRH as associated with historical depot uses, etc; with fill material; and former/current UST infrastructure also have the potential to result in soil vapour impacts.

On this basis, fill material, natural soils at depth, soil vapour and groundwater at the site are considered potentially impacted media as a result of historical activities.

5.3 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 and site inspection are generally in solid (e.g. metals) and/or liquid (e.g. TRH and PAH) form.

The ground surfaces on the site are a combination of sealed asphaltic and concrete pavements and building footprints. Migration of solid contaminants (heavy metals and asbestos) from the site via windblown dust is not likely in areas of hardstand pavements or building footprint, even in the presence of significant contaminant mass within soils.

Surface water is expected to primarily leave the site via discharge into the municipal stormwater system in paved areas, however infiltration of water into the underlying soils is considered possible via aged infrastructure and cracked pavements. Therefore, infiltration of water soluble contaminants into the groundwater, if present, is considered be a likely offsite migration pathway.

Should redevelopment of the site result in the removal of hardstand pavements, then the risk of offsite migration via windblown dusts from these areas may need to be considered during the development phase of the works.

In the event that volatile organic impacts are identified in soil or groundwater, soil vapour migration will also be considered as a potential pathway for contaminant migration.

5.4 Potential Human and Ecological Receptors and Exposure Pathways

Potential human receptors of environmental impact include future residents, visitors 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/groundwater as present at shallow depths and/or accessible by future excavations by site workers and/or occupants; and/or
- Potential Inhalation of vapours migrating upwards and laterally from fill and/or natural soil.

The site is primarily covered by hardstand pavements and building footprints, however several of the identified AECs have the potential to impact future onsite ecological receptors. Possible off-site ecological receptors are limited to potential impacts associated with groundwater, surface water runoff (if present), migrating from the site toward Sheas Creek and soil-vapour migrating from the site.

5.5 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 (sediments, dust, etc), soil vapour, or liquids (surface water/groundwater).

Man-made preferential pathways are likely present throughout the site, generally associated with areas of previously disturbed natural ground, unconsolidated fill materials and service trenches. Fill materials, including those surrounding subsurface infrastructure, buried wastes, and disturbed natural soil are anticipated to have a higher permeability than the underlying natural soils and/or bedrock.

5.6 Source to Receptor Pathway Summary

Table 5.2 below presents a summary of potential source to receptor pathways identified in **Section 5.1** to **5.5.**

Table 5.2 Conceptual Site Model Source to Receptor Summary

Areas of Environmental Concern	Contaminant of Potential Concern / Media	Pathway -> Uptake	Receptor
USTs	TRH and BTEX / Soil-vapour	Vapour intrusion into buildings and/or open atmosphere environments -> inhalation	Current and future construction/maintenance workers and/or occupants of the site
		Offsite migration via preferential pathways intrusion to buildings and/or open atmosphere -> inhalation	Current and future construction/maintenance workers and/or occupants of the site
	TRH, BTEX / Groundwater	Disturbance/physical contact -> oral or dermal ingestion	Current and future construction/maintenance workers and/or occupants of the site
		Offsite migration via groundwater -> oral/dermal contact, inhalation or biological uptake	Downstream ecological receptors (Sheas Creek)
	Heavy Metals / Soil and Groundwater	Disturbance/physical contact -> oral or dermal ingestion	Current and future construction/maintenance workers and/or occupants of the site
		Offsite migration via groundwater -> oral/dermal contact, inhalation or biological uptake	Downstream ecological receptors (Sheas Creek)
Whole site	Heavy Metals / Soil and Groundwater	Disturbance/physical contact -> oral or dermal ingestion	Current and future construction/maintenance workers and/or occupants of the site
		Offsite migration via groundwater -> oral/dermal contact, inhalation or biological uptake	Downstream ecological receptors (Sheas Creek)
	Asbestos / Soil and Material	Disturbance -> inhalation	Current and future construction/maintenance workers and/or occupants of the site
	TRH, PAH, BTEX, OCPs, OPPs and PCBs / Soil and Groundwater	Disturbance/Physical Contact -> oral or dermal ingestion	Current and future construction/maintenance workers and/or occupants of the site
		Offsite migration via groundwater -> oral/dermal contact, inhalation or biological uptake	Downstream ecological receptors (Sheas Creek)

6. Sampling and Analysis Plan

6.1 Data Quality Objectives

6.1.1 State the Problem

As discussed in **Section 1**, the client intends to redevelop the site for community housing purposes inclusive of a multi-storey residential building with ground floor retail/commercial, on-grade parking and landscaped areas. Additional investigations are required to determine the severity and extent of contamination identified during the PSI and to inform a remedial strategy for the site. As such, the following data gaps have been identified as being required to be addressed as part of this DGI:

- AEC 1: Source of elevated COPCs including heavy metals, PAH and TRHs in fill material.
- AEC 2: Assessment of fill soils in the vicinity of USTs identified during the PSI (CES 2018) within the northern car park area.
- AEC3: The nature and extent of soil vapour contamination due to historical land uses, volatile contamination identified in the site fill soils and the presence of USTs in the northern car park area.
- AEC 4: The potential for downgradient groundwater impacts associated with the USTs in the northern portion of the site and potential for off-site migration of contamination.

6.1.2 Identify the Decision

Based on the decision making process for assessing urban redevelopment sites detailed in EPA (2017) and NEPC (2013), the following decisions must be made:

- Are there any unacceptable risks to likely 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?

6.1.3 Identify Inputs into the Decision

Inputs to the decisions are:

- Review of previous site investigations including: CES (2018) and Greencap (2018);
- Observations of the current site conditions made during the intrusive investigation;
- Physical observations and interpretation of potentially contaminated media through the collection of soil, groundwater and vapour samples;
- Development of appropriate assessment criteria for evaluation of soil, groundwater and soil vapour impacts based on the proposed mixed residential with minimal soil access/commercial land use;
- Field parameters as measured utilising calibrated equipment during the intrusive investigation, including assessment of soil sample headspace, physicochemical parameters of groundwater and multi-gas concentration assessment of volatile vapours emanating from soils;

- Laboratory analysis of soil, groundwater and soil vapour 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 6.1.6**.

6.1.4 Define the Study Boundaries

The study boundaries are limited to the cadastral boundaries of the site, as shown on **Figure 2**. The site has an area of approximately 1,580 m^2.

The vertical extent of the soil investigation was up to 6.0 m bgs, the final depth of the deepest boreholes (BH106 and BH107). Soil sampling was undertaken to a maximum depth of 4.6 m bgs and groundwater wells were installed to depths of 6 m (BH106 and BH107).

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.

6.1.5 Develop a Decision Rule

The decision rules adopted to answer the decisions identified in **Section 6.1.2** are summarised in **Table 6.1**.

Table 6.1 Summary of Decision Rules

Decision Required to be Made	Decision Rule
1. Are there any unacceptable risks to likely future onsite receptors from site contamination?	A) The nature and extent of soil impacts was assessed, and soil analytical data was compared against current EPA endorsed criteria for residential with minimal soil access. 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. 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.
	C) Soil vapour analytical data was compared against EPA endorsed Tier 1 criteria. The reported concentrations were all below the adopted Site Criteria, the answer to the decision is No; If analytical concentrations were in excess of the Site criteria for one or more samples, the answer to the decision is Yes. Alternatively, consideration may be given to proceeding to a Tier II site specific assessment to further evaluate the potential risks.
2. Are there any issues relating to the local area background soil concentrations that exceed appropriate soil criteria?	If the 95% UCL of surface soils exceeds published background concentrations Olszowy et al. (1995[8]), the decision was Yes. Otherwise, the answer to the decision was No.
3. Are there any 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.

[8] *'Trace Element Concentrations in Soils from Rural and Urban Areas of Australia'*, Olszowy et. Al. (1995)

Decision Required to be Made	Decision Rule
4. Are there any aesthetic issues?	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?	Assessment of the potential for groundwater impacts at the site included installation of two new groundwater monitoring wells at the downgradient site boundary and a groundwater monitoring at existing and newly installed wells. The resulting groundwater contaminants concentrations were compared against adopted ANZECC/ARMCANZ 2000 based site-specific assessment criteria. Assessment of the potential for soil vapour migration at the site included installation of 10 sub-slab soil vapour locations, and sampling/analysis of the 5 soil vapour points with the highest recorded Photoionization Detector (PID) results. The resulting concentrations were compared against adopted EPA based criteria. Based on assessment results, was there any evidence of, or the potential for, unacceptable contaminant concentrations to migrate from the Site? If yes, the answer to the decisions was Yes. Otherwise, the answer to the decision was No.
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 proposed site uses. If no, a site management strategy is not required and the site is considered suitable, from a contamination view point for the proposed use.

6.1.6 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 6.2**.

- **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 6.2 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]
Blind 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		-
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	All samples
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples
Limits of reporting appropriate and consistent	All samples	All samples
Completeness		
Sample description and COCs completed and appropriate	All samples	All samples
Appropriate documentation	All samples	All samples
Satisfactory frequency and result for QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid

1. Relative per cent difference

6.1.7 Optimize the Design for Obtaining Data

JBS&G identified data gaps pertaining to the existing data set. As such, the sampling design was developed to supplement the existing data set such that sufficient data was available to address the required decisions.

Based on review of the available information, the following investigation locations as shown on **Figure 3**, were advanced:

AEC 1: For the assessment of the source of elevated COPCs including heavy metals, PAH and TRHs in fill material in the vicinity of BH6, BH10 and BH11 (CES 2018), three targeted boreholes (BH103, BH105 and BH107) were advanced in these areas. As a result of space constraints within the northeastern garage and access limitations in using the mechanical drill rig in this area, sample location BH105 was placed in an accessible location adjoining the building, outside the garage footprint. In addition to the above judgemental locations, an additional borehole BH104 was placed adjacent to the western site boundary to provide general site coverage in the context of assessing fill soil conditions.

AEC 2: For the assessment of fill soils in the vicinity of USTs identified during the PSI (CES 2018) within the northern car park area, two targeted boreholes (BH101 and BH102) were placed adjacent to the approximate UST locations as provided in CES 2018.

AEC3: To assess the nature and extent of potential soil vapour contamination, ten soil vapour probes (SV01-SV10) were installed on a generally systematic grid, skewed towards the approximate UST locations.

AEC 4: To assess the potential for downgradient groundwater impacts associated with the USTs in the northern portion of the site and potential for off-site migration of contamination, two monitoring wells (BH106 and BH107) were placed on the concrete hardstand adjacent to the southern workshop building.

6.2 Investigation Methodology

6.2.1 Soil Sampling Methodology

Soil sampling was generally completed via using push tubes. Soil samples were generally collected from the soil surface or immediately underlying hardstand pavements, and then approximately 0.5 m intervals to a maximum depth of 4.6 m bgs. 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 with the exception of BH104 which was terminated due to refusal.

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 directly from the push tube liner 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. 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 6.3**.

6.2.2 Groundwater Monitoring Well Installation

Two boreholes were converted into groundwater monitoring wells, installed in the southern portion of the site (inferred downgradient locations).

The wells were installed to a depth of approximately 6.0 m bgs targeting the groundwater perching on top of the silty clays. The wells were constructed from 50 mm unplasticised polyvinyl chloride (uPVC) screen and casing, combined with a lockable cap and steel gatic cover. 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 ‘gravel 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. The steel gatic cover was installed in concrete consistent with the surrounds.

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.

6.2.3 Groundwater Sampling

Each monitoring well (previously existing and new) was then gauged with an Interface Probe (IP) which can detect Non-Aqueous Phase Liquids (NAPLs). If NAPLs were present within the well they were collected with a disposable plastic bailer. If no significant NAPLs were present, the groundwater at each well was then purged with a low flow peristaltic pump, using fresh disposable Low Density Poly-ethylene (LDPE) tubing and silicon, to remove the standing water. During removal, physicochemical parameters (pH, electrical conductivity, dissolved oxygen, reduction-oxidation potential and temperature) were monitored until stabilisation. Groundwater samples were taken from the end of the disposable LDPE tubing after parameter stabilisation has occurred.

It is noted that slow groundwater recharge at BH106 and BH107 precluded a standard purging procedure from taking place prior to sampling. Groundwater was extracted to the practical extent via low flow peristaltic pump, ensuring VOCs sample containers were filled first, however adequate sample volumes were not present in BH107 for filling a PAH sampling container. Inadequate volume precluded physicochemical parameters to be taken from these monitoring wells.

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 6.3**).

6.2.4 Soil Vapour Sampling

Ten soil vapour probes were installed on a generally systematic grid, skewed towards identified AECs. Soil vapour probes were installed via the following process:

- Puncture of surface hardstand (concrete or asphaltic pavement) via rotary hammer drill, with a 20mm drill bit, through to the underlying soils;
- 'Flossing' of the drill hole to remove excess concrete dust and/or soil;
- Installation of a 300-600 mm nylon tube, fitted with steel mesh filter on the bottom and closed three-way on the accessible end, into the drill hole;
- Sealing of the drill hole via application of air drying clay covered by a concrete/bentonite slurry;
- Purging of the drill hole via pumping through a calibrated GFM430 multi-gas detector during which concentrations of oxygen (O_2), VOCs and carbon dioxide (CO_2) were monitored until stabilization was interpreted to have occurred;
- Once multi-gas detector parameters stabilised, application of a 'shroud' comprising an air tight container lined with isopropyl alcohol doused material to the base of the nylon tube, where sealed in place with the bentonite slurry;
- Where VOC concentrations were significantly altered from the stabilised/purged concentration, this indicated a potential leak was present and isopropyl alcohol vapour was intruding into the nylon tube, the soil vapour probe was removed and reinstalled and the leak detection test was repeated. It is noted that in the event that significant (>1000 ppm) VOC concentrations exist with sub-slab soil vapour, the application of the isopropyl alcohol doused rag is not an effective quality control measure;
- Based on the reported field purging data and with consideration to the inferred fuel infrastructure locations, five selected soil vapour probes were sampled. A 6.0 L sample of soil vapour was removed from the sub-slab vapour probe using a calibrated low flow air pump over a period of 60 minutes;

- A glass tube containing carbon sorbent media was fixed to the end of the nylon tubing with a small section of ¼ inch silicon tubing, and the low flow air pump was attached to the rear end of the carbon tube, such that the 6.0 L sample of soil vapour was drawn through the tube facilitating attachment of VOCs to the sorbent carbon media;
- Subsequent to the 6.0 L soil vapour sample being drawn through the carbon tube, the tube was removed from the sub-slap soil vapour probe and sealed via application of two end caps, then stored for transportation to the laboratory; and
- At the completion of the sampling, all soil vapour probes were removed from the ground and the sample holes were reinstated with concrete, consistent with the surrounds.

6.2.5 Decontamination

Fresh liners were used at each location advanced via push tube. Push tube sleeves were removed from the advancement casing and laid on the concrete hardstand 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.

Soil vapour and groundwater samples were collected using dedicated disposable sampling equipment which was disposed of after use.

6.2.6 Duplicate and Triplicate Sample Preparation

At selected sample locations, sufficient soil or 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 divided laterally into three samples with minimal disturbance to reduce the potential for loss of volatiles and placed in three clean glass jars and sample bags as appropriate. Soil samples were not homogenised in order to minimise the 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.

The collected soil vapour samples were extracted from soil vapour probes after purging. The soil vapour probe at location SV06 was left for a period of 1 hour after the primary soil vapour sample was extracted to allow for pressure equalization and then subsequently resampled to collect a blind duplicate. A split duplicate was not collected for soil vapour samples due to the inconsistency of analytical laboratory methods.

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

6.2.7 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 6.3.**

Table 6.3 Analytical Schedule

Sample Type	No. of Sampling Locations	Laboratory Analyses (exc. QA/QC)
Soil	6 borehole sampling locations	Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) – 9 samples TRHs/BTEX – 9 samples PAHs – 9 samples OCP/PCB – 7 samples Asbestos – 2 samples (500 ml NEPC 2013) + visual
Vapour	10 locations	VOCs and vTRH – 5 samples Iso-butylene – 5 samples
Water	5 Groundwater Wells	Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) – 5 samples TRH/VOCs –5 samples PAH low levels – 5 samples

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

7. Assessment Criteria

7.1 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: Guidelines for Assessing Service Station Sites*, NSW EPA, 1994 (EPA 1994);
- *Contaminated Sites: Sampling Design Guidelines*, NSW EPA, 1995 (EPA 1995);
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, October 2000, ANZECC/ARMCANZ (ANZECC 2000);
- *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, 3rd Edition, NSW EPA, 2017 (EPA 2017)
- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*, NSW DEC, March 2007 (DEC 2007);
- *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 DECC, June 2009 (DECC 2009);
- *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*, NSW OEH, 2011 (OEH 2011); and
- *Waste Classification Guidelines Part 1: Classifying Waste*. NSW EPA, 2014 (EPA 2014).

7.2 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. Given the proposed mixed uses of the site (commercial and residential with minimal access to soil), as noted in **Section 1.1**, the site has been conservatively compared to land use criteria for residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

The results of asbestos analysis were assessed in general accordance with NEPC (2013) including DOH (2009[9]) guidance.

Where there are no NSW EPA endorsed thresholds for individual COPC the laboratory limit of reporting (LOR) was adopted as an initial screening value for the purposes of this assessment.

The adopted site criteria are presented in the summary results tables for each media. Relevant guidelines have been adopted from Section 6 of Schedule B1 NEPC (2013) and are presented below:

Health Based Criteria:

- Table 1A (1) 'Health Investigation Levels for Soil contaminants';

[9] *Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in Western Australia*, May 2009. Western Australia Department of Health (DOH), (DOH 2009)

- Table 1A(2) 'Interim Soil Vapour Health Investigation Levels for Volatile Organic Chlorinated Compounds';
- Table 1A(3) Soil HSLs for Vapour Intrusion;
- Table 1A(4) Groundwater HSLs for Vapour Intrusion; and
- Table 1A(5) Soil Vapour HSLs for Vapour Intrusion.

The land use scenario adopted for the assessment was residential with minimal soil access) HIL-B and HSL A & HSL B).

Where laboratory results provided concentrations of contaminant groups (phenols, total chromium) for which assessment criteria refer to specific contaminants within the group, the lowest specific contaminant criteria were adopted for initial screening purposes. Total phenolics concentrations were compared against the criterion for pentachlorophenol of 660 mg/kg and total chromium was compared against the chromium (valence state 6) criterion of 3600 mg/kg

Ecological Screening Levels:

Ecological Screening Levels (ESLs) for the site were obtained from Table 1B(6) 'ESLs for TPH Fractions F1-F4, BTEX and Benzo(a)pyrene in Soil' under the 'Urban residential and public open space' land use scenario.

Site Specific Ecological Investigation Levels

Site specific EILs derived during the CES 2018 investigation within the context of 'Urban residential and public open space' were adopted for the purposes of this DGA.

Management Limits:

Management limits for consideration of the formation of Light Non-Aqueous Phase Liquids (LNAPLS), fire and explosive hazards, and effects on buried infrastructure have been obtained from Table 1B(7) 'Management Limits for TPH Fractions F1-F4 in Soil' under the 'Residential, parkland and public open space' land use scenario. Based on site observations discussed in **Section 9.1**, a coarse soil texture was adopted for comparison of results as the most conservative option based on observed site characteristics.

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

7.2.1 Groundwater Investigation Levels

DEC (2007) '*Guidelines for the Assessment and Management of Groundwater Contamination*' instructs that groundwater investigation levels (GILs) be based on a consideration of groundwater's environmental values. Environmental values are defined in ANZECC / ARMCANZ (2000) as "*...particular values or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health which require protection from the effects of pollution, waste discharges and deposit*".

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.

DEC (2007) instructs that all environmental values of groundwater be identified to allow development of appropriate GILs. NSW Government (2006) '*Environmental Objectives for Water Quality and River Flow*' are nominated as an appropriate source of environmental values. DEC (2007) further recommends that groundwater with a level of total dissolved solids below 2000 mg/L be considered suitable for potential use as drinking water. However, the site is located in the Botany Sands Aquifer Management Area 2, where domestic groundwater use is banned in this zone, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools. Furthermore, the registered bore search (**Section 2.7**) did not identify production or domestic bores within a 1 km radius of the site. On this basis, it is considered highly unlikely that groundwater in the vicinity of the site would be used as drinking water. As a result, drinking water criteria are not considered relevant to assessment of groundwater conditions at the site.

The site is located within the Cooks River catchment. On this basis, groundwater investigation criteria are adopted with reference to EPA's endorsed environmental values for the Cooks River catchment as affected by urban development. The relevant environmental values/objectives relevant for discharge of groundwater to Alexandra Canal (and Cooks River) are aquatic ecosystems (marine), visual amenity and secondary/primary recreational contact. As such, application of the adopted groundwater criteria shall be as follows:

- Recreational Criteria – shall be applied to groundwater as human contact with groundwater may occur via mixing of groundwater and the surface waters of the Alexandra Canal/Cooks River system and subsequent Botany Bay foreshore area.
- Marine Criteria – shall similarly be applied to groundwater as a result of potential exposure down-gradient of the site.

Given that the ultimate receiving water body, comprising Botany Bay is a tidal marine environment, threshold values for marine environments have been adopted for this assessment. It has been assumed that the receiving waters are slightly to moderately disturbed ecosystems based on their location within the metropolitan area.

Recreational criteria are based on guidance in NHMRC (2008) which indicates concentrations of substances at 10 times drinking water guideline provides a screening approach for assessing whether further consideration of risks to recreational waters is warranted.

The attached analytical tables include the adopted screening criteria.

7.2.2 Soil Vapour Criteria

Sub-slab soil vapour concentrations were compared against published levels as sourced from the following:

- Health based Screening Levels (HSLs) for vapour intrusion at low-high density residential land use – NEPC 2013, HSL A & HSL B (sand, depth 0m to <1m bgs); and
- Interim soil vapour Health Investigation Levels (HILs) for volatile organic chlorinated compounds – NEPC 2013, HIL B.

7.2.3 Material Classification for Off-site Disposal

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

following initial screening criteria will be used. 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 are present at concentrations above either CT1 or CT2 thresholds, representative TCLP analysis may be 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 D**. In addition to the above, consideration will also be given to NSW EPA General immobilisation approvals for metallurgical blast furnace slag containing materials EPA (2009/7), based on the observations of slag made during the investigation (**Section 9.1**). Pursuant to the provisions under Clause 28 of the Protection of the Environment Operations (Waste Regulation) 1996, the NSW EPA has authorized general immobilization approvals for the immobilization of contaminants in waste. Immobilization approval number 2009/07 specifies that waste contaminated with metallurgical blast furnace slag may be classified in accordance with the EPA Waste Classification Guidelines with TCLP values alone for the following contaminants: beryllium, chromium (VI), lead, nickel, PAHs and Benzo(a)pyrene.

8. Quality Assurance / Quality Control

8.1 QA/QC Results

The QA/QC result for soil samples collected at the site during the current assessment are summarised in **Table 8.1** and discussed in **Section 8.2**. Detailed QA/QC results are included in the laboratory reports in **Appendix E**, and in the Esdat output included in **Appendix F.**

Table 8.1 - QA/QC Results Summary

Data Quality Indicator	Results	DQI met?
Precision		
Soil blind duplicates (intra laboratory)	0 – 195 % RPD Intra laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Soil blind triplicates (inter laboratory)	0 – 170 % RPD Intra laboratory samples were analysed at a rate greater than 1 in 20 samples.	Partial[1]
Groundwater blind duplicates (intra laboratory)	0 – 192 % RPD Intra laboratory samples were analysed at a rate of 1 in 5 samples.	Partial[1]
Groundwater split duplicates (inter laboratory)	0 – 200 % RPD Intra laboratory samples were analysed at a rate of 1 in 5 samples.	Partial[1]
Soil vapour blind duplicate (intra laboratory)	0 % RPD Intra laboratory samples were analysed at a rate of 1 in 5 samples.	Yes
Laboratory duplicates	0 – 49 % RPD Intra laboratory samples were analysed at a rate of 1 in 20 samples.	Yes
Accuracy		
Surrogate spikes	1 – 125 % Recovery Surrogate spikes were completed for all organic samples	Partial[1]
Laboratory Control Samples	70 - 130% Recovery Laboratory control samples were completed for all organic and metal analytes	Yes
Matrix spikes	70 - 130% Recovery Matrix spikes were completed for all organic and metals samples	Yes
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 with the exception of leachate analyses undertaken as a secondary round of analysis.	Partial[1]
Trip spikes	81 – 120 %	Yes
Trip blanks	<LOR	Yes
Rinsate blank	NA	NA[1]
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 a team of two 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 8.2**.

8.2 QA/QC Discussion

8.2.1 Precision

Soil Duplicates

The RPDs between primary soil sample BH107 0.8-1.0 and intra-laboratory duplicate (QC01) analytical results were within the acceptable limits of deviation from the DQO with the exception of the following: chromium (55%), copper (122%), lead (75%), mercury (120%), TRH>C16-C34 (105%), benzene (100%), and various PAH compounds (ranging between 57-195%).

The RPDs between primary soil sample BH107 0.8-1.0 and inter-laboratory duplicate (QC01A) analytical results were within the acceptable limits of deviation from the DQO with the exception of the following: chromium (128%), copper (148%), lead (96%), mercury (169%), nickel (137%), zinc (170%), TRH>C16-C34 (105%) and Dibenz(a,h)anthracene (100%).

The RPDs for the intra-laboratory and inter-laboratory duplicates are presented in **Appendix F** and are considered to be the result of heterogeneity in the soil samples collected. The elevated RPD results are not considered to influence the outcome of the investigation.

Groundwater Duplicates

The RPDs between primary groundwater sample (BH4) and intra-laboratory duplicate (QC01) analytical results were within the acceptable limits of deviation from the DQO with the exception of the following: chromium (67%), chrysene (133%), fluoranthene (160%), pyrene (167%), total PAHs (192%), 1,2,4-trimethyl benzene (127%) and 1,3,5-trimethyl benzene (67%).

The RPDs between primary groundwater sample (BH4) and inter-laboratory duplicate (QC01A) analytical results were within the acceptable limits of deviation from the DQO with the exception of the following: copper (171%), lead (67%), nickel (67%), total PAHs (200%), 1,2,4-trimethyl benzene (100%).

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 LOR. The elevated RPD results are not considered to influence the outcome of the investigation.

Soil Vapour Duplicates

The primary soil vapour sample analytical results agreed with the intra laboratory duplicate analytical results for all analytes, with all results within the acceptable limits of deviation from the DQO.

Laboratory Duplicates

Laboratory duplicate soil samples were analysed by the testing laboratory at a rate greater than 1 per 20 primary soil samples. The results of analysis for the laboratory duplicate soil sample were generally within the acceptance criteria of 0 – 30 %, except for TRH C10-C14 (49%) and fluorene (36%) for one laboratory duplicate sample, however, these elevated RPDs were within the NATA accredited laboratory acceptance criteria.

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

8.2.2 Accuracy

Surrogate spike recoveries were generally within the acceptable range of 70 – 130 %. Reported surrogate spike recoveries ranged between 1-125% and were within the NATA acceptable limits of 50 – 150 % with the exception of Dibutylchlorendate (OCP surrogate) and Dibutylchlorendate (PCB surrogate) reported at 1% in sample BH103 0.3-0.55. The laboratory reported that the LORs have been raised in sample BH103 0.3-0.55 due to matrix interference. No OCPs or PCBs were reported to exist within samples above the laboratory LOR within any of the analysed samples. Potential over representation of OCPs and PCBc, as indicated by over-reporting of the aforementioned surrogates in sample BH103 0.3-0.55, is therefore not considered to have altered the outcome of the assessment.

Laboratory control sample (LCS) recoveries were within the acceptable range of 70 – 130%.

Matrix spike recoveries were within the acceptable range of 70 – 130 %.

8.2.3 Representativeness

The extraction and analysis of critical soil samples was completed within the recommended holding times for all analytes. It is noted that subsequent to receipt of initial lab results, additional samples were scheduled for leachate preparation and subsequent analysis. As a result of the lead time, analysis of the leachate was completed outside the initial technical holding time (14 days). Given the absence of light end volatile contaminants in the initial total soil concentration results and the sample preparation and analysis methods, the delay in analysis of the samples is considered not to have influenced the final reported concentrations. As such, the out of holding time occurrences have not influenced the ability to draw viable decisions from the data.

Disposable sampling equipment were used during the field program for sampling of all media with disposable gloves used for collection of each soil sample, and as such, rinsate samples were not required to be collected.

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 storage blank was submitted with each sampling event during the soil and groundwater investigation. There were no reported concentrations of BTEX compounds above the laboratory Limit of Reporting (LOR).

An equipment blank and field blank were prepared for soil vapour sampling. Analyte levels were all below detection limits.

During the soil vapour investigation, leak detection testing was undertaken to test the seal of the probe, during purging and throughout the sampling at each location by covering each with fabric soaked with isopropyl alcohol solvent. It is noted that potential detections of constituents of the solvent (in the soil vapour results) would indicate that the probe was not properly sealed. Results of the soil vapour assessment reported no detections in isopropyl alcohol constituents, indicating that the integrity of the probe installation was intact during sampling.

There were no reported analytes above the laboratory LOR in the laboratory method blank.

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.**

8.2.4 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, groundwater and soil vapour investigation.

8.2.5 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.

8.3 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. Notation has been made of the inherent heterogeneity of the fill matrix within the decision-making framework to ensure appropriate conservatism is adopted to manage site contamination risks.

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, groundwater and soil vapour data is of an acceptable quality upon which to draw conclusions regarding the environmental condition of the site.

9. Investigation Results

9.1 Soil Observations

Soil sampling was conducted on 15 May 2018 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 presented as follows. A total of seven boreholes were advanced via mechanical drill rig, with six boreholes used for the purposes of soil sampling.

As discussed in **Section 2.2**, the site footprint was predominantly covered by building footprints, concrete slab and asphaltic pavement.

Five boreholes (BH101 to BH105) were advanced within the CoS depot area (Northern Portion), where fill material was encountered to depths ranging from 0.8-2.0 m bgs. Fill material primarily comprised silty clay and silty sand; colours were observed to be primarily brown with some dark/brown black material observed at BH103 and BH105. Fill contained low proportion of gravels, with anthropogenic inclusions including glass, ceramic, and brick fragments at all locations except for BH105. Inclusions of ash, slag and coal were observed at BH101, BH102, BH103, BH104 and BH105. Borehole BH104 was terminated in fill material due to refusal on ceramic fragments.

Two boreholes (BH106 and BH107) were advanced within the tenanted workshop area (Southern Portion) where fill material was encountered to depths ranging from 0.6-2.0 m bgs, with no anthropogenic inclusions observed.

Where natural soils were encountered at sampling locations, two distinct soil types were noted underlying the fill material:

- Silty Sand was encountered underlying the fill material at locations BH101, BH102, BH105, BH106 and BH107. The sand extended to a maximum depth of 1.5 m bgs with silty clays underlying the sand at all locations in BH101, BH102, BH105 (northern portion). The silty sand was encountered to greater depths at BH106 and BH107 advanced in the southern portion to a depth of 3.5-4.0 m bgs. The sand was dry-damp and brown in colour. No odours or staining was observed within the silty sand material.
- Silty clay underlying the sand at above locations, as well as underlying the fill material at the remaining locations (except for BH104, where borehole was terminated in fill). The clay soil was typically characterised as mottled red/grey, red/brown, with no odours or staining observed.

No odours, staining or ACM was observed throughout the soil profile at any of the investigation locations. PID results ranged from 0 to 1.3 ppm. Groundwater seepage was not observed during drilling.

9.2 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 9.2.1** to **Section 9.2.6**. Soil human health and ecological criteria exceedances are presented in **Figures 4A** and **4B**. Statistical Analyses for the data sets are provided in **Appendix G.**

9.2.1 Metals

Individual heavy metals concentrations were reported at levels less than the adopted health and ecological based assessment criteria with the exception of the following:

- Copper was reported at concentrations exceeding the adopted EIL criterion (100 mg/kg) in the following samples: BH101 0.3-0.4 (240 mg/kg), BH102 0.35-0.55 (180 mg/kg), BH103 0.3-0.5 (130 mg/kg), BH104 0.65-0.75 (110 mg/kg), and BH107 0.3-0.5 (280 mg/kg). At the time

of the investigation, the site was covered by building was footprints and concrete/asphaltic slab, and as such ecological effects were not observed. It is noted that the shallow fill material in this area is unlikely to be used as a growing medium in the proposed development of the site. As such, these exceedances are not considered to affect the future site use and do not warrant further assessment and/ or management.

- Zinc concentration was reported at concentrations exceeding the adopted EIL criterion (320 mg/kg) in all fill samples analysed including BH101 0.3-0.4 (710 mg/kg) and BH104 0.65-0.75 (580 mg/kg). As discussed above, shallow fill material in this area is unlikely to be used as a growing medium in the proposed development of the site. As such, these exceedances are not considered to affect the future site use and do not warrant further assessment and/ or management.

9.2.2 Polycyclic Aromatic Hydrocarbons

Individual PAH compounds were reported at levels less than the adopted health and ecological based assessment criteria with the exception of the following:

- Carcinogenic PAHs as B(a)P Toxic Equivalence Quotient (TEQ) were reported exceeding the adopted HIL-B of 4 mg/kg in the following samples: BH101 0.3-0.4 (16.98 mg/kg), BH102 0.35-0.55 (7.023 mg/kg), BH103 0.3-0.5 (305.3 mg/kg), BH107 0.3-0.5 (8.754 mg/kg) and BH107 0.8-1.0 (5.307 mg/kg). Elevated B(a)P TEQ concentration reported at BH103 0.3-0.5 greater than 250% of HIL-B criterion is considered a hotspot that requires remediation/management.

  Statistical analysis was undertaken for B(a)P TEQ data set available for fill materials across the site (CES 2018 and JBS&G 2018), which identified maximum concentration greater than 250% of HIL-B criterion, standard deviation greater than half of the HIL-B criterion and 95% upper confidence limit (UCL) calculation in exceedance of HIL-B criterion. As such, the above nominated results are considered to exceed the assessed HIL-B criterion.

- Total PAH concentration was reported exceeding the adopted HIL-B of 400 mg/kg at BH103 0.3-0.5 (4,967 mg/kg). As discussed above, BH103 0.3-0.5 has been identified as a PAH hotspot that requires remediation/management.

- Naphthalene concentration was reported exceeding the adopted HSL-B of 3 mg/kg and ESL of 170 mg/kg at BH103 0.3-0.5 (510-720 mg/kg). As discussed above, BH103 0.3-0.5 has been identified as a PAH hotspot that requires remediation/management.

- B(a)P concentrations were reported exceeding the adopted ESL criterion (0.7 mg/kg) in the following samples: BH101 0.3-0.4 (11 mg/kg), BH102 0.35-0.55 (4.1 mg/kg), BH103 0.3-0.5 (200 mg/kg), BH105 0.3-0.5 (2.5 mg/kg), BH107 0.3-0.5 (5.5 mg/kg) and BH107 0.8-1.0 (3.3 mg/kg). As discussed above, shallow fill material in this area is unlikely to be used as a growing medium in the proposed development of the site. As such, these 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.

9.2.3 Total Recoverable Hydrocarbons and BTEX Compounds

The following samples were reported to have TRH fraction concentrations in exceedance of the site assessment criteria:

- TRH >C10-C16 less Naphthalene (F2) was reported to exceed the adopted HSL criterion of 110 mg/kg, ESL criterion of 120 mg/kg at BH103 0.3-0.5 (2,000 mg/kg). Additionally, TRH >C10-C16 concentration (2700 mg/kg) and TRH>C16-C34 concentration (14,000 mg/kg) exceeded the management limit of 1000 mg/kg and 2500 mg/kg respectively.

Silica gel clean-up was conducted on sample BH103 0.3-0.5 (2000 mg/kg), with concentrations reported as follows:

- TRH >C10-C16 Fraction – 250 mg/kg;
- TRH >C16-C34 Fraction – 360 mg/kg; and
- TRH >C34-C40 Fraction <100 mg/kg.

As discussed above, BH103 0.3-0.5 has been identified as a PAH hotspot that requires remediation/management.

- TRH >C16-C34 fraction was reported to exceed the adopted ESL of 300 mg/kg at BH101 0.3-0.4 (610 mg/kg), BH103 0.3-0.5 (14,000 mg/kg), BH107 0.3-0.5 (500 mg/kg) and BH107 0.8-1.0 (320 mg/kg). As discussed above, shallow fill material in this area is unlikely to be used as a growing medium in the proposed development of the site. As such, these 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.

Concentrations of all BTEX compounds in all soil samples selected for analysis were reported to be below the adopted health and ecological site assessment criteria.

9.2.4 Organochlorine Pesticides and Polychlorinated Biphenyls

Concentrations of individual OCP compounds were reported to below the adopted health and ecological assessment criteria for all soil samples selected for analysis.

Concentrations of total PCB compounds were reported below the adopted health based assessment criteria for all soil samples selected for analysis.

9.2.5 Asbestos

Asbestos in soil analysis results identified no concentrations above the adopted assessment criteria in soil samples submitted to the laboratory for analysis.

9.3 Groundwater Field Observations

A groundwater monitoring event (GME) sampling the two new wells (BH106 and BH107) and three existing monitoring wells (BH1, BH3 and BH4) was conducted on 18 May 2018. A summary of groundwater conditions encountered during the GME is presented in **Table 9.2** and **Table 9.3** below. Groundwater monitoring well locations are provided on **Figure 3**.

Details of depths to groundwater and other geospatial characteristics are summarised in **Table 9.1** below.

Table 9.1 Groundwater Geospatial Details (18 May 2018)

Well Reference	Easting	Northing	Well Height (m AHD top of casing)	Depth to Groundwater (m below top of casing)	Groundwater Level (mAHD)
BH1	333483	6248226	-	6.690	-
BH3	333498	6248216	-	3.760	-
BH4	333503	6248224	-	3.390	-
BH106/MW01	333476.4	6248201.2	24.55	5.155	19.395
BH107/MW02	333493.5	6248199.9	24.425	5.734	18.691

MGA coordinate and AHD values were provided by a registered surveyor for BH106/MW01 and BH107/MW02. The surveyor's report is provided as part of **Appendix H**. It is noted that AHD survey data for historical wells BH1, BH3 and BH4 were not provided in the previous investigation report (CES 2018).

Table 9.2 Groundwater Field Physicochemical Parameters

Well Reference	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH (units)	Oxidation Reduction Potential (mV)	Temperature (°C)
BH1	13.33	23.2	6.83	16.5	12.6
BH3	5.84	3.1	4.48	49.8	24.0
BH4	6.72	6.0	5.04	20.7	21.0
BH106/MW01	-	-	-	-	-
BH107/MW02	-	-	-	-	-

Inadequate volumes precluded physicochemical parameters to be taken from monitoring wells BH106 and BH107 during the groundwater monitoring event.

Review of the field parameters as presented above indicates that the groundwater has a slightly acidic to neutral pH, is fresh, moderately reducing and is characterised by aerobic conditions.

Table 9.3 Groundwater Observations (18 May 2018)

Well Reference	Odour	Sheen	Turbidity	Light non-aqueous phase liquid (LNAPL)
BH1	No odour	No sheen	Moderate turbidity	None observed
BH3	No odour	No sheen	Moderate turbidity	None observed
BH4	No odour	No sheen	High turbidity	None observed
BH106/MW01	No odour	No sheen	Moderate turbidity	None observed
BH107/MW02	No odour	No sheen	Moderate turbidity	None observed

9.4 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 9.4.1** to **Section 9.4.4**. Groundwater criteria exceedances are presented in **Figure 5**.

9.4.1 Metals

Heavy metal concentrations within the analysed samples were all reported to be below the adopted site assessment criteria with the exception of the following:

- Copper was detected at concentrations exceeding the adopted ecological criterion (0.0013 mg/L) in all groundwater samples: BH1 (0.019 mg/L), BH3 (0.058 mg/L), BH4 (0.013 mg/L), BH106 (0.03 mg/L) and BH107 (0.06 mg/L).
- Zinc was detected at concentrations exceeding the adopted ecological criterion (0.015 mg/L) in all groundwater samples: BH1 (0.12 mg/L), BH3 (0.16 mg/L), BH4 (0.039 mg/L), BH106 (0.14 mg/L) and BH107 (0.06 mg/L).
- Lead was detected at concentrations marginally exceeding the adopted ecological criterion (0.0044 mg/L) in sample BH3 (0.005 mg/L).
- Nickel was detected at concentrations marginally exceeding the adopted ecological criterion (0.007 mg/L) in sample BH1 (0.025 mg/L).

9.4.2 Total Recoverable Hydrocarbons and BTEX Compounds

BTEX concentrations were reported below the laboratory LOR.

TRH compounds were reported below the laboratory LOR and/or less than site assessment criteria. Low levels of F1 TRH and F2 TRH were detected in the following samples significantly below the adopted assessment criteria:

- F2 TRH concentration in sample BH1 reported at 0.14 mg/L; and
- F1 TRH concentration in sample duplicate sample collected from BH4 reported at 0.04 mg/L.

No TRH/BTEX concentrations above the laboratory LOR were reported in both BH106 and BH107 (inferred down-gradient locations).

9.4.3 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.

Low levels of B(a)P was detected in sample BH4 (0.00003 mg/L), significantly below the adopted assessment criteria.

9.4.4 Volatile Organic Compounds

VOC compounds were generally reported to be at concentrations below the adopted site criteria within the analysed samples.

Low levels of 1,2,4-trimethyl benzene and 1,3,5-trimethyl benzene were detected in duplicate sample collected from BH4 at 0.009 mg/L and 0.004 mg/L respectively, noting no site assessment criteria are available for these compounds.

All other individual VOC compounds were less than the laboratory LOR.

9.5 Soil Vapour Contamination Analytical Results

Five soil vapour samples were analysed for VOCs including BTEX and volatile TRH (>C10-C16 and C6-C10). The results are presented in **Table C**. Each contaminant compound concentration in each of the analysed samples was reported to have concentrations less than the laboratory LOR with the exception of benzene concentration reported at SV09 (0.4834 mg/m^3), however, all concentrations were below the adopted site criteria for soil vapour.

9.6 Preliminary In-Situ Waste Classification

Summarised soil analytical data for COPCs are presented in **Table B** and are discussed in the following sections. Detailed laboratory reports and chain of custody documentation are provided in **Appendix E**.

Given the identification of blast furnace slag within fill materials in a number of locations across the site, as discussed in **Section 9.1**, fill identified as impacted with blast furnace slag has been classified in accordance with the EPA immobilization approval 2009/07. Representative of soil analytical data for SCC and TCLP leached concentrations and general observations are discussed in **Section 9.3.1** and justification for application of the immobilization approval to soil analytical results missing TCLP data is provided.

Interpreted Waste Material Types are listed in **Table 9.4** and reference to them is made throughout the following text. Where materials have exceeded the waste classification criteria, a reference to the Material Type dataset of which the sample forms part is noted next to the result**.**

9.6.1 Representativeness of Soil Results

As discussed in **Section 9.1** soil investigation observations have indicated that fill material at the site is characterised as generally consistent with anthropogenic inclusions, and exhibits mildly varying consistency. Where soils have been encountered, which are largely consistent with soils at surrounding locations, TCLP data and observations of slag from surrounding locations have been utilised in deriving waste classifications.

The following table (**Table 9.1**) provides details pertaining to the application of TCLP data and slag observations

Table 9.4 – TCLP Data Application

Borehole	Slag Observed	Utilisation of TCLP Leached Concentrations From:
BH101	Y	BH4_0.3-0.8 (lead) and BH101 0.3-0.4 (PAH) – consistent material description in proximity
BH102	Y	BH9_0.3-0.9 (lead and PAH) – consistent material description in proximity
BH103	Y	BH6_0.3-0.8 (lead) and BH103 0.3-0.5 (PAH) – consistent material description in proximity
BH104	N	BH1_0.4-0.8 (lead and PAH) – consistent material description in proximity
BH105	Y	BH11_0.3-0.7 (lead and PAH) – consistent material description in proximity
BH107	N	BH11_0.3-0.7 (lead) and BH107 0.3-0.5 (PAH) – consistent material description in proximity

With respect to the aforementioned, **Section 9.6.2** to **Section 9.6.7** provides a summary of analytical results which have indicated the presence of higher waste categories.

9.6.2 Heavy Metals

Samples reported to have concentrations of heavy metals in exceedance of the CT1 or CT2 criteria are summarised below.

- Lead was reported at a concentration in exceedance of the CT2 criterion (400 mg/kg) in sample BH104 0.65-0.75 (490 mg/kg); and
- Lead was reported at concentrations in exceedance of the CT1 criterion (100 mg/kg) within samples BH101 0.3-0.4 (390 mg/kg), BH102 0.35-0.55 (400 mg/kg), BH103 0.3-0.5 (110 mg/kg), BH105 0.3-0.5 (330 mg/kg), BH107 0.3-0.5 (200 mg/kg) and BH107 0.8-1.0 (140 mg/kg).

However, representative TCLP data (**Table 9.4**), indicate that concentrations of lead are within SCC1 and TCLP1 criteria consistent with General Solid Waste.

9.6.3 Total Recoverable Hydrocarbons

Total Recoverable Hydrocarbons were generally reported to be below the CT1 criteria, consistent with General Solid Waste.

It is noted that C10-C36 Fraction (Total) in sample BH103 0.3-0.5 was preliminarily reported as 21,100 mg/kg, however, subsequent to silica gel clean-up the sample concentration was reported at 570 mg/kg, within the CT1 criterion of 10,000 mg/kg.

9.6.4 Polycyclic Aromatic Hydrocarbons

Samples reported to have concentrations of PAH in exceedance of CT1 or CT2 criteria are summarised below.

- B(a)P was reported at a concentration in exceedance of the CT2 criterion (3.2 mg/kg) in samples BH101 0.3-0.4 (11 mg/kg), BH102 0.35-0.55 (4.1 mg/kg), BH103 0.3-0.5(200 mg/kg), BH107 0.3-0.5 (5.5 mg/kg) and BH107 0.8-1.0 (3.3 mg/kg).
- Total PAH concentration in exceedance of the CT2 criterion (800 mg/kg) in sample BH103 0.3-0.5 (4,967 mg/kg).
- B(a)P was reported at a concentration in exceedance of the CT criterion (0.8 mg/kg) in sample BH105 0.3-0.5 (2.5 mg/kg).

However, representative TCLP data (**Table 9.4**), indicate that concentrations of PAHs are generally within SCC1 and TCLP1 criteria, consistent with General Solid Waste.

Further, pursuant to EPA Immobilization approval number 2009/07, fill material contaminated with blast furnace slag at BH101 and BH103 is classified as General Solid Waste in accordance with the EPA Waste Classification Guidelines with TCLP values.

9.6.5 Benzene, Toluene, Ethylbenzene and Xylene

All analysed samples reported concentrations less than the CT1 threshold.

9.6.6 Organochlorine Pesticides and Polychlorinated Biphenyls

All analysed samples reported pesticide concentrations less than the CT1 thresholds.

9.6.7 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.

10. Discussion

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

10.1 Potential Risk to Future Onsite Receptors

In reference to the decision rules developed in **Section 6.1.5**, the following sections discuss potential risks posed to future on-site receptors from impacted media present at the site.

10.1.1 Soil Contamination

Representative soil samples collected from completed investigation locations were analysed for a range of COPCs as identified for the site in **Section 4.1**. Soil sample analysis results, from the current investigation, identified a number of site contaminants were consistent with those identified in CES (2018) as documented in **Section 9.2**.

Contaminants present at concentrations higher than the adopted site criteria are discussed below with respect to human health.

- Statistical analysis of the results for B(a)P TEQ as discussed in **Section 9.2.2** indicates that the full data set exceed the health based assessment criteria from the ground surface to the base of fill material at approximately 2.0 m bgs. The elevated B(a)P TEQ concentrations are interpreted to be associated with ash/metalliferous slag inclusions in the fill material. As such, the fill material will require management to address the potential exposure risk with respect to B(a)P TEQ prior to utilization of the site for the proposed land use and during the proposed redevelopment.
- B(a)P TEQ, naphthalene and total PAH impacts have been identified in the shallow fill material at BH103 0.3-0.5. This impact is interpreted to be associated with ash/metalliferous slag inclusions observed at this location. Further, mid fraction TRH (>C10-C16 and >C16-C34) have been reported at BH103 0.3-0.5. The impact was limited within surficial to shallow fill soils and are expected to be associated with the high PAH concentrations within the soils rather than a fuel or oil related hydrocarbon source. The material in the vicinity of BH103 0.3-0.5 will require management to address the potential exposure risk prior to utilization of the area for the proposed land use and during the proposed redevelopment.

Concentrations of copper, zinc, B(a)P and TRH >C16-C34 fraction were reported in various samples in exceedance of the adopted ecological criteria (**Section 9.2**) for the proposed landuse. However, JBS&G notes that the shallow fill material at the site is unlikely to be used as a growing medium in the proposed development of the site. As such, JBS&G do not consider these impacts 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.

10.1.2 Potential Risk from Groundwater

Comparison of analytical results with the adopted health screening and recreational criteria adopted has not identified the occurrence of groundwater impacts presenting a significant risk to future site users. The presence of copper, zinc, lead and nickel above the ecological criteria is considered typical of a built up urban/industrial environment within the geological setting of the site (Botany Sands).

Furthermore, given the site location within the Botany Sands Aquifer Embargo Area and the groundwater in the area is not suitable for human consumption, the low concentrations of F1 TRH, F2 TRH, B(a)P, VOC compounds (1,2,4-trimethyl benzene and 1,3,5-trimethyl benzene) are considered not to represent an unacceptable risk to future on-site receptors.

10.1.3 Potential Risks from Soil Vapour

The field soil vapour survey completed across the site did not identify the presence of significant volatile organic compound impacts underlying the site. Vapour samples collected on a systematic grid with judgemental locations in proximity of the potential UST infrastructure in the northern portion of the site reported volatile hydrocarbon (VOCs including BTEX) concentrations to occur at levels less that the laboratory LOR and below the adopted site assessment criteria. On this basis, it is considered that there are no unacceptable risks from soil vapour associated with the identified TRH impacts in soil or minor detections in groundwater at the site.

10.1.4 Hazardous Building Materials

The hazardous material risk assessment (Greencap 2018) identified the presence of hazardous building materials including asbestos, lead paint, ODS and SMF which require appropriate removal/management prior to development of the site.

10.2 Background Soil Contamination

Analysis of soils from within the natural soil profile was undertaken on two samples (BH101 1.2-1.4 and BH103 1.8-2.0). No COPCs were reported to be at concentrations above the natural background concentrations as described in Olszowy et al. (1995). As such, no further consideration of background soil contamination concentrations are required.

10.3 Chemical Mixtures

Fill material impacted with a range of heavy metals, PAHs and TRH has been identified at the site as requiring future management/remediation. With consideration to the identified conditions, the conservatism of the adopted site assessment criteria and the toxicological pathways with which the identified contaminants act, there were no chemical mixtures identified at the site during the assessment that may increase the risk of harm at the site.

10.4 Aesthetic Issues

No significant odours or staining were observed at the site during the current investigation, and no asbestos was observed on the site surface, or detected during laboratory analysis.

Fill material in numerous areas of the site has been identified as dark brown/black with anthropogenic inclusions of glass, ceramic, and brick fragments, ash, slag and coal. Complete exposure pathways relating to the identified heavy metals, PAH and TRH concentrations within fill material at the site, will require management as discussed above.

On this basis, there are no aesthetic issues that require to be addressed in material beyond that identified as requiring management to address health exposure risks.

10.5 Potential Migration of Contaminants

Contaminant concerns as outlined in **Sections 9.1** and **Section 9.2** above, comprise heavy metals, PAHs and TRH impacts within the shallow fill soils.

On the basis that almost the entirety of the site currently comprises the asphaltic hardstands and building footprints, and the proposed development (**Appendix I**) will comprise hardstand pavements installed across the site, it is unlikely significant vertical migration of contaminants within soils at the site would substantially contribute to future contaminant concentrations within groundwater at the site.

Based on the reported toxicity characteristic leaching procedure (TCLP) results and the nature of the observed ash/metalliferous slag (in which metals and/or PAHs and B(a)P are bonded within a vitrified solid mass or are immobilised within a vitrified carbonaceous and siliceous matrix), it is considered that the reported concentrations of lead, PAHs and B(a)P will likely not leach to groundwater.

Assessment of site groundwater conditions has identified heavy metals concentrations considered typical of a built up urban/industrial environment within the geological setting of the site. Low concentrations of F1 TRH, F2 TRH, B(a)P and VOC compounds (1,2,4-trimethyl benzene and 1,3,5-trimethyl benzene) were detected at the inferred up-gradient monitoring well, with no detections reported in the inferred downgradient wells. These concentrations are considered to be representative of the broader urban/industrial environment and not relate to fuel infrastructure potentially present on-site. As such, there are no off-site migration issues relating to groundwater at the site.

Investigation of potential soil vapour migration risks across the site has identified the absence of significant sub-slab vapour concentrations inclusive of site areas in the vicinity of potential fuel infrastructure.

10.6 Site Management Strategy

Based on communications with the client and review of the current development plans (**Appendix I**), it is understood that the site is to be redeveloped for high-density residential development with ground floor retail/commercial use. The intended development does not contain any basement levels, with hardstand pavements to be installed across the site.

Based on the proposed land use, the scope of work completed for this assessment and the limitations presented in **Section 12**, the assessment has identified that there are a number of site contamination issues that will require management and/or remediation such that the site may be considered suitable for the proposed future site use. These include addressing the insitu fuel storage infrastructure as a contamination source and heavy metal, PAH and TRH impacted fill material.

The tanks will require decommissioning in accordance with DECCW (2010) *UPSS Technical Note: Site Validation Reporting* and in compliance with relevant legislation, policies and industry best practice.

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 resolve the contamination issues at the site.

Site won fill material are not considered suitable for utilisation as growing media. As part of the site management strategy, growing media will be required to be imported to the site.

10.7 Waste Classification

To assist with planning for remediation/management requirements a preliminary insitu waste classification has been provided in **Section 9.6**. Based on the available data set from past and present investigations (CES 2018 and JBS&G 2018) and observations made during the current investigation, fill material at the site is provisionally classified General Solid Waste (Non-putrescible).

Previous investigations (CES 2018) have provisionally classified natural soils underlying the fill material as Virgin Excavated Natural Material (VENM) with the exception of the natural soils surrounding BH11 which have been provisionally classified as Hazardous Waste on the basis of arsenic concentration.

11. Conclusions and Recommendations

Based on the scope of works completed for this assessment and subject to the limitations stated in **Section 12**, the following conclusions have been drawn with regard to the site conditions:

- Previous investigations (Greencap 2018) have identified the presence of hazardous building materials including asbestos, lead paint, ODS and SMF within existing site structures that require appropriate removal/management during proposed demolition works.
- Previous investigations (CES 2018) have identified the presence of potential fuel infrastructure in the northern portion of the site, considered to represent a potential contamination source and as such requiring management/removal pursuant to DECCW (2010).
- Fill material at the site has previously been identified as variously impacted with heavy metals, PAHs and TRH. Further characterisation of conditions within the site has identified contaminant levels generally consistent with CES (2018), with the following impacts identified as requiring management/remediation:
    - Fill material across the site identified as impacted with B(a)P TEQ in exceedance of the adopted health based investigation criteria. The elevated B(a)P TEQ concentrations are interpreted to be associated with ash/metalliferous slag inclusions in the fill material. As such, the fill material will require management to address the potential exposure risk with respect to B(a)P TEQ prior to utilization of the site for the proposed land use and during the proposed redevelopment.
    - B(a)P TEQ, naphthalene, total PAH and light to mid fraction TRH (>C10-C16 and >C16-C34) impacts identified in the shallow fill material at BH103 0.3-0.5 with respect to human health. This impact is interpreted to be associated with ash/metalliferous slag inclusions, with the TRH concentrations expected to be associated with the high PAH concentrations within the soils rather than a fuel or oil related hydrocarbon source. The material in the vicinity of BH103 0.3-0.5 will require management to address the potential exposure risk prior to utilization of the area for the proposed land use and during the proposed redevelopment.
    - Concentrations of copper, zinc), B(a)P and TRH >C16-C34 fractions were reported in various samples in exceedance of the adopted ecological criteria for the proposed landuse. As such, site won fill material are not considered suitable for utilisation as growing media. JBS&G notes that the shallow fill material at the site is unlikely to be used as a growing medium in the proposed development of the site. As part of the site management strategy, growing media will be required to be imported to the site. Therefore, JBS&G do not consider these impacts to constitute a risk to future plant growth or inhibit the future development of the site. JBS&G consider that the ecological impacts identified (where not concurrent with health-based impacts) do not warrant further assessment and/ or management.
- Groundwater conditions at the site are considered indicative of typical inner-Sydney industrial areas, with elevated concentrations of copper, zinc, lead and nickel in groundwater passing across the site. Low level petroleum hydrocarbon impacts and VOC compounds were also identified in inferred up-gradient locations, reported at concentrations below the adopted assessment criteria. There are no identified off-site migration issues relating to groundwater at the site.
- Assessment of potential soil vapour conditions identified the absence of unacceptable volatile contaminant risks associated with the site.

- Based on the available data set from past and present investigations (CES 2018 and JBS&G 2018) and observations made during the current investigation, fill material at the site is provisionally classified General Solid Waste (Non-putrescible). Previous investigations (CES 2018) have provisionally classified natural soils underlying the fill material as Virgin Excavated Natural Material (VENM) with the exception of the natural soils surrounding BH11 which have been provisionally classified as Hazardous Waste on the basis of arsenic concentration.
- Subject to interim retention of existing site pavements (i.e. asphaltic/concrete hardstand and building concrete slabs within the site), there are considered to be no outstanding aesthetic concerns. Future management/remediation will be required to address the fuel infrastructure and anthropogenic inclusions identified within the fill glass, ceramic, brick fragments, ash, slag and coal in the absence of pavements.
- A remedial action plan (RAP) should be prepared to address the identified site contamination issues at the site via remediation/management such that the site can be considered suitable of the proposed residential with minimal soil access landuse scenario.

12. 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 enquires.

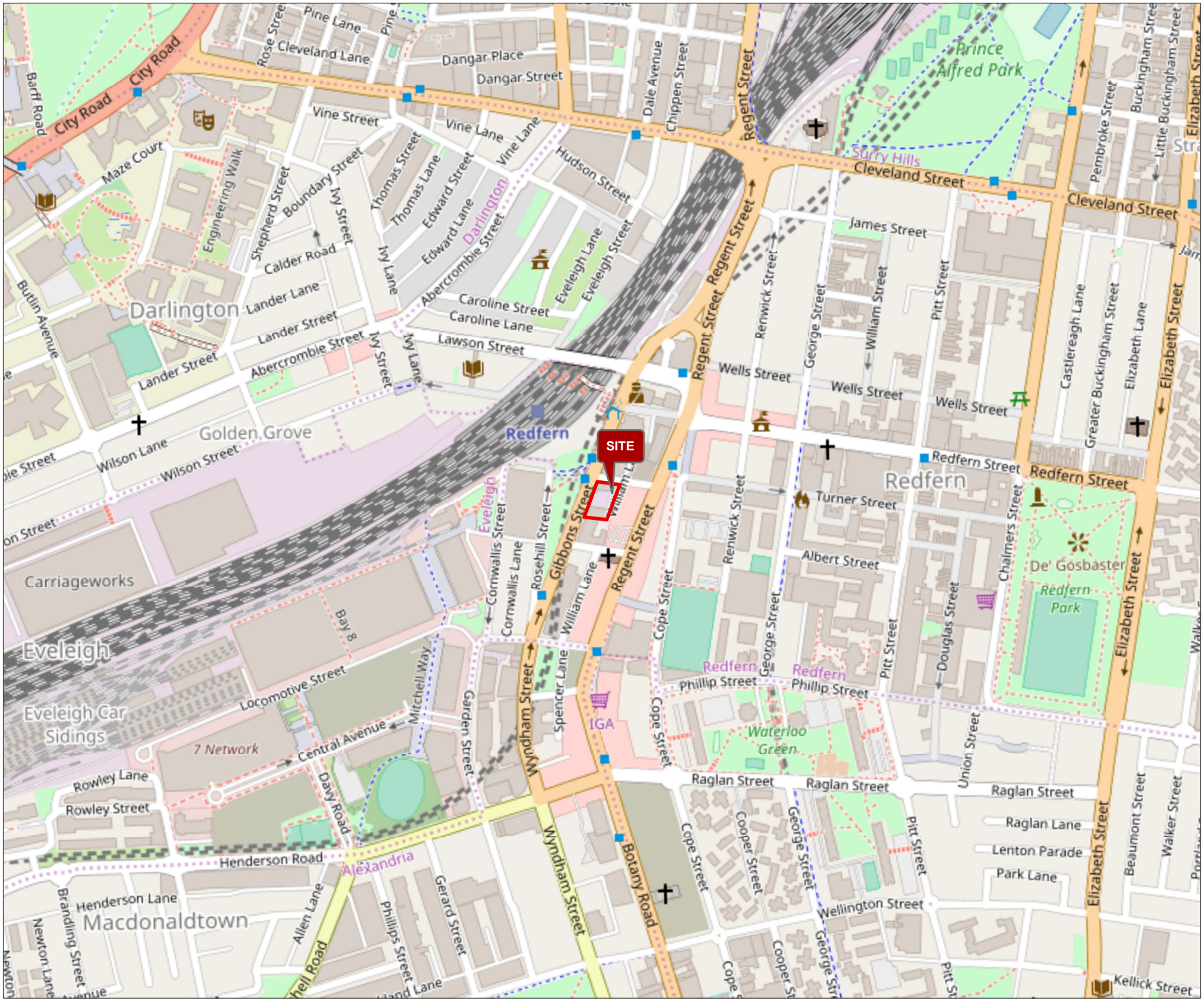
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the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

JBS&G

Job No: 54877	
Client: St George Housing	
Version: R01 Rev A	Date: 23-May-2018
Drawn By: AV	Checked By: SG

Scale 1:7,000

0 80 160

metres

Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

SITE LOCATION

FIGURE 1

File Name: 54877_01
Reference: © OpenStreetMap (and) contributors, CC-BY-SA



Legend:

- Approximate Site Location
- City of Sydney Council Depot Area
- Tenanted Workshop Area
- Potential UST (CES 2018)

JBS&G

Job No: 54877

Client: St George Housing

Version: R01 Rev A	Date: 08-Jun-2018
Drawn By: AV	Checked By: SG

Scale 1:500

0 6 12

metres

Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

SITE LAYOUT

FIGURE 2

File Name: 54877_02
Reference: www.nearmap.com - Imagery 20180411



Legend:

- Approximate Site Location
- City of Sydney Council Depot Area
- Tenanted Workshop Area
- Potential UST (CES 2018)

Historical Sample Locations

- Borehole Location (CES 2018)
- Borehole/Groundwater Well Location (CES 2018)

Sample Locations

- Borehole Location
- Borehole/ Groundwater Monitoring Well
- Soil Vapour Location

JBS&G

Job No: 54877	
Client: St George Housing	
Version: R01 Rev A	Date: 12-Jun-2018
Drawn By: AV	Checked By: SG
Scale 1:400	

0 5 10
metres

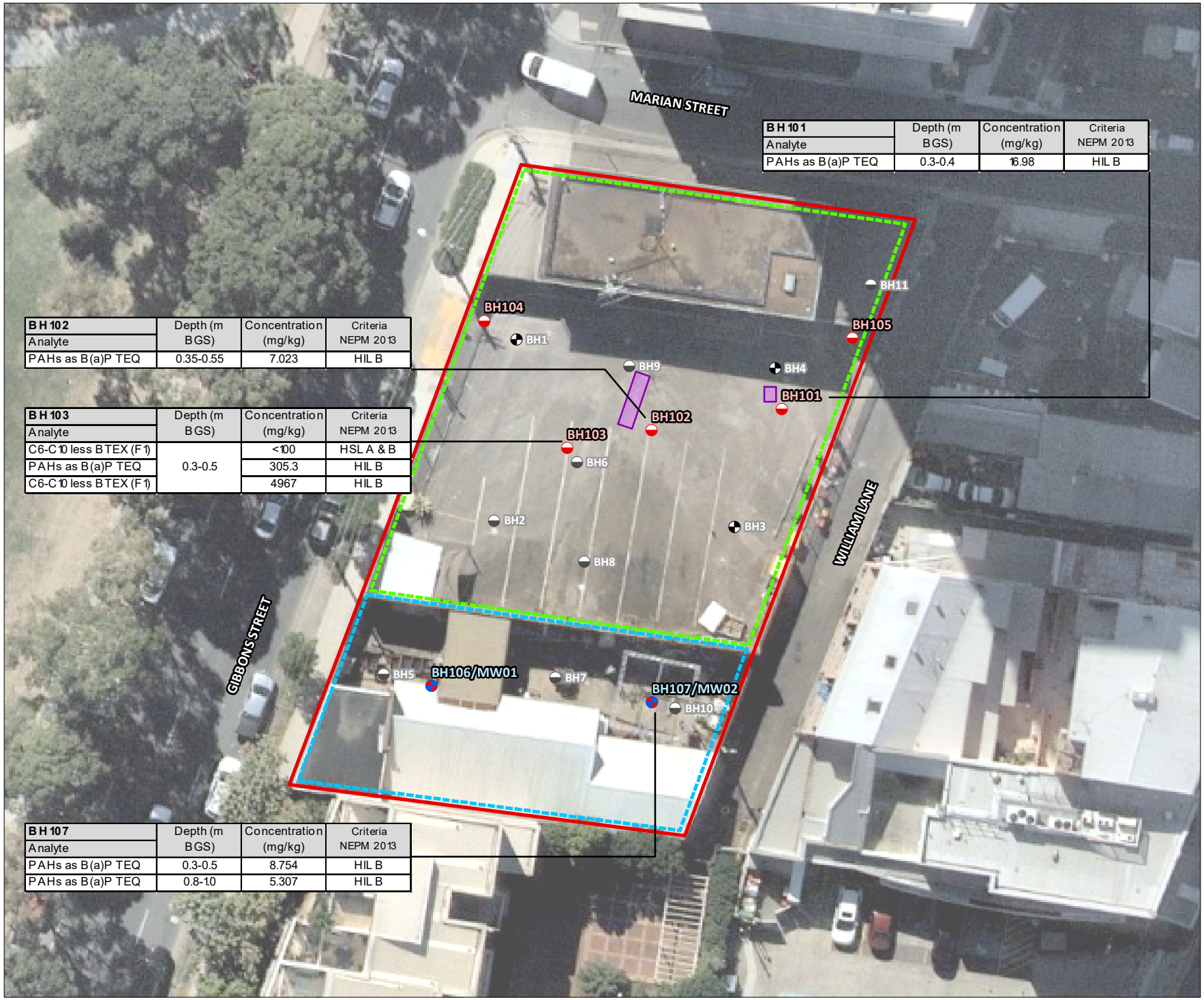
Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

SAMPLE LOCATIONS

FIGURE 3

File Name: 54877_03
Reference: www.nearmap.com - Imagery 20180411



BH101	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
PAHs as B(a)P TEQ	0.3-0.4	16.98	HIL B

BH102	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
PAHs as B(a)P TEQ	0.35-0.55	7.023	HIL B

BH103	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
C6-C10 less BTEX (F1)	0.3-0.5	<100	HSL A & B
PAHs as B(a)P TEQ		305.3	HIL B
C6-C10 less BTEX (F1)		4967	HIL B

BH107	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
PAHs as B(a)P TEQ	0.3-0.5	8.754	HIL B
PAHs as B(a)P TEQ	0.8-1.0	5.307	HIL B

Legend:

- Approximate Site Location
- City of Sydney Council Depot Area
- Tenanted Workshop Area
- Potential UST (CES 2018)

Historical Sample Locations

- Borehole Location (CES 2018)
- Borehole/Groundwater Well Location (CES 2018)

Sample Locations

- Borehole Location
- Borehole/ Groundwater Monitoring Well

JBS&G

Job No: 54877

Client: St George Housing

Version: R01 Rev A | Date: 12-Jun-2018

Drawn By: AV | Checked By: SG

Scale 1:400

0 4.5 9

metres

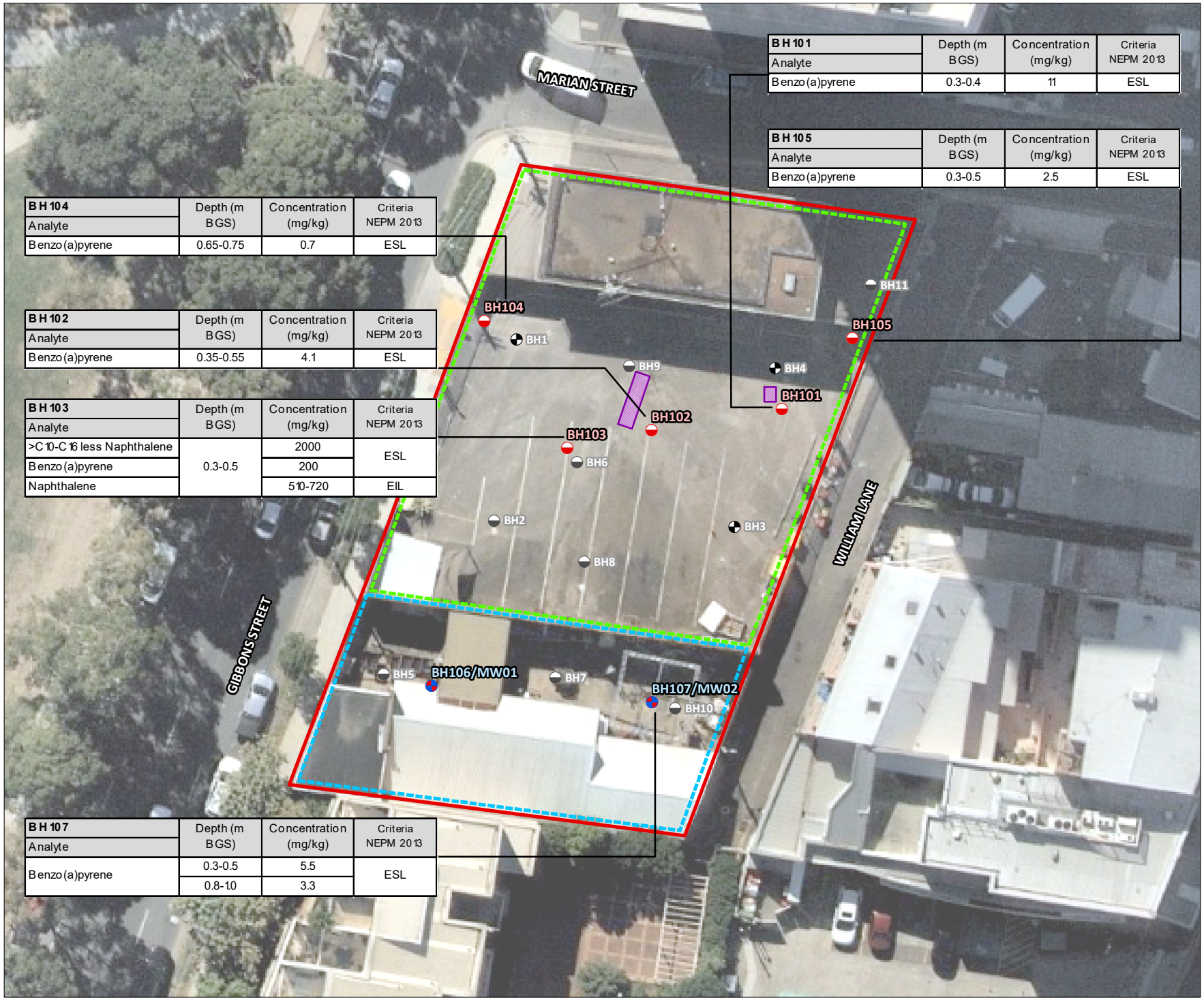
Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

SOIL CRITERIA EXCEEDANCES (HUMAN HEALTH)

FIGURE 4A

File Name: 54877_04A
Reference: www.nearmap.com - Imagery 20180411



BH104	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
Benzo(a)pyrene	0.65-0.75	0.7	ESL

BH102	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
Benzo(a)pyrene	0.35-0.55	4.1	ESL

BH103	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
>C10-C16 less Naphthalene	0.3-0.5	2000	ESL
Benzo(a)pyrene		200	
Naphthalene		510-720	EIL

BH101	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
Benzo(a)pyrene	0.3-0.4	11	ESL

BH105	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
Benzo(a)pyrene	0.3-0.5	2.5	ESL

BH107	Depth (m BGS)	Concentration (mg/kg)	Criteria NEPM 2013
Analyte			
Benzo(a)pyrene	0.3-0.5	5.5	ESL
	0.8-1.0	3.3	

Legend:

- Approximate Site Location
- City of Sydney Council Depot Area
- Tenanted Workshop Area
- Potential UST (CES 2018)

Historical Sample Locations

- Borehole Location (CES 2018)
- Borehole/Groundwater Well Location (CES 2018)

Sample Locations

- Borehole Location
- Borehole/ Groundwater Monitoring Well

JBS&G

Job No: 54877

Client: St George Housing

Version: R01 Rev A | Date: 12-Jun-2018

Drawn By: AV | Checked By: SG

Scale 1:400

0 4.5 9
metres

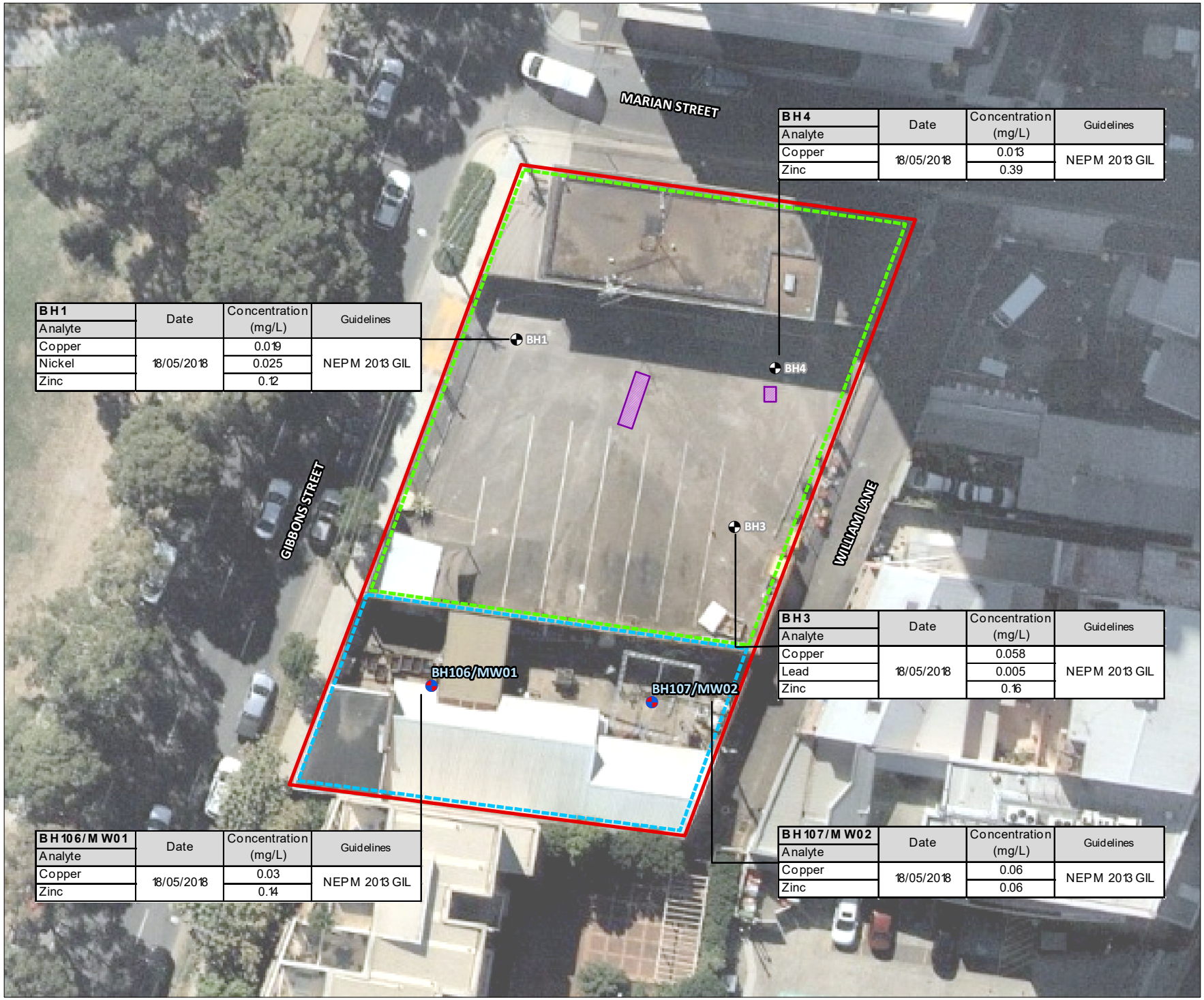
Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

SOIL CRITERIA EXCEEDANCES (ECOLOGICAL)

FIGURE 4B

File Name: 54877_04B
Reference: www.nearmap.com - Imagery 20180411



BH1 Analyte	Date	Concentration (mg/L)	Guidelines
Copper	18/05/2018	0.019	NEPM 2013 GIL
Nickel		0.025	
Zinc		0.12	

BH4 Analyte	Date	Concentration (mg/L)	Guidelines
Copper	18/05/2018	0.013	NEPM 2013 GIL
Zinc		0.39	

BH3 Analyte	Date	Concentration (mg/L)	Guidelines
Copper	18/05/2018	0.058	NEPM 2013 GIL
Lead		0.005	
Zinc		0.16	

BH106/MW01 Analyte	Date	Concentration (mg/L)	Guidelines
Copper	18/05/2018	0.03	NEPM 2013 GIL
Zinc		0.14	

BH107/MW02 Analyte	Date	Concentration (mg/L)	Guidelines
Copper	18/05/2018	0.06	NEPM 2013 GIL
Zinc		0.06	

Legend:

- Approximate Site Location
- City of Sydney Council Depot Area
- Tenanted Workshop Area
- Potential UST (CES 2018)

Historical Sample Locations

- Borehole/Groundwater Well Location (CES 2018)

Sample Locations

- Groundwater Monitoring Well

JBS&G

Job No: 54877

Client: St George Housing

Version: R01 Rev A | Date: 12-Jun-2018

Drawn By: AV | Checked By: SG

Scale 1:400

0 5 10
metres

Coor. Sys. GDA 1994 MGA Zone 56

9-11 Gibbons Street
Redfern, NSW

GROUNDWATER CRITERIA EXCEEDANCES

FIGURE 5

File Name: 54877_05
Reference: www.nearmap.com - Imagery 20180411

Table A – Soil Analytical Results

Table A - Soil Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

	/IC IWRG621		PAHs in Soil	Metals & Metalloids								TPHs (NEPC 1999)					TPHs (NEPC 1999) - Silica Gel				TRHs (NEPC 2013)						Hs (NEPC 2013) - Silica G			BTEX						Polycyclic Aromatic Hydrocarbons																				
	Organochlorine Pesticides EPAVic	Other Organochlorine Pesticides EPAVic	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-C14 Fraction (SG)	C15-C28 Fraction (SG)	C29-C36 Fraction (SG)	C10 - C36 Fraction (Total) (SG)	>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)	>C10-C16 Fraction (SG)	>C16-C34 Fraction (SG)	>C34-C40 Fraction (SG)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	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	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Carcinogenic PAHs as B(a)P TEQ	Phenanthrene	Pyrene	PAHs (Total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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	0.10	0.10		2.00	0.40	1.00	1.00	1.00	0.10	1.00	1.00	20.00	20.00	50.00	50.00	50.00	20.00	50.00	50.00	50.00	50.00	100.00	100.00		50.00	20.00	20.00	50.00	100.00	100.00	0.10	0.10	0.10	0.10	0.20	0.30	0.10	0.10	0.10	0.10	0.05	0.50	0.50	0.50	0.50	0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.50
NEPM 2013 EIL - Urban Residential (site specific)				100		190	100	1100		25	320																																													170				
NEPM 2013 ESL Urban Residential and Public Open Space, Coarse Soil																						300	2800		120		180				50	70	85			105					0.7																	
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open Space, Coarse																					1000	2500	10000			700		1000	2500	10000																													
NEPM 2013 Soil HIL B				500	150	500	30000	1200	120	1200	60000																																												4			400
NEPM 2013 Soil HSL A & HSL B for Vapour Intrusion - Sand 0 to <1m																									110		45				0.5	55	160			40																				3				
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																																																							
BH101 0.3-0.4	0.3-0.4	11/05/2018	<0.1	<0.1	-	8.1	0.4	13	240	390	0.6	11	710	<20	36	480	280	796	-	-	-	-	<50	610	190	-	<50	<20	<20	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	1.7	2.3	11	11	17	17	17	5.9	7.2	5	9.6	2.9	27	0.7	7.2	<0.5	16.98	6.1	29	126.6
BH101 1.2-1.4	1.2-1.4	11/05/2018	-	-	-	<2	<0.4	<5	<5	9.7	<0.1	<5	110	<20	<20	<50	<50	<50	-	-	-	-	<50	<100	<100	-	<50	<20	<20	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5
BH102 0.35-0.55	0.35-0.55	11/05/2018	<0.1	<0.1	-	10	<0.4	8.1	180	400	0.4	10	180	<20	<20	<50	<50	<50	-	-	-	-	<50	240	<100	-	<50	<20	<20	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	0.9	1.8	4.2	4.1	7	7	7	3	2.8	2.7	3.5	1.6	9.5	0.8	2.7	<0.5	7.023	5.2	9	51.8
BH103 0.3-0.5	0.3-0.5	11/05/2018	<0.1	<0.1	-	4	<0.4	7	130	110	0.2	5.8	91	<100	3200	14,000	3900	21,100	170	400	<50	570	2700	14,000	2300	-	2000	<100	<100	250	360	<100	<0.5	0.7	<0.5	0.6	<1	<1.5	46	120	250	240	200	310	310	310	130	110	130	240	43	700	260	88	510 - 720	305.3	1200	700	4967
BH103 1.8-2.0	1.8-2	11/05/2018	-	-	-	2.2	<0.4	9.8	<5	8.4	<0.1	<5	<5	<20	<20	<50	<50	<50	-	-	-	-	<50	<100	<100	-	<50	<20	<20	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5
BH104 0.65-0.75	0.65-0.75	11/05/2018	<0.1	<0.1	-	5.2	0.4	8.7	110	490	2.7	6	580	<20	<20	97	77	174	-	-	-	-	<50	130	<100	-	<50	<20	<20	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	0.7	0.7	0.9	1.2	1.5	0.6	<0.5	<0.5	0.7	<0.5	1.6	<0.5	0.6	<0.5	1.175	0.8	1.6	7.3
BH105 0.3-0.5	0.3-0.5	11/05/2018	<0.1	<0.1	-	9.5	<0.4	15	65	330	1.6	17	230	<20	29	220	140	389	-	-	-	-	<50	280	110	-	<50	<20	<20	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	0.7	2.6	2.5	3.3	3.5	3.8	1.4	1.9	2	2.4	<0.5	4.5	<0.5	1.3	<0.5	3.523	2.7	4.9	26.9
BH107 0.3-0.5	0.3-0.5	11/05/2018	<0.1	<0.1	-	3.9	<0.4	9	280	200	1.2	11	170	<20	48	370	250	668	-	-	-	-	<50	500	170	-	<50	<20	<20	-	-	-	0.2	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	0.6	0.7	4.6	5.5	8.8	8.8	8.8	3.7	5.1	3.5	4.3	1.6	6	<0.5	3.8	<0.5	8.754	2.5	6.7	48.6
BH107 0.8-1.0	0.8-1	11/05/2018	<0.1	<0.1	-	3.3	<0.4	9.1	40	140	1.2	16	260	<20	<20	250	160	410	-	-	-	-	<50	320	110	-	<50	<20	<20	-	-	-	0.3	<0.1	0.1	<0.1	<0.2	<0.3	<0.5	<0.5	0.9	3.8	3.3	5.3	5.3	5.3	2.4	2.5	2.5	3.2	0.9	6	<0.5	1.8	<0.5	5.307	3	6.3	36.6
QC01	BH107 0.8-1.0	11/05/2018	<0.1	<0.1	-	<2	<0.4	5.2	9.7	64	0.3	15	290	<20	<20	<50	<50	<50	-	-	-	-	<50	<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	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5
QC01A	BH107 0.8-1.0	11/05/2018	-	-	4.9	<4	<0.4	2	6	49	<0.1	3	21	<25	<50	<100	<100	-	-	-	-	-	<50	<100	<100	<50	<50	<25	<25	-	-	-	<0.2	<1	<0.5	<1	<2	<1	0.1	0.2	1	4	3.2	4.6	4.6	4.6	-	1.6	-	3	0.3	7.4	<0.1	1.6	<0.1	4.106	2.6	8.2	-
Statistical Summary																																																									
Number of Results	8	8	1	11	11	11	11	11	11	11	11	11	11	11	11	10	1	1	1	1	11	11	11	1	11	11	11	1	1	1	9	9	9	9	9	9	11	11	11	11	11	11	11	10	11	10	11	11	11	11	11	11	11	11	11	10
Number of Detects	0	0	1	8	2	10	9	11	8	9	10	0	4	7	7	7	1	1	0	1	1	7	5	0	1	0	0	1	1	0	2	1	1	1	0	0	2	5	7	8	8	8	11	11	7	7	6	8	6	8	3	8	1	8	8	8	7
Minimum Concentration	<0.1	<0.1	4.9	<2	<0.4	2	<5	8.4	<0.1	3	<5	<20	<20	<50	<50	<50	170	400	<50	570	<50	<100	<100	<50	<50	<20	<20	250	360	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	0.1	0.2	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	0.3	<0.5	<0.1	<0.5	<0.1	1.175	<0.5	<0.5	<0.5
Minimum Detect	ND	ND	4.9	2.2	0.4	2	6	8.4	0.2	3	21	ND	29	97	77	174	170	400	ND	570	2700	130	110	ND	2000	ND	ND	250	360	ND	0.2	0.7	0.1	0.6	ND	ND	0.1	0.2	0.7	0.7	0.7	0.9	0.6	1.2	0.6	1.6	2	0.7	0.3	1.6	0.7	0.6	510	1.175	0.8	1.6	7.3
Maximum Concentration	<0.1	<0.1	4.9	10	0.4	15	280	490	2.7	17	710	<100	3200	14000	3900	21100	170	400	<50	570	2700	14000	2300	<50	2000	<100	<100	250	360	<100	<0.5	<1	<0.5	<1	<2	<1.5	46	120	250	240	200	310	310	310	130	110	130	240	43	700	260	88	720	305.3	1200	700	4967
Maximum Detect	ND	ND	4.9	10	0.4	15	280	490	2.7	17	710	ND	3200	14000	3900	21100	170	400	ND	570	2700	14000	2300	ND	2000	ND	ND	250	360	ND	0.3	0.7	0.1	0.6	ND	ND	46	120	250	240	200	310	310	310	130	110	130	240	43	700	260	88	720	305.3	1200	700	4967
Average Concentration	0.05	0.05		4.6	0.24	8.1	97	199	0.76	9.1	240	14	309	1431	458	2392					268	1480	289		205	14	14				0.12	0.17	0.1	0.16	0.24	0.26	4.4	11	23	25	21	33	33	33	15	12	15	24	4.7	69	24	9.8	56	32	111	70	527
Median Concentration	0.05	0.05	4.9	3.9	0.2	8.7	65	140	0.4	10	180	10	10	200	110	349.5	170	400	25	570	25	240	50	25	25	10	10	250	360	50	0.05	0.05	0.05	0.05	0.1	0.15	0.25	0.25	0.7	3.8	3.2	4.6	4.6	4.6	1.9	1.9	2.25	3	0.3	6	0.25	1.6	0.2	4.106	2.6	6.3	31.75
Standard Deviation	0	0		3.3	0.081	3.9	100	174	0.84	5.5	222	12	959	4171	1145	6579					807	4157	669		595	12	12				0.1	0.25	0.087	0.22	0.31	0.22	14	36	75	71	59	92	92	92	41	33	41	72	13	209	78	26	185	91	361	209	1561
Number of Guideline Exceedances	0	0	0	0	0	0	6	0	0	0	9	0	0	0	0	0	0	0	0	0	1	4	0	0	1	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	0	1	6	0	0	1
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	6	0	0	0	9	0	0	0	0	0	0	0	0	0	1	4	0	0	1	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	1	6	0	0	1

Table A - Soil Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

		Chlorinated Benzenes	Polychlorinated Biphenyls								Organochlorine Pesticides																							Asbestos										Asbestos	Asbestos - Trace Analysis		
	Total Positive PAHs	Hexachlorobenzene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	4,4-DDE	Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	Dieldrin	DDD	DDT	DDT+DDE+DDD (Sum of Total)	delta-BHC	Endosulfan alpha	Endosulfan beta	gamma-Chlordane	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	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	Asbestos Reported Result	ACM - Comment	AF - Comment	FA - Comment
	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	Comment	Comment	Comment	Comment
EQL		0.05	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.05	0.05	0.05		0.05	0.10	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	1.00													
NEPM 2013 EIL - Urban Residential (site specific)																				180																												
NEPM 2013 ESL Urban Residential and Public Open Space, Coars																																															
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open																																														
NEPM 2013 Soil HIL B		15								1			10				90				600						20			10			500	30													
NEPM 2013 Soil HSL A & HSL B for Vapour Intrusion - Sand 0 to 4																																															
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																																														
BH101 0.3-0.4	0.3-0.4	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	253	0	0	0	0	0	0	0	0	0	1	No asbestos detected at the	No asbestos detected at the	No asbestos detected at the
BH101 1.2-1.4	1.2-1.4	11/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102 0.35-0.55	0.35-0.55	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	327	0	0	0	0	0	0	0	0	0	1	No asbestos detected at the	No asbestos detected at the	No asbestos detected at the
BH103 0.3-0.5	0.3-0.5	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103 1.8-2.0	1.8-2	11/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104 0.65-0.75	0.65-0.75	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
BH105 0.3-0.5	0.3-0.5	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107 0.3-0.5	0.3-0.5	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107 0.8-1.0	0.8-1	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
QC01	BH107 0.8-1.0	11/05/2018	-	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.05	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
QC01A	BH107 0.8-1.0	11/05/2018	38	<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	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																															
Number of Results		1	9	9	9	9	9	9	9	9	9	9	9	9	1	9	8	9	9	9	9	9	9	9	1	9	9	9	8	9	9	9	9	8	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Detects		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	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum Concentration		38	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	253	0	0	0	0	0	0	0	0	0	1	0.001	0.001	0.001
Minimum Detect		38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	253	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	0.001	0.001	0.001
Maximum Concentration		38	<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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	327	0	0	0	0	0	0	0	0	0	1	0.001	0.001	0.001
Maximum Detect		38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	327	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	0.001	0.001	0.001
Average Concentration		0.028	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.028	0.028	0.033	0.028		0.028	0.05	0.028	0.028	0.028	0.028	0.028	0.028	0.028		0.028	0.028	0.028	0.025	0.028	0.028	0.028	0.028	0.5													
Median Concentration		38	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	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	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.5	290	0	0	0	0	0	0	0	0	0	1	0.001	0.001	0.001
Standard Deviation		0.0083	0	0	0	0	0	0	0	0	0.008	0.008	0.025	0.008		0.008	0	0.008	0.008	0.008	0.008	0.008	0.008	0.008		0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	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	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	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: 54877
Project Name: Redfern Data Gap Assessment

						Other	
			Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment	% Moisture 103oC	Moisture
			Comment	Comment	Comment	%	%
EQL						1.00	
NEPM 2013 EIL - Urban Residential (site specific)							
NEPM 2013 ESL Urban Residential and Public Open Space, Coars							
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open							
NEPM 2013 Soil HIL B							
NEPM 2013 Soil HSL A & HSL B for Vapour Intrusion - Sand 0 to							
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**					
BH101 0.3-0.4	0.3-0.4	11/05/2018	Organic fibre	No respirab	-	9.5	-
BH101 1.2-1.4	1.2-1.4	11/05/2018	-	-	-	8.1	-
BH102 0.35-0.55	0.35-0.55	11/05/2018	Organic fibre	No respirab	-	12	-
BH103 0.3-0.5	0.3-0.5	11/05/2018	-	-	-	8.3	-
BH103 1.8-2.0	1.8-2	11/05/2018	-	-	-	13	-
BH104 0.65-0.75	0.65-0.75	11/05/2018	-	-	-	6.7	-
BH105 0.3-0.5	0.3-0.5	11/05/2018	-	-	-	10	-
BH107 0.3-0.5	0.3-0.5	11/05/2018	-	-	-	11	-
BH107 0.8-1.0	0.8-1	11/05/2018	-	-	-	9.1	-
QC01	BH107 0.8-1.0	11/05/2018	-	-	-	4.9	-
QC01A	BH107 0.8-1.0	11/05/2018	-	-	-	-	7.9
Statistical Summary							
Number of Results			0	0	2	10	1
Number of Detects			0	0	2	10	1
Minimum Concentration			99999	99999	99999	4.9	7.9
Minimum Detect			ND	ND	ND	4.9	7.9
Maximum Concentration			0	0	0	13	7.9
Maximum Detect			ND	ND	ND	13	7.9
Average Concentration						9.3	
Median Concentration						9.3	7.9
Standard Deviation						2.4	
Number of Guideline Exceedances			0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0

Table B – Groundwater Analytical Results

Table B - Groundwater Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

| | VIC IWRG621 | | VOC | Metals & Metalloids | | | | | | | | Chlorinated Alkanes | | | | | | | |

Table B - Groundwater Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

	TRHs (NEPC 2013)					BTEX						Polycyclic Aromatic Hydrocarbons																													Monocyclic Aromatic Hydrocarbons										Miscellaneous Hydrocarbons								
	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C16 less Naphthalene (F2)	>C10-C16 Fraction	>C16-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (WHO)	Benzo(b,j)fluoranthene	Benzo(b,k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Total)	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	Iodomethane	1,2,3-trichlorobenzene
	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	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	0.10	0.10	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00				0.00	0.00	0.00	0.00		0.00	0.00	
NEPM 2013 GIL - Marine Waters						0.5																					0.05																					
Recreational (10x Health Based Drinking Water Criteria)						0.01	3	8			6					0.0001																							0.3		0.01			0.01				
NEPM 2013 Groundwater HSL C for Vapour Intrusion - Sand			1		1	0.8	NL	NL			NL																NL																					
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																																																
BH1	BH1	BH1	18/05/2018	<0.1	<0.1	0.14	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<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	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-
BH106	BH106	BH106	18/05/2018	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<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	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-
BH107	BH107	BH107	18/05/2018	-	-	-	<0.02	-	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-
BH3	BH3	BH3	18/05/2018	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<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	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-
BH4	BH4	BH4	18/05/2018	<0.1	<0.1	<0.05	<0.04	<0.04	<0.002	<0.002	<0.002	<0.002	<0.004	<0.006	<0.00001	<0.00001	<0.00001	0.00003	0.00003	-	0.00002	-	0.00004	0.00003	0.00005	<0.00001	0.00009	<0.00001	0.00003	<0.01 - 0.00001	0.00004	0.00011	0.00048	<0.002	<0.002	-	<0.002	<0.002	-	-	-	<0.002	-	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	-
QC01	BH4	BH4	18/05/2018	<0.1	<0.1	<0.05	0.04	0.04	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<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	0.009	0.004	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-
QC01A	QC01A	BH4	18/05/2018	<0.1	<0.1	<0.05	0.025	0.025	<0.001	<0.001	<0.001	<0.001	<0.002	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	-	<0.0002	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0	0.006	0.003	<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	-	<0.001
Statistical Summary																																																				
Number of Results	6	6	6	7	6	7	7	7	7	7	6	6	6	6	6	6	1	5	1	6	5	6	6	6	6	6	6	6	6	6	7	7	1	7	7	1	1	1	7	1	7	6	1	7	6	6	7	1	7	6	1
Number of Detects	0	0	1	2	2	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	1	0	1	0	1	1	1	1	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0005	<0.00001	<0.0002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0	<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	0.14	0.025	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00003	0.00003	ND	0.00002	ND	0.00004	0.00003	0.00005	ND	0.00009	ND	0.00003	ND	0.00004	0.00011	0.00048	0.006	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.1	<0.1	0.14	0.04	0.04	<0.002	<0.002	<0.002	<0.002	<0.004	<0.006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	0.00002	<0.0002	<0.0001	0.00003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.009	0.004	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.002	<0.01	<0.001	<0.002	<0.002	<0.002	<0.01	<0.001	<0.002	<0.002	<0.001
Maximum Detect	ND	ND	0.14	0.04	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00003	0.00003	ND	0.00002	ND	0.00004	0.00003	0.00005	ND	0.00009	ND	0.00003	0.00001	0.00004	0.00011	0.00048	0.009	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.05	0.05	0.044	0.018	0.019	0.00057	0.00057	0.00057	0.00057	0.0011	0.0018	0.000013	0.000013	0.000013	0.000017	0.000017		0.000008		0.000018	0.00001	0.00002	0.000013	0.000027	0.000013	0.000017	0.00043	0.000018	0.00003	0.000083	0.0026	0.0014		0.00057	0.00057				0.00057		0.00057	0.00058	0.00058	0.0012		0.00057	0.00058	
Median Concentration	0.05	0.05	0.025	0.01	0.015	0.0005	0.0005	0.0005	0.0005	0.001	0.0015	0.000005	0.000005	0.000005	0.000005	0.000005	0.00025	0.000005	0.0001	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	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	0.047	0.011	0.012	0.00019	0.00019	0.00019	0.00019	0.00038	0.00061	0.000018	0.000018	0.000018	0.000019	0.000019		0.0000067		0.000021	0.000011	0.000023	0.000018	0.000036	0.000018	0.000019	0.001	0.000021	0.000043	0.00019	0.0035	0.0015		0.00019	0.00019				0.00019		0.00019	0.0002	0.0002	0.0017		0.00019	0.0002	
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	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	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 B - Groundwater Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

				Chlorinated Benzenes					Solvents	Organic Sulfur Compounds	Miscellaneous Industrial Chemicals
				1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	2-Propanone (Acetone)	Carbon disulfide	Hexachlorobutadiene
				mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L
EQL					0.00	0.00	0.00	0.00	1.00	0.00	
NEPM 2013 GIL - Marine Waters				0.02							
Recreational (10x Health Based Drinking Water Criteria)					15		0.4	3			
NEPM 2013 Groundwater HSL C for Vapour Intrusion - Sand											
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**								
BH1	BH1	BH1	18/05/2018	-	<0.001	<0.001	<0.001	<0.001	<1	<0.001	-
BH106	BH106	BH106	18/05/2018	-	<0.001	<0.001	<0.001	<0.001	<1	<0.001	-
BH107	BH107	BH107	18/05/2018	-	<0.001	<0.001	<0.001	<0.001	<1	<0.001	-
BH3	BH3	BH3	18/05/2018	-	<0.001	<0.001	<0.001	<0.001	<1	<0.001	-
BH4	BH4	BH4	18/05/2018	-	<0.002	<0.002	<0.002	<0.002	<2	<0.002	-
QC01	BH4	BH4	18/05/2018	-	<0.001	<0.001	<0.001	<0.001	<1	<0.001	-
QC01A	QC01A	BH4	18/05/2018	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001
Statistical Summary											
Number of Results				1	7	7	7	7	6	6	1
Number of Detects				0	0	0	0	0	0	0	0
Minimum Concentration				<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001	<0.001
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				<0.001	<0.002	<0.002	<0.002	<0.002	<2	<0.002	<0.001
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					0.00057	0.00057	0.00057	0.00057	0.58	0.00058	
Median Concentration				0.0005	0.0005	0.0005	0.0005	0.0005	0.5	0.0005	0.0005
Standard Deviation					0.00019	0.00019	0.00019	0.00019	0.2	0.0002	
Number of Guideline Exceedances				0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0

Table C – Soil Vapour Analytical Results

Table C - Soil Vapour Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

	Organic Alcohols	Chlorinated Alkanes														Chlorinated Alkenes										Trihalomethanes				TRHs (NEPC 2013		BTEX				Polycyclic Aromatic Hydrocarbons	
	Isopropyl alcohol	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	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	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride	Bromodichloromethane	Chloroform	Dibromochloromethane	Tribromomethane	>C10-C16 Fraction	>C6-C10 Fraction	Benzene	Ethylbenzene	Toluene	Xylene (Total)	Naphthalene	1,2,4-trimethyl benzene
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
EQL	1.67	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.67	1.67	0.08	0.08	0.08	0.25	0.08	0.08
NEPM 2013 HIL Residential B Soil Vapour			60																	0.08		2		0.02	0.03												
NEPM 2013 Soil Vapour HSL A & HSL B - Sand 0 to <1m																																1	330	1300	220	0.8	
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																																		
DUP1	SV06 (FRONT)	SV06	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
SV02	SV02 (FRONT)	SV02	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
SV05	SV05 (FRONT)	SV05	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
SV06	SV06 (FRONT)	SV06	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
SV07	SV07 (FRONT)	SV07	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
SV09	SV09 (FRONT)	SV09	14/05/2018	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	0.4834	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
Statistical Summary																																					
Number of Results	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
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	0	0	0	1	0	0	0	0	0
Minimum Concentration	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	<0.08335	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
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	ND	ND	ND	0.4834	ND	ND	ND	ND	ND
Maximum Concentration	<1.667	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<1.667	<1.667	0.4834	<0.08335	<0.08335	<0.2501	<0.08335	<0.08335
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	ND	ND	ND	0.4834	ND	ND	ND	ND	ND
Average Concentration	0.83	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.83	0.83	0.12	0.042	0.042	0.13	0.042	0.042
Median Concentration	0.8335	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.8335	0.8335	0.041675	0.041675	0.041675	0.12505	0.041675	0.041675
Standard Deviation	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	0.18	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	6	0	0	0	6	6	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	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C - Soil Vapour Analytical Results
Project Number: 54877
Project Name: Redfern Data Gap Assessment

				Monocyclic Aromatic Hydrocarbons								cellaneous Hydrocarb		Chlorinated Benzenes						Miscellaneous Industrial Chemicals
				1,3,5-trimethyl benzene	4-isopropyl toluene	isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	1,2-dibromoethane	Dibromomethane	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Hexachlorobutadiene
				mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
EQL				0.08	0.08	0.08	0.08	0.08	0.08	0.83	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
NEPM 2013 HIL Residential B Soil Vapour																				
NEPM 2013 Soil Vapour HSL A & HSL B - Sand 0 to <1m																				
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																	
DUP1	SV06 (FRONT)	SV06	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
SV02	SV02 (FRONT)	SV02	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
SV05	SV05 (FRONT)	SV05	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
SV06	SV06 (FRONT)	SV06	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
SV07	SV07 (FRONT)	SV07	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
SV09	SV09 (FRONT)	SV09	14/05/2018	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
Statistical Summary																				
Number of Results				6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.8335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335	<0.08335
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration				0.042	0.042	0.042	0.042	0.042	0.042	0.42	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
Median Concentration				0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.41675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675	0.041675
Standard Deviation				0	0	0	0	0	0	0	0	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
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C – Soil Waste Classification for Off-Site Disposal

Table D - Soil Waste Classification
Project Number: 54877
Project Name: Redfern Data Gap Assessment

| | VIC IWRG621 | | PAHs in Soil | Metals & Metalloids | | | | | | | | TPHs (NEPC 1999) | | | | | TPHs (NEPC 1999) - Silica Gel | | | | TRHs (NEPC 2013) | | | | | | Is (NEPC 2013) - Silica | | | BTEX | | | | | | Polycyclic Aromatic Hydrocarbons | | | | | | | |

Table D - Soil Waste Classification
Project Number: 54877
Project Name: Redfern Data Gap Assessment

						Chlorinated Benzenes	Polychlorinated Biphenyls								Organochlorine Pesticides																										Asbestos										Asbestos	Asbestos - Trace Analysis							Other	
						Hexachlorobenzene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	4,4-DDE	Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	Dieldrin	DDD	DDT	DDT+DDE+DDD (Sum of Total)	delta-BHC	Endosulfan alpha	Endosulfan beta	gamma-Chlordane	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	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	Asbestos Reported Result	ACM - Comment	AF - Comment	FA - Comment	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment	% Moisture 103oC	Moisture
						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	Comment	Comment	Comment	Comment	Comment	Comment	Comment	%	%
EQL						0.05	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.05	0.05	0.05		0.05	0.10	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	1.00																			1.00	
NSW EPA 2014 General Solid Waste (No Leaching)														50-0												60	60		60																											
NSW EPA 2014 Restricted Solid Waste (No Leaching)														50-0												240	240		240																											
Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time																																																						
BH101 0.3-0.4	BH101	0.3-0.4	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	253	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	9.5	-
BH101 1.2-1.4	BH101	1.2-1.4	11/05/2018			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	-
BH102 0.35-0.55	BH102	0.35-0.55	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	327	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	12	-
BH103 0.3-0.5	BH103	0.3-0.5	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-
BH103 1.8-2.0	BH103	1.8-2	11/05/2018			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-
BH104 0.65-0.75	BH104	0.65-0.75	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-
BH105 0.3-0.5	BH105	0.3-0.5	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-
BH107 0.3-0.5	BH107	0.3-0.5	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-
BH107 0.8-1.0	BH107	0.8-1	11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1	-
QC01	BH107 0.8-1.0		11/05/2018			<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-
QC01A	QC01A		11/05/2018			<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	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9
Statistical Summary																																																								
Number of Results						9	9	9	9	9	9	9	9	9	9	9	9	9	1	9	8	9	9	9	9	9	9	1	9	9	9	8	9	9	9	9	8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	10	1
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	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	10	1
Minimum Concentration						<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	253	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	4.9	7.9
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	ND	ND	ND	253	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	1	1	1	1	1	4.9	7.9
Maximum Concentration						<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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<1	327	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	13	7.9
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	ND	ND	ND	327	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	1	1	1	1	1	13	7.9
Average Concentration						0.028	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.028	0.028	0.033	0.028		0.028	0.05	0.028	0.028	0.028	0.028	0.028	0.028		0.028	0.028	0.028	0.025	0.028	0.028	0.028	0.028	0.5																			9.3	
Median Concentration						0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	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	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.5	290	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	9.3	7.9
Standard Deviation						0.0083	0	0	0	0	0	0	0	0	0.0083	0.0083	0.025	0.0083		0.0083	0	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083		0.0083	0.0083	0.0083	0	0.0083	0.0083	0.0083	0.0083	0																			2.4	
Number of Guideline Exceedances						0	0	0	0	0	0	0	0	9	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	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)						0	0	0	0	0	0	0	0	9	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	0	0	0	0	0	0	0

Table D - Soil Waste Classification
Project Number: 54877
Project Name: Redfern Data Gap Assessment

EQL
NSW EPA 2014 General Solid Waste (No Leaching)
NSW EPA 2014 Restricted Solid Waste (No Leaching)

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time
BH101 0.3-0.4	BH101	0.3-0.4	11/05/2018
BH101 1.2-1.4	BH101	1.2-1.4	11/05/2018
BH102 0.35-0.55	BH102	0.35-0.55	11/05/2018
BH103 0.3-0.5	BH103	0.3-0.5	11/05/2018
BH103 1.8-2.0	BH103	1.8-2	11/05/2018
BH104 0.65-0.75	BH104	0.65-0.75	11/05/2018
BH105 0.3-0.5	BH105	0.3-0.5	11/05/2018
BH107 0.3-0.5	BH107	0.3-0.5	11/05/2018
BH107 0.8-1.0	BH107	0.8-1	11/05/2018
QC01	BH107 0.8-1.0		11/05/2018
QC01A	QC01A		11/05/2018

Statistical Summary
Number of Results
Number of Detects
Minimum Concentration
Minimum Detect
Maximum Concentration
Maximum Detect
Average Concentration
Median Concentration
Standard Deviation
Number of Guideline Exceedances
Number of Guideline Exceedances(Detects Only)

Table D - Soil Waste Classification - PAH TCLP
Project Number: 54877
Project Name: Redfern Data Gap Assessment

	Polycyclic Aromatic Hydrocarbons																	Ionic Balance			
	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	Naphthalene	Phenanthrene	Pyrene	PAHs (Total)	pH (TCLP - HCl addition)	pH (TCLP - initial)	pH (TCLP - off)	pH (Leachate fluid)
	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	ph Units
EQL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
NSW EPA 2014 General Solid Waste (leached)					0.04																
NSW EPA 2014 Restricted Solid Waste (leached)					0.16																
Field_ID **LocCode** **Sample_Depth_Range** **Sampled_Date-Time** **Matrix_Description**																					
BH101 0.3-0.4 BH101 0.3-0.4 11/05/2018	<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	2	8.6	7.8	5.1
BH103 0.3-0.5 BH103 0.3-0.5 11/05/2018	0.037	0.084	0.017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	0.085	<0.001	1.5	0.087	0.006	1.823	1.8	8.4	7.3	5.1
BH107 0.3-0.5 BH107 0.3-0.5 11/05/2018	<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	1.9	8.4	5.6	5.1
Statistical Summary																					
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	1	1	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1	3	3	3	3
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	1.8	8.4	5.6	5.1
Minimum Detect	0.037	0.084	0.017	ND	ND	ND	ND	ND	ND	ND	0.007	0.085	ND	1.5	0.087	0.006	1.823	1.8	8.4	5.6	5.1
Maximum Concentration	0.037	0.084	0.017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	0.085	<0.001	1.5	0.087	0.006	1.823	2	8.6	7.8	5.1
Maximum Detect	0.037	0.084	0.017	ND	ND	ND	ND	ND	ND	ND	0.007	0.085	ND	1.5	0.087	0.006	1.823	2	8.6	7.8	5.1
Average Concentration	0.013	0.028	0.006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0027	0.029	0.0005	0.5	0.029	0.0023	0.61	1.9	8.5	6.9	5.1
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	1.9	8.4	7.3	5.1
Standard Deviation	0.021	0.048	0.0095	0	0	0	0	0	0	0	0.0038	0.049	0	0.87	0.05	0.0032	1.1	0.1	0.12	1.2	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
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 Groundwater Bore Searches

Table A - Groundwater Bore Summary Details

Bore ID	Location (approximate)	Intended Purpose	Drilled Depth (m bgl)	Standing Water Level (m bgl)
GW071907	750 m south east of the site	Recreation (Cancelled)	180.00	11.600
GW106192	850 m south of the site	Domestic (Converted)	6.00	4.000
GW111571	1 km south of the site	Monitoring/Active	6.00	3.490
GW109501	1 km north of the site	Monitoring/Active	N/A	N/A
GW109502	950 m north of the site	Monitoring/Active	N/A	N/A
GW109503	950 m north of the site	Monitoring/Active	N/A	N/A
GW113861	950 m north of the site	Monitoring/Active	N/A	N/A
GW113876	900 m north of the site	Monitoring/Active	N/A	N/A
GW113878	900 m north of the site	Monitoring/Active	N/A	N/A
GW113887	900 m north of the site	Monitoring/Active	N/A	N/A
GW113877	900 m north of the site	Monitoring/Active	N/A	N/A
GW113888	900 m north of the site	Monitoring/Active	N/A	N/A
GW113872	900 m north of the site	Monitoring/Active	N/A	N/A
GW113859	900 m north of the site	Monitoring/Active	N/A	N/A
GW113858	900 m north of the site	Monitoring/Active	N/A	N/A
GW113862	900 m north of the site	Monitoring/Active	N/A	N/A
GW113864	900 m north of the site	Monitoring/Active	N/A	N/A
GW113863	900 m north of the site	Monitoring/Active	N/A	N/A
GW113865	900 m north of the site	Monitoring/Active	N/A	N/A
GW113866	900 m north of the site	Monitoring/Active	N/A	N/A
GW113867	900 m north of the site	Monitoring/Active	N/A	N/A
GW113886	900 m north of the site	Monitoring/Active	N/A	N/A
GW113857	900 m north of the site	Monitoring/Active	N/A	N/A
GW113868	900 m north of the site	Monitoring/Active	N/A	N/A
GW113889	900 m north of the site	Monitoring/Active	N/A	N/A
GW113869	900 m north of the site	Monitoring/Active	N/A	N/A
GW113870	900 m north of the site	Monitoring/Active	N/A	N/A
GW113871	900 m north of the site	Monitoring/Active	N/A	N/A
GW113881	900 m north of the site	Monitoring/Active	N/A	N/A
GW113873	900 m north of the site	Monitoring/Active	N/A	N/A
GW113874	900 m north of the site	Monitoring/Active	N/A	N/A
GW109500	900 m north of the site	Monitoring/Active	N/A	N/A
GW113875	900 m north of the site	Monitoring/Active	N/A	N/A
GW113884	900 m north of the site	Monitoring/Active	N/A	N/A
GW113882	900 m north of the site	Monitoring/Active	N/A	N/A
GW113880	900 m north of the site	Monitoring/Active	N/A	N/A
GW113890	900 m north of the site	Monitoring/Active	N/A	N/A
GW113879	900 m north of the site	Monitoring/Active	N/A	N/A
GW113856	900 m north of the site	Monitoring/Active	N/A	N/A
GW113891	900 m north of the site	Monitoring/Active	N/A	N/A
GW113855	900 m north of the site	Monitoring/Active	N/A	N/A
GW113860	900 m north of the site	Monitoring/Active	N/A	N/A

GW113892	900 m north of the site	Monitoring/Active	N/A	N/A
GW113893	900 m north of the site	Monitoring/Active	N/A	N/A
GW113885	900 m north of the site	Monitoring/Active	N/A	N/A
GW113883	900 m north of the site	Monitoring/Active	N/A	N/A
GW109646	900 m north of the site	Monitoring/Active	8.20	5.930
GW109648	900 m north of the site	Monitoring/Active	6.20	5.230
GW109649	900 m north of the site	Monitoring/Active	7.20	2.950

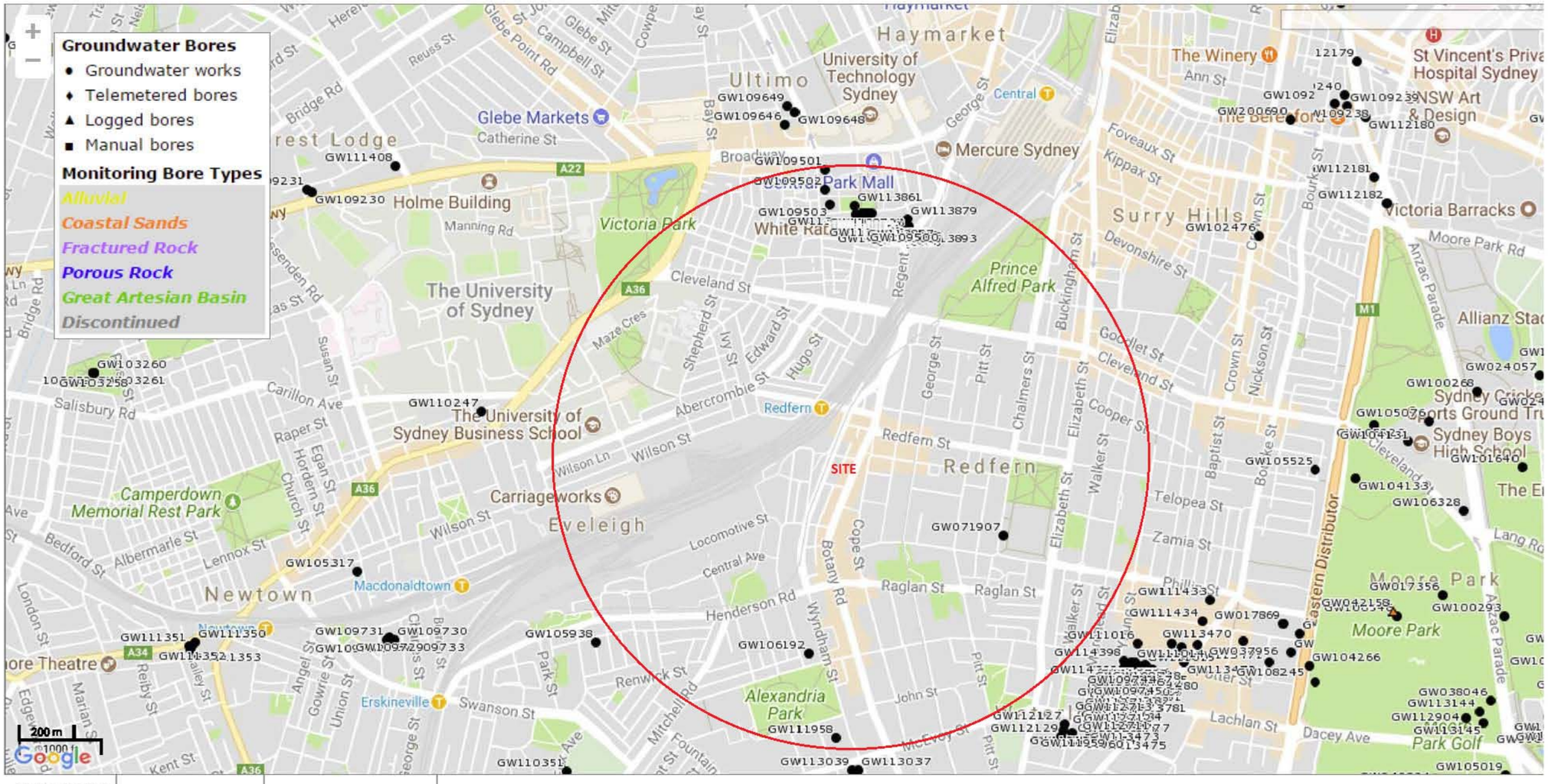
All Groundwater

All Groundwater Map

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All data times are Eastern Standard Time

Map | Info



NSW Office of Water
Work Summary

GW071907

Licence: 10BL152224
Licence Status: CANCELLED

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

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Down Hole Hammer
Owner Type: Local Govt

Commenced Date:
Completion Date: 15/05/2008
Final Depth: 180.00 m
Drilled Depth: 180.00 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Paul Sheehy
Assistant Driller:

Property: REDFERN PARK CHALMERS ST REDFERN 2016 NSW
GWMA: -
GW Zone: -
Standing Water Level (m): 11.600
Salinity Description:
Yield (L/s): 0.100

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1 135313
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot 1//135313

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

Elevation: 30.00 m (A.H.D.)
Elevation Source: Est. Contour 8-15M.
Northing: 6247997.0
Easting: 334034.0
Latitude: 33°53'43.3"S
Longitude: 151°12'18.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: GD.,ACC.MAP

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	17.50	240			Rotary Air
1		Hole	Hole	17.50	120.00	159			Down Hole Hammer
1		Hole	Hole	120.00	180.00	156			Down Hole Hammer
1	1	Casing	Pvc Class 9	-0.30	57.70	140			Held in Clamp, Screwed and Glued
1	1	Casing	Steel	-0.30	17.70	156			Driven into small hole, Welded

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)
24.50	24.70	0.20	Unknown			0.10	30.00		152.00
55.00	55.50	0.50	Unknown			0.30	60.00		190.00
82.00	85.00	3.00	Unknown			0.10	90.00		206.00
138.00	154.00	16.00	Unknown	11.60		0.10	162.00		345.00

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.00	3.00	SANDY CLAY	Sandy Clay	
3.00	8.50	5.50	CLAY	Clay	
8.50	24.00	15.50	SHALE	Shale	
24.00	24.50	0.50	SANDSTONE GREY	Sandstone	
24.50	24.70	0.20	SANDSTONE GREY FRACTURED	Sandstone	
24.70	44.00	19.30	SANDSTONE GREY	Sandstone	
44.00	55.00	11.00	SANDSTONE QUARTZ	Sandstone	
55.00	55.50	0.50	SANDSTONE GREY FRACTURED	Sandstone	
55.50	82.00	26.50	SANDSTONE GREY	Sandstone	
82.00	85.00	3.00	SANDSTONE QUARTZ	Sandstone	
85.00	128.00	43.00	SANDSTONE GREY	Sandstone	
128.00	130.00	2.00	SANDSTONE QUARTZ	Sandstone	
130.00	138.00	8.00	SANDSTONE GREY	Sandstone	
138.00	154.00	16.00	SANDSTONE QUARTZ	Sandstone	
154.00	180.00	26.00	SANDSTONE GREY	Sandstone	

Remarks

24/09/2008: Previously 10BL152224.
02/09/2009: Previous Lic No:10BL602472.
19/11/2012: Nat Carling, 19-Nov-2012; Corrected owner type & added work name. Added Rock Type codes to driller's log.

***** End of GW071907 *****

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

NSW Office of Water
Work Summary

GW106192

Licence: 10BL164184
Licence Status: CONVERTED

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

Work Type: Spear
Work Status: Supply Obtained
Construct.Method: Jetted - Water
Owner Type: Private

Commenced Date:
Completion Date: 10/12/2004
Final Depth: 6.00 m
Drilled Depth: 6.00 m

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

Property: DYER 114 GARDEN ST ALEXANDRIA 2015 NSW
GWMA: -
GW Zone: -
Standing Water Level: 4.000
Salinity: Good
Yield: 0.500

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	8//248162
Licensed:	CUMBERLAND	ALEXANDRIA	Whole Lot 8//248162

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: 6247611.0
Easting: 333418.0
Latitude: 33°53'55.5"S
Longitude: 151°11'54.2"E

GS Map: -
MGA Zone: 0
Coordinate Source: GIS - Geographic Information System

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	6.00	90			Jetted - Water
1	1	Casing	P.V.C.	0.00	5.40	32	26		Seated on Bottom, Glued
1	1	Opening	Screen - Wire Wound	5.40	6.00	50		1	Stainless Steel, Screwed, 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)
4.00	6.00	2.00	Unknown	4.00		0.50		00:05:00	

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	topsoil	Topsoil	

0.30	2.20	1.90	sand, yellow	Sand	
2.20	2.30	0.10	rock, coffee	Rock	
2.30	4.50	2.20	sand, brown	Sand	
4.50	6.00	1.50	sand, grey	Sand	

Remarks

07/12/2009: updated from original form A

***** End of GW106192 *****

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NSW Office of Water
Work Summary

GW109500

Licence: 10BL601554 **Licence Status:** ACTIVE

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

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:**
Completion Date: 01/03/2007 **Drilled Depth:**

Contractor Name: Terratest Pty Ltd
Driller: Jason Douglas Tucker
Assistant Driller:

Property: BROADWAY BREWERY 26 BROADWAY CHIPPENDALE 2008 NSW **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248974.0 **Latitude:** 33°53'11.4"S
Elevation Source: Unknown **Easting:** 333698.0 **Longitude:** 151°12'06.0"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

***** End of GW109500 *****

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NSW Office of Water
Work Summary

GW109501

Licence: 10BL601554 **Licence Status:** ACTIVE

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

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:**
Completion Date: 01/03/2007 **Drilled Depth:**

Contractor Name: Terratest Pty Ltd
Driller: Jason Douglas Tucker
Assistant Driller:

Property: BROADWAY BREWERY 26 BROADWAY CHIPPENDALE 2008 NSW **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//87874
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249156.0 **Latitude:** 33°53'05.3"S
Elevation Source: Unknown **Easting:** 333441.0 **Longitude:** 151°11'56.2"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

***** End of GW109501 *****

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

NSW Office of Water
Work Summary

GW109502

Licence: 10BL601554 **Licence Status:** ACTIVE

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

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:**
Completion Date: 01/03/2007 **Drilled Depth:**

Contractor Name: Terratest Pty Ltd
Driller: Jason Douglas Tucker
Assistant Driller:

Property: BROADWAY BREWERY 26 BROADWAY CHIPPENDALE 2008 NSW **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//630747
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249090.0 **Latitude:** 33°53'07.5"S
Elevation Source: Unknown **Easting:** 333442.0 **Longitude:** 151°11'56.2"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

***** End of GW109502 *****

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

NSW Office of Water
Work Summary

GW109503

Licence: 10BL601554 **Licence Status:** ACTIVE

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

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:**
Completion Date: 01/03/2007 **Drilled Depth:**

Contractor Name: Terratest Pty Ltd
Driller: Jason Douglas Tucker
Assistant Driller:

Property: BROADWAY BREWERY 26 BROADWAY CHIPPENDALE 2008 NSW **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	2//630747
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249045.0 **Latitude:** 33°53'08.9"S
Elevation Source: Unknown **Easting:** 333460.0 **Longitude:** 151°11'56.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

***** End of GW109503 *****

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

NSW Office of Water
Work Summary

GW109646

Licence: 10BL602486 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:** 8.20 m
Completion Date: 03/05/2008 **Drilled Depth:** 8.20 m

Contractor Name: ENVIRONMENT INVESTIGATION SERVICES
Driller: Nicholas Alexander Kontos
Assistant Driller:

Property: WEST APARTMENTS PTY LTD 485 - 511 WATTLE STREET ULTIMO 2007 NSW **Standing Water Level:** 5.930
GWMA: **Salinity:**
GW Zone: **Yield:** 1.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.45	1//216724
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249293.0 **Latitude:** 33°53'00.8"S
Elevation Source: Unknown **Easting:** 333312.0 **Longitude:** 151°11'51.2"E

GS Map: - **MGA Zone:** 0 **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	8.20	100			Auger
1		Annulus	Waterworn/Rounded	1.10	8.20				Graded
1	1	Casing	Pvc Class 18	0.00	1.10	61	51		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	1.10	8.20	61		1	Casing - Machine Slotted, PVC Class 18, SL: 4.2mm, A: 0.20mm

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)
6.30	8.20	1.90	Unknown	5.93		1.00			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.80	0.80	FILL,LT GREY,SAND,CONCRETE,BRICK,METAL	Fill	

			FRAG.		
0.80	2.80	2.00	SILTY CLAY,BROWN,GREY,MED PLASTICITY	Silty Clay	
2.80	5.00	2.20	CLAYEY SAND,GREY/DARK GREY	Clayey Sand	
5.00	8.00	3.00	SILTY SAND,LT GREY/RED	Silty Sandstone	
8.00	8.20	0.20	SANDSTONE,RED,BROWN,WEATHERED,CLAY BANDS	Sandstone	

Remarks

***** End of GW109646 *****

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

NSW Office of Water
Work Summary

GW109648

Licence: 10BL602485 **Licence Status:** ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger - Hollow Flight
Owner Type: Private

Commenced Date: **Final Depth:** 6.20 m
Completion Date: 03/05/2008 **Drilled Depth:** 6.20 m

Contractor Name: ENVIRONMENT INVESTIGATION SERVICES
Driller: Nicholas Alexander Kontos
Assistant Driller:

Property: WEST APARTMENTS PTY LTD 485 - 511 WATTLE STREET ULTIMO 2007 NSW **Standing Water Level:** 5.230
GWMA: **Salinity:**
GW Zone: **Yield:** 0.500

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.45	1//546296
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249333.0 **Latitude:** 33°52'59.5"S
Elevation Source: Unknown **Easting:** 333342.0 **Longitude:** 151°11'52.4"E

GS Map: - **MGA Zone:** 0 **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 - Hollow Flight
1		Annulus	Waterworn/Rounded	1.00	6.20				Graded
1	1	Casing	Pvc Class 18	0.00	2.60	61	51		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	2.60	6.20	61		1	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 42.0mm, A: 0.20mm

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)
5.20	6.20	1.00	Unknown	5.23		0.50			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.90	2.90	FILL,BROWN/GREY,LOOSE	Fill	

			GRAVEL,CONCRETE,SAND		
2.90	4.90	2.00	SILTY CLAY,LT GREY,MOTT.BROWN HIGH PLASTICITY	Silty Clay	
4.90	5.80	0.90	SILTY SAND,LT GREY,MED COURSE GRAINED	Silty Sandstone	
5.80	6.20	0.40	SANDSTONE,RED,BROWN,WEATHERED,CLAY BANDS	Sandstone	

Remarks

***** End of GW109648 *****

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NSW Office of Water
Work Summary

GW109649

Licence: 10BL602485 **Licence Status:** ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger - Hollow Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.20 m
Completion Date: 03/05/2008 **Drilled Depth:** 7.20 m

Contractor Name: ENVIRONMENT INVESTIGATION SERVICES
Driller: Nicholas Alexander Kontos
Assistant Driller:

Property: WEST APARTMENTS PTY LTD 485 - 511 WATTLE STREET ULTIMO 2007 NSW **Standing Water Level:** 2.950
GWMA: **Salinity:**
GW Zone: **Yield:** 1.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.45	1//546296
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249352.0 **Latitude:** 33°52'58.9"S
Elevation Source: Unknown **Easting:** 333320.0 **Longitude:** 151°11'51.6"E

GS Map: - **MGA Zone:** 0 **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	7.20	100			Auger - Hollow Flight
1		Annulus	Waterworn/Rounded	1.00	7.20				Graded
1	1	Casing	Pvc Class 18	0.00	1.10	61	51		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	1.10	7.20	61		1	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 42.0mm, A: 0.20mm

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)
3.20	6.20	3.00	Unknown	2.95		1.00			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.80	4.80	FILL,GREY,BROWN,GRAVEL,CLAY,SILT	Fill	

4.80	5.90	1.10	SILTY SAND,LT GREY,RED,MED COARSE GRAINED	Silty Sandstone	
5.90	7.20	1.30	SANDSTONE RED BROWN,WEATHERED WITH CLAY BANDS	Sandstone	

Remarks

***** End of GW109649 *****

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NSW Office of Water
Work Summary

GW111958

Licence: 10BL605133 **Licence Status:** ACTIVE

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

Work Type: Spear
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 27/04/2012
Final Depth: 6.00 m
Drilled Depth: 6.00 m

Contractor Name: SGA Environmental
Driller: Dahmon Sorongan
Assistant Driller: James King

Property: WALTCORP RIVERBANK NOMINEE
123 - 129 WYNDHAM STREET
ALEXANDRIA 2015 NSW
Standing Water Level: 3.490
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	A//388055
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: 6247347.0
Easting: 333507.0
Latitude: 33°54'04.1"S
Longitude: 151°11'57.5"E

GS Map: -
MGA Zone: 0
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	6.00	88			Auger - Solid Flight
1		Annulus	Crushed Aggregate	2.00	3.50				
1	1	Casing	Pvc Class 18	0.00	2.50	50	44		Seated on Bottom
1	1	Opening	Slots - Horizontal	2.50	4.50	50		1	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 5.00mm

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)
3.49	4.50	1.01	Unknown	3.49					

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

0.00	0.32	0.32	CONCRETE	Fill	
0.32	1.40	1.08	FILL, LOOSE,DARK GREY/BLACK CLAYEY SAND AND SANDSTONE	Fill	
1.40	6.00	4.60	SAND, LOOSE WHITE FINE GRAINED	Sand	

Remarks

17/07/2014: Nat Carling, 17-July-2014; Updated work type, added status, fixed driller's log error.

***** End of GW111958 *****

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

NSW Office of Water
Work Summary

GW113855

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 22/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248970.0
Easting: 333710.0
Latitude: 33°53'11.5"S
Longitude: 151°12'06.5"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113855 *****

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

NSW Office of Water
Work Summary

GW113856

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 23/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248970.0
Easting: 333708.0
Latitude: 33°53'11.5"S
Longitude: 151°12'06.4"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113856 *****

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

NSW Office of Water
Work Summary

GW113857

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 23/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248983.0
Easting: 333685.0
Latitude: 33°53'11.1"S
Longitude: 151°12'05.5"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113857 *****

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

NSW Office of Water
Work Summary

GW113858

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 19/09/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248985.0 **Latitude:** 33°53'11.0"S
Elevation Source: Unknown **Easting:** 333682.0 **Longitude:** 151°12'05.4"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113858 *****

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

NSW Office of Water
Work Summary

GW113859

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 15/09/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248973.0 **Latitude:** 33°53'11.4"S
Elevation Source: Unknown **Easting:** 333677.0 **Longitude:** 151°12'05.2"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113859 *****

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

NSW Office of Water
Work Summary

GW113860

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 16/09/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248976.0
Easting: 333712.0
Latitude: 33°53'11.3"S
Longitude: 151°12'06.6"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113860 *****

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

NSW Office of Water
Work Summary

GW113861

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 30/07/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	4//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249043.0 **Latitude:** 33°53'09.0"S
Elevation Source: Unknown **Easting:** 333537.0 **Longitude:** 151°11'59.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113861 *****

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

NSW Office of Water
Work Summary

GW113862

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 28/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248987.0
Easting: 333564.0
Latitude: 33°53'10.9"S
Longitude: 151°12'00.8"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113862 *****

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NSW Office of Water
Work Summary

GW113863

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 16/09/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248991.0 **Latitude:** 33°53'10.7"S
Elevation Source: Unknown **Easting:** 333563.0 **Longitude:** 151°12'00.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113863 *****

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

NSW Office of Water
Work Summary

GW113864

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 22/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248995.0
Easting: 333563.0
Latitude: 33°53'10.6"S
Longitude: 151°12'00.8"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113864 *****

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

NSW Office of Water
Work Summary

GW113865

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 21/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248998.0
Easting: 333563.0
Latitude: 33°53'10.5"S
Longitude: 151°12'00.8"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113865 *****

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

NSW Office of Water
Work Summary

GW113866

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 18/02/2014 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249001.0 **Latitude:** 33°53'10.4"S
Elevation Source: Unknown **Easting:** 333562.0 **Longitude:** 151°12'00.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113866 *****

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

NSW Office of Water
Work Summary

GW113867

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 22/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249004.0
Easting: 333562.0
Latitude: 33°53'10.3"S
Longitude: 151°12'00.8"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113867 *****

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

NSW Office of Water
Work Summary

GW113868

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 18/02/2014 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249008.0 **Latitude:** 33°53'10.2"S
Elevation Source: Unknown **Easting:** 333562.0 **Longitude:** 151°12'00.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113868 *****

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

NSW Office of Water
Work Summary

GW113869

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 29/07/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249011.0 **Latitude:** 33°53'10.1"S
Elevation Source: Unknown **Easting:** 333562.0 **Longitude:** 151°12'00.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113869 *****

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NSW Office of Water
Work Summary

GW113870

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 07/11/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249016.0 **Latitude:** 33°53'09.9"S
Elevation Source: Unknown **Easting:** 333561.0 **Longitude:** 151°12'00.7"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113870 *****

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

NSW Office of Water
Work Summary

GW113871

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 08/11/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249019.0 **Latitude:** 33°53'09.8"S
Elevation Source: Unknown **Easting:** 333561.0 **Longitude:** 151°12'00.7"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113871 *****

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NSW Office of Water
Work Summary

GW113872

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 16/09/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249020.0
Easting: 333572.0
Latitude: 33°53'09.8"S
Longitude: 151°12'01.2"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113872 *****

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NSW Office of Water
Work Summary

GW113873

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 26/07/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248979.0 **Latitude:** 33°53'11.2"S
Elevation Source: Unknown **Easting:** 333698.0 **Longitude:** 151°12'06.0"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113873 *****

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

NSW Office of Water
Work Summary

GW113874

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 19/09/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248977.0
Easting: 333699.0
Latitude: 33°53'11.3"S
Longitude: 151°12'06.1"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113874 *****

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

NSW Office of Water
Work Summary

GW113875

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 30/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248974.0
Easting: 333698.0
Latitude: 33°53'11.4"S
Longitude: 151°12'06.0"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113875 *****

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

NSW Office of Water
Work Summary

GW113877

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 28/07/2003 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6249019.0 **Latitude:** 33°53'09.8"S
Elevation Source: Unknown **Easting:** 333587.0 **Longitude:** 151°12'01.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113877 *****

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

NSW Office of Water
Work Summary

GW113878

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 07/11/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249017.0
Easting: 333596.0
Latitude: 33°53'09.9"S
Longitude: 151°12'02.1"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113878 *****

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

NSW Office of Water
Work Summary

GW113879

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 25/07/2003
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249000.0
Easting: 333711.0
Latitude: 33°53'10.5"S
Longitude: 151°12'06.6"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113879 *****

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

NSW Office of Water
Work Summary

GW113880

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 20/08/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	3//514435
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6249014.0
Easting: 333544.0
Latitude: 33°53'10.0"S
Longitude: 151°12'00.1"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113880 *****

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

NSW Office of Water
Work Summary

GW113881

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 20/08/2004 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248963.0 **Latitude:** 33°53'11.7"S
Elevation Source: Unknown **Easting:** 333691.0 **Longitude:** 151°12'05.8"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113881 *****

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NSW Office of Water
Work Summary

GW113882

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 20/08/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//58670
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248961.0
Easting: 333696.0
Latitude: 33°53'11.8"S
Longitude: 151°12'06.0"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113882 *****

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NSW Office of Water
Work Summary

GW113883

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 20/08/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248959.0
Easting: 333712.0
Latitude: 33°53'11.9"S
Longitude: 151°12'06.6"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113883 *****

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NSW Office of Water
Work Summary

GW113884

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 20/08/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248974.0
Easting: 333698.0
Latitude: 33°53'11.4"S
Longitude: 151°12'06.0"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113884 *****

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NSW Office of Water
Work Summary

GW113885

Licence: 10BL165951 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:**
Completion Date: 20/08/2004 **Drilled Depth:**

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008 **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248956.0 **Latitude:** 33°53'12.0"S
Elevation Source: Unknown **Easting:** 333710.0 **Longitude:** 151°12'06.5"E

GS Map: - **MGA Zone:** 0 **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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113885 *****

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

NSW Office of Water
Work Summary

GW113886

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 01/10/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248970.0
Easting: 333680.0
Latitude: 33°53'11.5"S
Longitude: 151°12'05.3"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113886 *****

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

NSW Office of Water
Work Summary

GW113887

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 05/10/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248987.0
Easting: 333664.0
Latitude: 33°53'10.9"S
Longitude: 151°12'04.7"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113887 *****

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

NSW Office of Water
Work Summary

GW113888

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 05/10/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	5//1142053
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248990.0
Easting: 333668.0
Latitude: 33°53'10.8"S
Longitude: 151°12'04.9"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113888 *****

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NSW Office of Water
Work Summary

GW113889

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 05/10/2004
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	1//76719
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248979.0
Easting: 333685.0
Latitude: 33°53'11.2"S
Longitude: 151°12'05.5"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113889 *****

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NSW Office of Water
Work Summary

GW113890

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 09/10/2005
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248961.0
Easting: 333700.0
Latitude: 33°53'11.8"S
Longitude: 151°12'06.1"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113890 *****

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NSW Office of Water
Work Summary

GW113891

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 09/10/2005
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248960.0
Easting: 333705.0
Latitude: 33°53'11.8"S
Longitude: 151°12'06.3"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113891 *****

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NSW Office of Water
Work Summary

GW113892

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 09/10/2005
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248960.0
Easting: 333708.0
Latitude: 33°53'11.8"S
Longitude: 151°12'06.4"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113892 *****

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NSW Office of Water
Work Summary

GW113893

Licence: 10BL165951
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 11/10/2005
Final Depth:
Drilled Depth:

Contractor Name: Terratest
Driller: Unkown Unknown
Assistant Driller:

Property: CARLTON & UNITED BREWERIES 26 - 100 BROADWAY WELLINGTON ST CHIPPENDALE 2008
Standing Water Level:
GWMA:
GW Zone:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.1	//9999
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248960.0
Easting: 333711.0
Latitude: 33°53'11.8"S
Longitude: 151°12'06.5"E

GS Map: -
MGA Zone: 0
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

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)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/08/2014: Nat Carling, 1-Aug-2014; Added status, drill method, depth, updated work type.

***** End of GW113893 *****

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Appendix B Historical Soil and Groundwater Analytical Results (CES 2018)

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	Sample Type	Sample ID	BH3_0.3-0.6	BH3_1.2-1.5	BH3_1.2-1.5	BH2_0.3-0.6	BH2_2.0-2.3	BH1_0.4-0.8	BH1_0.4-0.8	QAQC1_BH1_0.4-0.8	BH1_1.2-1.5	BH4_0.3-0.8	BH4_1.2-1.5	BH4_1.2-1.5	BH6_0.3-0.8	BH6_0.3-0.8
								Depth (mbgl)	0.3-0.6	1.2-1.5	1.2-1.5	0.3-0.6	2.0-2.3	0.4-0.8	0.4-0.8	0.4-0.8	1.2-1.5	0.3-0.8	1.2-1.5	1.2-1.5	0.3-0.8	0.3-0.8
								Date Sampled	27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018	28/02/2018	28/02/2018	28/02/2018	28/02/2018	01/03/2018	01/03/2018	01/03/2018	02/03/2018	02/03/2018
								Soil Unit	Fill	Natural	Natural	Fill	Natural	Fill	Fill	Fill	Natural	Fill	Natural	Natural	Fill	Fill
								Laboratory report	186116	186116	186116	186116	186116	186212	186212	186212	186212	186295	186295	186295	186376	186376
								Sample Type	Primary	Primary	Lab Duplicate	Primary	Primary	Primary	Lab Duplicate	Filed Duplicate	Primary	Primay	Primary	Lab Duplicate	Primary	Lab Duplicate
TRH C6 - C9	mg/kg	25							<25	<25		<25	<25	<25		<25	<25	<25			<25	<25
TRH C6 - C10	mg/kg	25							<25	<25		<25	<25	<25		<25	<25	<25			<25	<25
FRACTION 1	mg/kg	25		180	45	NL			<25	<25		<25	<25	<25		<25	<25	<25			<25	<25
Benzene	mg/kg	0.2		50	0.5	NL			<0.2	<0.2		<0.2	<0.2	<0.2		<0.2	<0.2	<0.2			<0.2	<0.2
Toluene	mg/kg	0.5		85	160	NL			<0.5	<0.5		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5			<0.5	<0.5
Ethylbenzene	mg/kg	1		70	55	NL			<1	<1		<1	<1	<1		<1	<1	<1			<1	<1
m+p-xylene	mg/kg	2			40				<2	<2		<2	<2	<2		<2	<2	<2			<2	<2
o-Xylene	mg/kg	1			40				<1	<1		<1	<1	<1		<1	<1	<1			<1	<1
Xylenes (total)	mg/kg			105	40	NL			<1	<1		<1	<1	<1		<1	<1	<1			<1	<1
Naphthalene	mg/kg	1			3	NL			<1	<1		<1	<1	<1		<1	<1	<1			85	160
Total Phenolics	mg/kg	5																				
TRH C10 - C14	mg/kg	50							<50	<50		<50	<50	<50		<50	<50	<50			150	66
TRH C15 - C28	mg/kg	100							<100	<100		280	<100	<100		<100	<100	<100			1000	390
TRH C29 - C36	mg/kg	100							<100	<100		160	<100	<100		<100	<100	<100			360	150
TRH total C10 - C36	mg/kg	50																				
TRH >C10-C16	mg/kg	50							<50	<50		<50	<50	<50		<50	<50	<50			270	110
FRACTION 2	mg/kg	50		120	110				<50	<50		<50	<50	<50		<50	<50	<50			190	<50
TRH >C16-C34	mg/kg	100							<100	<100		400	<100	<100		<100	<100	<100			1200	470
TRH >C34-C40	mg/kg	100							<100	<100		<100	<100	<100		<100	<100	<100			140	<100
Total +ve TRH (>C10-C40)	mg/kg								<50	<50		400	<50	<50		<50	<50	<50			1600	580
Naphthalene	mg/kg	0.1	170		3				<0.1	<0.1		0.3	<0.1	<0.1		<0.1	<0.1	<0.1			200	28
Acenaphthylene	mg/kg	0.1							<0.1	<0.1		2.3	<0.1	0.1		<0.1	<0.1	<0.1			58	7.9
Acenaphthene	mg/kg	0.1							<0.1	<0.1		0.2	<0.1	<0.1		<0.1	<0.1	<0.1			18	1.8
Fluorene	mg/kg	0.1							<0.1	<0.1		0.8	<0.1	<0.1		<0.1	<0.1	<0.1			94	10
Phenanthrene	mg/kg	0.1							0.1	<0.1		10	0.1	0.7		<0.1	0.2	0.5			360	45
Anthracene	mg/kg	0.1							<0.1	<0.1		2.6	<0.1	0.2		<0.1	<0.1	0.2			92	11
Fluoranthene	mg/kg	0.1							0.3	<0.1		18	0.3	1.5		0.2	0.4	0.9			250	29
Pyrene	mg/kg	0.1							0.3	<0.1		20	0.4	1.7		0.2	0.3	0.8			250	29
Benzo(a)anthracene	mg/kg	0.1							0.2	<0.1		9.7	0.2	0.8		0.1	0.2	0.4			110	12
Chrysene	mg/kg	0.1							0.1	<0.1		6.9	0.2	1		0.1	0.2	0.5			98	11
Benzo(b+k)fluoranthene	mg/kg	0.2							0.3	<0.2		11	0.3	3.6		0.4	0.6	0.7			130	15
Benzo(a)pyrene	mg/kg	0.05		33 (CRC-Care)					0.2	<0.05		7.5	0.2	1.1		0.1	0.2	0.4			98	11
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1							<0.1	<0.1		3.3	<0.1	0.8		<0.1	<0.1	0.3			37	4
Dibenzo(a,h)anthracene	mg/kg	0.1							<0.1	<0.1		1.3	<0.1	0.2		<0.1	<0.1	<0.1			12	1.1
Benzo(g,h,i)perylene	mg/kg	0.1							<0.1	<0.1		4.1	0.1	0.9		<0.1	<0.1	0.2			47	5.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5							<0.5	<0.5		11	<0.5	1.8		<0.5	<0.5	0.5			140	15
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5							<0.5	<0.5		11	<0.5	1.8		<0.5	<0.5	0.6			140	15
Benzo(a)pyrene TEQ	mg/kg	0.5			4	3			<0.5	<0.5		11	<0.5	1.8		<0.5	<0.5	0.6			140	15
Total +ve	mg/kg	-			400	300			1.4	<0.05		98	1.9	13		1.2	2	4.7			1900	220
Total PCB	mg/kg	0.1			1	1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	0.1			<1	<1
Arsenic	mg/kg	4	100		500	300			5	<4		7	<4	41	33	7	9	52			6	4
Cadmium	mg/kg	0.4			150	90			<0.4	<0.4		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.5			<0.4	<0.4
Chromium	mg/kg	1							11	<1		9	13	5	8	4	4	6			11	8
Copper	mg/kg	1	100		30000	17000			40	<1		53	21	24	33	8	10	18			150	120
Lead	mg/kg	1	1100		1200	600			440	2		220	43	100	130	31	32	190			330	300
Mercury	mg/kg	0.1			120	80			1	<0.1		0.9	0.2	0.9	1	0.2	0.2	0.9			0.5	0.5
Nickel	mg/kg	1	25		1200	1200			6	<1		6	3	4	5	1	2	4			4	4
Zinc	mg/kg	1	320		60000	30000			200	17		120	32	170	180	28	28	410			150	150
pH1:5 soil:water	pH Units									8									7.8			
Electrical Conductivity1:5 soil:water	µS/cm																					
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.01			2000	1000															<0.1	<0.1
Perfluorooctanesulfonic acid (PFOS)	µg/kg	0.01	10 (*)		2000	1000															<0.1	<0.1
Perfluorooctanoic acid (PFOA)	µg/kg	0.01			20000	10000															<0.1	<0.1
6:2 FTS	µg/kg	0.01																			<0.1	<0.1
8:2 FTS	µg/kg	0.01																			<0.1	<0.1
Exchangeable Ca	meq/100g	0.1								1.1	0.7								3.4	3.2		
Exchangeable K	meq/100g	0.1								<0.1	<0.1								0.3	0.3		
Exchangeable Mg	meq/100g	0.1								0.13	<0.1								0.35	0.33		
Exchangeable Na	meq/100g	0.1								<0.1	<0.1								<0.1	<0.1		
Cation Exchange Capacity	meq/100g	1								1.3	<1								4.1	3.8		
Sample Mass Tested	g								1185.5			1428.97		1426.8				1007.93			909.85	
Foreign Material	%	0.05																				

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	Sample ID	BH3_0.3-0.6	BH3_1.2-1.5	BH3_1.2-1.5	BH2_0.3-0.6	BH2_2.0-2.3	BH1_0.4-0.8	BH1_0.4-0.8	QAQC1_BH1_0.4-0.8	BH1_1.2-1.5	BH4_0.3-0.8	BH4_1.2-1.5	BH4_1.2-1.5	BH6_0.3-0.8	BH6_0.3-0.8
							Depth (mbgl)	0.3-0.6	1.2-1.5	1.2-1.5	0.3-0.6	2.0-2.3	0.4-0.8	0.4-0.8	0.4-0.8	1.2-1.5	0.3-0.8	1.2-1.5	1.2-1.5	0.3-0.8	0.3-0.8
							Date Sampled	27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018	28/02/2018	28/02/2018	28/02/2018	28/02/2018	01/03/2018	01/03/2018	01/03/2018	02/03/2018	02/03/2018
							Soil Unit	Fill	Natural	Natural	Fill	Natural	Fill	Fill	Fill	Natural	Fill	Natural	Natural	Fill	Fill
							Laboratory report	186116	186116	186116	186116	186116	186212	186212	186212	186212	186295	186295	186295	186376	186376
							Sample Type	Primary	Primary	Lab Duplicate	Primary	Primary	Primary	Lab Duplicate	Filed Duplicate	Primary	Primay	Primary	Lab Duplicate	Primary	Lab Duplicate
HCB	mg/kg	0.1			15	10		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
alpha-BHC	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
gamma-BHC	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
beta-BHC	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Heptachlor	mg/kg	0.1			10	10		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
delta-BHC	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Aldrin	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Heptachlor Epoxide	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
gamma-Chlordane	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
alpha-chlordane	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Chlordane	mg/kg	0.1			90	70															
Endosulfan I	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
pp-DDE	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Dieldrin	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Aldrin and Dieldrin	mg/kg	0.1			10	10		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1					
Endrin	mg/kg	0.1			20	20		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
pp-DDD	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Endosulfan II	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Endosulfan	mg/kg	0.1			400	340							<0.1		<0.1	<0.1					
pp-DDT	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
DDT (Total)	mg/kg	0.1	180										<0.1		<0.1	<0.1					
DDT+DDE+DDD	mg/kg	0.1			600	400		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Endosulfan Sulphate	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Methoxychlor	mg/kg	0.1			500	400		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Bromophos-ethyl	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Chlorpyriphos	mg/kg	0.1			340	250		<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Diazinon	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Dichlorvos	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Dimethoate	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Ethion	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Fenitrothion	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Malathion	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Parathion	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Ronnel	mg/kg	0.1						<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1
Dichlorodifluoromethane	mg/kg	1									<1		<1								
Chloromethane	mg/kg	1									<1		<1								
Vinyl Chloride	mg/kg	1									<1		<1								
Bromomethane	mg/kg	1									<1		<1								
Chloroethane	mg/kg	1									<1		<1								
Trichlorofluoromethane	mg/kg	1									<1		<1								
1,1-Dichloroethene	mg/kg	1									<1		<1								
trans-1,2-dichloroethene	mg/kg	1									<1		<1								
1,1-dichloroethane	mg/kg	1									<1		<1								
cis-1,2-dichloroethene	mg/kg	1									<1		<1								
bromochloromethane	mg/kg	1									<1		<1								
chloroform	mg/kg	1									<1		<1								
2,2-dichloropropane	mg/kg	1									<1		<1								
1,2-dichloroethane	mg/kg	1									<1		<1								
1,1,1-trichloroethane	mg/kg	1									<1		<1								
1,1-dichloropropene	mg/kg	1									<1		<1								
carbon tetrachloride	mg/kg	1									<1		<1								
dibromomethane	mg/kg	1									<1		<1								
1,2-dichloropropane	mg/kg	1									<1		<1								
trichloroethene	mg/kg	1									<1		<1								
bromodichloromethane	mg/kg	1									<1		<1								
trans-1,3-dichloropropene	mg/kg	1									<1		<1								
cis-1,3-dichloropropene	mg/kg	1									<1		<1								
1,1,2-trichloroethane	mg/kg	1									<1		<1								
1,3-dichloropropane	mg/kg	1									<1		<1								
dibromochloromethane	mg/kg	1									<1		<1								
1,2-dibromoethane	mg/kg	1									<1		<1								
tetrachloroethene	mg/kg	1									<1		<1								
1,1,1,2-tetrachloroethane	mg/kg	1									<1		<1								
chlorobenzene	mg/kg	1									<1		<1								
bromoform	mg/kg	1									<1		<1								
1,1,2,2-tetrachloroethane	mg/kg	1									<1		<1								
1,2,3-trichloropropane	mg/kg	1									<1		<1								
bromobenzene	mg/kg	1									<1		<1								
2-chlorotoluene	mg/kg	1									<1		<1								
4-chlorotoluene	mg/kg	1									<1		<1								
1,3-dichlorobenzene	mg/kg	1									<1		<1								
1,4-dichlorobenzene	mg/kg	1									<1		<1								
1,2-dichlorobenzene	mg/kg	1									<1		<1								
1,2-dibromo-3-chloropropane	mg/kg	1									<1		<1								
1,2,4-trichlorobenzene	mg/kg	1									<1		<1								
hexachlorobutadiene	mg/kg	1									<1		<1								
1,2,3-trichlorobenzene	mg/kg	1									<1		<1								
Asbestos ID in soil																					
Trace Analysis																					
Sample mass tested	g							1185.5			1428.9		1426.8				1007.93			909.85	
Sample Description	-							Brown coarse-grained soil & rocks			Brown coarse-grained soil & rocks		Grey sandy soil & rocks				Brown fine-grained soil & rocks			Brown coarse- grained soil & rocks	
Asbestos ID in soil (as per AS4964)	-							No asbestos detected at reporting limit of 0.1g/kg; Organic fibres detected			No asbestos detected at reporting limit of 0.1g/kg; Organic fibres detected		No asbestos detected at reporting limit of 0.1g/kg; Organic fibres detected				No asbestos detected at reporting limit of 0.1g/kg; Organic fibre detected			No asbestos detected at reporting limit of 0.1g/kg; Organic fibre detected	
Trace Analysis	-							No asbestos detected			No asbestos detected		No asbestos detected				No asbestos detected			No asbestos detected	
Total Asbestos	g/kg	<0.1						<0.1			<0,1		<0.1				<0.1			<0,1	
Asbestos ID in soil <0.1g/kg	-	N/A						No visible asbestos detected			No visible asbestos detected		No visible asbestos detected				No visible asbestos detected			No visible asbestos detected	
ACM >7mm Estimation	g	--			0.04%	0.02%		–			–		–				–			–	
FA and AF Estimation	g	--						–			–		–				–			–	
ACM >7mm Estimation	%(w/w)	<0.01						<0.01			<0.01		<0.01				<0.01			<0.01	
FA and AF Estimation	%(w/w)	<0.001			0.001%	0.001%		<0.001			<0.001		<0.001				<0.001			<0.001	

Notes:

Benzo(a)pyrene - High reliability ecological guideline for fresh B(a)P, Urban residential and public open space, 85% level of protection, derived ecological guideline (95% confidence limit), Table 11, Technical Report No. 39, Risk based management and remedaition guidance for benzo(a)pyrene, CRC-CARE, January 2017
Ecological Investigation Levels - Exposure Setting - Urban Residential/Public Open Space; EIL for copper, nickel and zinc are based on CEC value for BH4_1.2-1.5 and this may be conservative for all soil/fill types.

Ecological Screening Levels - Exposure Setting - Urban Residential/Public Open Space - fine soil texture

(*)-PFOS value is interim soil- ecological indirect exposure for Residential and Parkland from PFAS National Enviormental Management Plan, January 2018

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	BH6_1.2-1.5	BH5_0.3-0.9	BH5_1.2-1.5	BH7_0.3-0.9	BH7_1.2-1.5	BH8_0.3-0.9	BH8_1.2-1.5	BH9_0.3-0.9	BH9_1.2-1.5	BH8_1.2-1.5	BH8_1.2-1.5	BH10_0.3-0.9	BH10_0.3-0.9	BH10_1.2-1.5	BH10_1.2-1.5	BH11_0.3-0.7	BH11_0.3-0.7
							1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	1.2-1.5	1.2-1.5	0.3-0.9	0.3-0.9	1.2-1.5	1.2-1.5	0.3-0.7	0.3-0.7
							02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018
							Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Natural	Natural	Fill	Fill	Natural	Natural	Fill	Fill
							186376-B	186376	186376	186376	186376-B	186376	186376-B	186376	186376-B	186376-A	186376-A	186597	186597	186597	186597	186597	186597
							Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Lab Duplicate
TRH C6 - C9	mg/kg	25					<25	<25		<25		<25		<25		<25	<25	<25	<25	<25		<25	
TRH C6 - C10	mg/kg	25					<25	<25		<25		<25		<25		<25	<25	<25	<25	<25		<25	
FRACTION 1	mg/kg	25		180	45	NL	<25	<25		<25		<25		<25		<25	<25	<25	<25	<25		<25	
Benzene	mg/kg	0.2		50	0.5	NL	<0.2	<0.2		<0.2		<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	
Toluene	mg/kg	0.5		85	160	NL	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	
Ethylbenzene	mg/kg	1		70	55	NL	<1	<1		<1		<1		<1		<1	<1	<1	<1	<1		<1	
m+p-xylene	mg/kg	2			40		<2	<2		<2		<2		<2		<2	<2	<2	<2	<2		<2	
o-Xylene	mg/kg	1			40		<1	<1		<1		<1		<1		<1	<1	<1	<1	<1		<1	
Xylenes (total)	mg/kg			105	40	NL	<1	<1		<1		<1		<1		<1	<1	<1	<1	<1		<1	
Naphthalene	mg/kg	1			3	NL	<1	<1		<1		5		<1		<1	<1	<1	<1	<1		<1	
Total Phenolics	mg/kg	5																					
TRH C10 - C14	mg/kg	50					<50	<50		<50		<50		<50		<50	<50	<50	<50	<50		<50	
TRH C15 - C28	mg/kg	100					<100	<100		450		240		<100		<100	<100	970	1200	<100		390	
TRH C29 - C36	mg/kg	100					<100	<100		260		160		<100		<100	<100	800	1100	<100		410	
TRH total C10 - C36	mg/kg	50																					
TRH >C10-C16	mg/kg	50					<50	<50		<50		<50		<50		<50	<50	<50	<50	<50		<50	
FRACTION 2	mg/kg	50		120	110		<50	<50		<50		<50		<50		<50	<50	<50	<50	<50		<50	
TRH >C16-C34	mg/kg	100					<100	<100		640		360		<100		<100	<100	1600	2000	<100		690	
TRH >C34-C40	mg/kg	100					<100	<100		200		120		<100		<100	<100	390	570	<100		190	
Total +ve TRH (>C10-C40)	mg/kg						<50	<50		830		480		<50		<50	<50	2000	2600	<50		880	
Naphthalene	mg/kg	0.1	170		3		0.6	0.2		0.8	<0.1	4	0.2	0.4	<0.1	0.3	0.2	2.3	2.1	<0.1		0.4	
Acenaphthylene	mg/kg	0.1					0.2	0.2		2.8	<0.1	2	0.2	0.7	0.2	0.4	0.2	2.8	3.6	<0.1		1.7	
Acenaphthene	mg/kg	0.1					<0.1	<0.1		0.5	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		<0.1	
Fluorene	mg/kg	0.1					<0.1	0.1		3.2	<0.1	0.3	0.1	0.5	<0.1	0.2	0.2	2.9	2.3	<0.1		0.2	
Phenanthrene	mg/kg	0.1					0.4	1.1		22	<0.1	5.2	1.1	4.3	0.6	2	1.2	28	25	<0.1		7.8	
Anthracene	mg/kg	0.1					0.2	0.3		6.4	<0.1	1.8	0.4	1.3	0.2	0.8	0.4	12	10	<0.1		2.4	
Fluoranthene	mg/kg	0.1					1.1	1.2		24	<0.1	14	1.5	6.2	1.2	3.1	1.8	61	70	<0.1		16	
Pyrene	mg/kg	0.1					1.2	1.1		22	<0.1	15	1.5	6.3	1.3	3	1.9	61	80	<0.1		17	
Benzo(a)anthracene	mg/kg	0.1					0.9	0.6		12	<0.1	8	0.8	3.3	0.7	1.7	1	28	35	<0.1		8.7	
Chrysene	mg/kg	0.1					0.8	0.5		8.6	<0.1	6.7	0.7	2.6	0.7	1.4	0.8	32	39	<0.1		8	
Benzo(b+k)fluoranthene	mg/kg	0.2					1	0.8		15	<0.2	10	0.8	4.5	0.8	2.5	1	53	63	<0.2		15	
Benzo(a)pyrene	mg/kg	0.05		33 (CRC-Care)			1	0.5		10	<0.05	7	0.76	3	0.73	1.8	0.98	37	44	<0.05		2.7	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1					0.6	0.2		4.1	<0.1	2.8	0.4	1.3	0.4	0.8	0.4	35	42	<0.1		6	
Dibenzo(a,h)anthracene	mg/kg	0.1					0.2	<0.1		1.4	<0.1	1	0.1	0.5	0.1	0.3	0.1	6.3	7.4	<0.1		0.5	
Benzo(g,h,i)perylene	mg/kg	0.1					0.8	0.2		4.9	<0.1	3.5	0.5	1.5	0.5	1	0.5	35	43	<0.1		8.8	
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5					1.4	0.6		15	<0.5	10	1.1	4.4	1.1	2.6	1.4	56	66	<0.5		6.3	
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5					1.4	0.7		15	<0.5	10	1.1	4.4	1.1	2.6	1.4	56	66	<0.5		6.3	
Benzo(a)pyrene TEQ	mg/kg	0.5			4	3	1.4	0.7		15	<0.5	10	1.1	4.4	1.1	2.6	1.4	56	66	<0.5		6.3	
Total +ve	mg/kg	-			400	300	9	7		140	<0.05	81	9.1	36	7.5	19	11	400	470	<0.05		95	
Total PCB	mg/kg	0.1			1	1		<0.1		<0.5		<0.5		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.5	
Arsenic	mg/kg	4	100		500	300	4	10	<4	5	8	7		8		<4	<4	<4	<4	<4		490	
Cadmium	mg/kg	0.4			150	90	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4		<0.4		<0.4	<0.4	<0.4	<0.4	<0.4		0.7	
Chromium	mg/kg	1					10	12	5	13	4	10		12		3	3	6	5	<1		12	
Copper	mg/kg	1	100		30000	17000	110	750	10	90	8	73		84		8	10	47	48	<1		60	
Lead	mg/kg	1	1100		1200	600	120	220	54	170	39	660		240		39	42	89	100	1		280	
Mercury	mg/kg	0.1			120	80	1	1.5	0.3	0.5	0.2	0.5		1.1		0.3	0.4	0.3	0.4	<0.1		0.9	
Nickel	mg/kg	1	25		1200	1200	22	5	1	8	6	17		8		3	3	6	5	<1		8	
Zinc	mg/kg	1	320		60000	30000	140	340	24	330	27	160		240		47	48	110	130	9		500	
pH1:5 soil:water	pH Units																						
Electrical Conductivity1:5 soil:water	µS/cm																						
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.01			2000	1000		<0.1		<0.1		<0.1		<0.1									
Perfluorooctanesulfonic acid (PFOS)	µg/kg	0.01	10 (*)		2000	1000		<0.1		<0.1		0.2		<0.1									
Perfluorooctanoic acid (PFOA)	µg/kg	0.01			20000	10000		<0.1		<0.1		<0.1		<0.1									
6:2 FTS	µg/kg	0.01						<0.1		<0.1		<0.1		<0.1									
8:2 FTS	µg/kg	0.01						<0.1		<0.1		<0.1		<0.1									
Exchangeable Ca	meq/100g	0.1																					
Exchangeable K	meq/100g	0.1																					
Exchangeable Mg	meq/100g	0.1																					
Exchangeable Na	meq/100g	0.1																					
Cation Exchange Capacity	meq/100g	1																					
Sample Mass Tested	g							1122.91		1185.08		1290.67		704.73									
Foreign Material	%	0.05																					

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	BH6_1.2-1.5	BH5_0.3-0.9	BH5_1.2-1.5	BH7_0.3-0.9	BH7_1.2-1.5	BH8_0.3-0.9	BH8_1.2-1.5	BH9_0.3-0.9	BH9_1.2-1.5	BH8_1.2-1.5	BH8_1.2-1.5	BH10_0.3-0.9	BH10_0.3-0.9	BH10_1.2-1.5	BH10_1.2-1.5	BH11_0.3-0.7	BH11_0.3-0.7
							1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	1.2-1.5	1.2-1.5	0.3-0.9	0.3-0.9	1.2-1.5	1.2-1.5	0.3-0.7	0.3-0.7
							02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018
							Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Natural	Natural	Fill	Fill	Natural	Natural	Fill	Fill
							186376-B	186376	186376	186376	186376-B	186376	186376-B	186376	186376-B	186376-A	186376-A	186597	186597	186597	186597	186597	186597
							Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Lab Duplicate
HCB	mg/kg	0.1			15	10		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
alpha-BHC	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
gamma-BHC	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
beta-BHC	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Heptachlor	mg/kg	0.1			10	10		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
delta-BHC	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Aldrin	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Heptachlor Epoxide	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
gamma-Chlordane	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
alpha-chlordane	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Chlordane	mg/kg	0.1			90	70																	
Endosulfan I	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
pp-DDE	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Dieldrin	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Aldrin and Dieldrin	mg/kg	0.1			10	10																	
Endrin	mg/kg	0.1			20	20		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
pp-DDD	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Endosulfan II	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Endosulfan	mg/kg	0.1			400	340																	
pp-DDT	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
DDT (Total)	mg/kg	0.1	180																				
DDT+DDE+DDD	mg/kg	0.1			600	400		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Endrin Aldehyde	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Endosulfan Sulphate	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Methoxychlor	mg/kg	0.1			500	400		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Azinphos-methyl (Guthion)	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Bromophos-ethyl	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Chlorpyriphos	mg/kg	0.1			340	250		<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Chlorpyriphos-methyl	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Diazinon	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Dichlorvos	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Dimethoate	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Ethion	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Fenitrothion	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Malathion	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Parathion	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Ronnel	mg/kg	0.1						<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1		<0.1	
Dichlorodifluoromethane	mg/kg	1						<1		<1												<1	<1
Chloromethane	mg/kg	1						<1		<1												<1	<1
Vinyl Chloride	mg/kg	1						<1		<1												<1	<1
Bromomethane	mg/kg	1						<1		<1												<1	<1
Chloroethane	mg/kg	1						<1		<1												<1	<1
Trichlorofluoromethane	mg/kg	1						<1		<1												<1	<1
1,1-Dichloroethene	mg/kg	1						<1		<1												<1	<1
trans-1,2-dichloroethene	mg/kg	1						<1		<1												<1	<1
1,1-dichloroethane	mg/kg	1						<1		<1												<1	<1
cis-1,2-dichloroethene	mg/kg	1						<1		<1												<1	<1
bromochloromethane	mg/kg	1						<1		<1												<1	<1
chloroform	mg/kg	1						<1		<1												<1	<1
2,2-dichloropropane	mg/kg	1						<1		<1												<1	<1
1,2-dichloroethane	mg/kg	1						<1		<1												<1	<1
1,1,1-trichloroethane	mg/kg	1						<1		<1												<1	<1
1,1-dichloropropene	mg/kg	1						<1		<1												<1	<1
carbon tetrachloride	mg/kg	1						<1		<1												<1	<1
dibromomethane	mg/kg	1						<1		<1												<1	<1
1,2-dichloropropane	mg/kg	1						<1		<1												<1	<1
trichloroethene	mg/kg	1						<1		<1												<1	<1
bromodichloromethane	mg/kg	1						<1		<1												<1	<1
trans-1,3-dichloropropene	mg/kg	1						<1		<1												<1	<1
cis-1,3-dichloropropene	mg/kg	1						<1		<1												<1	<1
1,1,2-trichloroethane	mg/kg	1						<1		<1												<1	<1
1,3-dichloropropane	mg/kg	1						<1		<1												<1	<1
dibromochloromethane	mg/kg	1						<1		<1												<1	<1
1,2-dibromoethane	mg/kg	1						<1		<1												<1	<1
tetrachloroethene	mg/kg	1						<1		<1												<1	<1
1,1,1,2-tetrachloroethane	mg/kg	1						<1		<1												<1	<1
chlorobenzene	mg/kg	1						<1		<1												<1	<1
bromoform	mg/kg	1						<1		<1												<1	<1
1,1,2,2-tetrachloroethane	mg/kg	1						<1		<1												<1	<1
1,2,3-trichloropropane	mg/kg	1						<1		<1												<1	<1
bromobenzene	mg/kg	1						<1		<1												<1	<1
2-chlorotoluene	mg/kg	1						<1		<1												<1	<1
4-chlorotoluene	mg/kg	1						<1		<1												<1	<1
1,3-dichlorobenzene	mg/kg	1						<1		<1												<1	<1
1,4-dichlorobenzene	mg/kg	1						<1		<1												<1	<1
1,2-dichlorobenzene	mg/kg	1						<1		<1												<1	<1
1,2-dibromo-3-chloropropane	mg/kg	1						<1		<1												<1	<1
1,2,4-trichlorobenzene	mg/kg	1						<1		<1												<1	<1
hexachlorobutadiene	mg/kg	1						<1		<1												<1	<1
1,2,3-trichlorobenzene	mg/kg	1						<1		<1												<1	<1
Asbestos ID in soil																							
Trace Analysis																							
Sample mass tested	g							1122.91		1185.08		1290.67		704.73				1588.3				1041.99	
Sample Description	-							Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks				Brown sandy soil & rocks				Brown sandy soil & rocks	
Asbestos ID in soil (as per AS4964)	-							No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected				No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected				No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected	
Trace Analysis	-							No asbestos detected		No asbestos detected		No asbestos detected		No asbestos detected				No asbestos detected				No asbestos detected	
Total Asbestos	g/kg	<0.1						<0.1		<0.1		<0.1		<0.1				<0.1				<0.1	
Asbestos ID in soil <0.1g/kg	-	N/A						No visible asbestos detected		No visible asbestos detected		No visible asbestos detected		No visible asbestos detected				No visible asbestos detected				No visible asbestos detected	
ACM >7mm Estimation	g	--			0.04%	0.02%		–		–		–		–				–				–	
FA and AF Estimation	g	--						–		–		–		–				–				–	
ACM >7mm Estimation	%(w/w)	<0.01						<0.01		<0.01		<0.01		<0.01				<0.01				<0.01	
FA and AF Estimation	%(w/w)	<0.001			0.001%	0.001%		<0.001		<0.001		<0.001		<0.001				<0.001				<0.001	

Notes:

Benzo(a)pyrene - High reliability ecological guideline for fresh B(a)P, Urban residential and public open space, 85% level of protection, derived ecological guideline (95% confidence limit)
Ecological Investigation Levels - Exposure Setting - Urban Residential/Public Open Space; EIL for copper, nickel and zinc are based on CEC value for BH4_1.2-1.5 and this may be conservative for all soil/fill types.
Ecological Screening Levels - Exposure Setting - Urban Residential/Public Open Space - fine soil texture
(*)-PFOS value is interim soil- ecological indirect exposure for Residential and Parkland from PFAS National Enviormental Management Plan, January 2018

Project: 9-11 Gibbons Street, Redfern
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Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	BH11_1.3-1.6 1.3-1.6 06/03/2018 Natural 186597-A Primary	BH11_1.3-1.6 1.3-1.6 06/03/2018 Natural 186597-A Lab Duplicate	BH1_0.4-0.8 0.4-0.8 28/02/2018 Fill 1806508 Primary	QAQC1 0.4-0.8 28/02/2018 Fill 1806508 Field Duplicate of BH1_0.4-0.8	QAQC2 0.4-0.8 28/02/2018 Fill 1806508 Field Triplicate of BH1_0.4-0.8	BH2_1.2-1.5 1.2-1.5 28/02/2018 Natural 1806508
TRH C6 - C9	mg/kg	25									<10	
TRH C6 - C10	mg/kg	25									<10	
FRACTION 1	mg/kg	25		180	45	NL					<10	
Benzene	mg/kg	0.2		50	0.5	NL					<0.2	
Toluene	mg/kg	0.5		85	160	NL					<0.5	
Ethylbenzene	mg/kg	1		70	55	NL					<0.5	
m+p-xylene	mg/kg	2			40						<0.5	
o-Xylene	mg/kg	1			40						<0.5	
Xylenes (total)	mg/kg			105	40	NL					<0.5	
Naphthalene	mg/kg	1			3	NL					<1	
Total Phenolics	mg/kg	5										
TRH C10 - C14	mg/kg	50									<50	
TRH C15 - C28	mg/kg	100									<100	
TRH C29 - C36	mg/kg	100									<100	
TRH total C10 - C36	mg/kg	50									<50	
TRH >C10-C16	mg/kg	50									<50	
FRACTION 2	mg/kg	50		120	110						<50	
TRH >C16-C34	mg/kg	100									<100	
TRH >C34-C40	mg/kg	100									<100	
Total +ve TRH (>C10-C40)	mg/kg										<50	
Naphthalene	mg/kg	0.1	170		3		<0.1				<0.5	
Acenaphthylene	mg/kg	0.1					<0.1				<0.5	
Acenaphthene	mg/kg	0.1					<0.1				<0.5	
Fluorene	mg/kg	0.1					<0.1				<0.5	
Phenanthrene	mg/kg	0.1					<0.1				<0.5	
Anthracene	mg/kg	0.1					<0.1				<0.5	
Fluoranthene	mg/kg	0.1					<0.1				<0.5	
Pyrene	mg/kg	0.1					<0.1				<0.5	
Benzo(a)anthracene	mg/kg	0.1					<0.1				<0.5	
Chrysene	mg/kg	0.1					<0.1				<0.5	
Benzo(b+k)fluoranthene	mg/kg	0.2					<0.2					
Benzo(a)pyrene	mg/kg	0.05		33 (CRC-Care)			<0.05				<0.5	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1					<0.1				<0.5	
Dibenzo(a,h)anthracene	mg/kg	0.1					<0.1				<0.5	
Benzo(g,h,i)perylene	mg/kg	0.1					<0.1				<0.5	
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5					<0.5				<0.5	
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5					<0.5				0.6	
Benzo(a)pyrene TEQ	mg/kg	0.5			4	3	<0.5				1.2	
Total +ve	mg/kg	-			400	300	<0.05					
Total PCB	mg/kg	0.1			1	1					<0.1	
Arsenic	mg/kg	4	100		500	300	820	770			<5	
Cadmium	mg/kg	0.4			150	90	<0.4	<0.4			<1	
Chromium	mg/kg	1					11	11			3	
Copper	mg/kg	1	100		30000	17000	2	2			6	
Lead	mg/kg	1	1100		1200	600	14	12			23	
Mercury	mg/kg	0.1			120	80	<0.1	<0.1			0.1	
Nickel	mg/kg	1	25		1200	1200	1	2			2	
Zinc	mg/kg	1	320		60000	30000	46	40			19	
pH1:5 soil:water	pH Units											
Electrical Conductivity1:5 soil:water	µS/cm											
Perfluorohexanesulfonic acid (PFHxS)	µg/kg	0.01			2000	1000						
Perfluorooctanesulfonic acid (PFOS)	µg/kg	0.01	10 (*)		2000	1000						
Perfluorooctanoic acid (PFOA)	µg/kg	0.01			20000	10000						
6:2 FTS	µg/kg	0.01										
8:2 FTS	µg/kg	0.01										
Exchangeable Ca	meq/100g	0.1										
Exchangeable K	meq/100g	0.1										
Exchangeable Mg	meq/100g	0.1										
Exchangeable Na	meq/100g	0.1										
Cation Exchange Capacity	meq/100g	1										
Sample Mass Tested	g											
Foreign Material	%	0.05										

Project: 9-11 Gibbons Street, Redfern
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Table 4: Soil Analytical Results - HIL/HSL, EIL/ESL Assessment

Parameters	Unit	PQL	EIL, Urban residential and public open space	ESL, Urban residential and public open space	Residential, Soil HIL B / HSL B	Recreational C, Soil HIL C/ HSL C	BH11_1.3-1.6	BH11_1.3-1.6	BH1_0.4-0.8	QAQC1	QAQC2	BH2_1.2-1.5
							1.3-1.6	1.3-1.6	0.4-0.8	0.4-0.8	0.4-0.8	1.2-1.5
							06/03/2018	06/03/2018	28/02/2018	28/02/2018	28/02/2018	28/02/2018
							Natural	Natural	Fill	Fill	Fill	Natural
							186597-A	186597-A	1806508	1806508	1806508	1806508
							Primary	Lab Duplicate	Primary	Field Duplicate of BH1_0.4-0.8	Field Triplicate of BH1_0.4-0.8	
HCB	mg/kg	0.1			15	10					<0.05	
alpha-BHC	mg/kg	0.1									<0.05	
gamma-BHC	mg/kg	0.1									<0.05	
beta-BHC	mg/kg	0.1									<0.05	
Heptachlor	mg/kg	0.1			10	10					<0.05	
delta-BHC	mg/kg	0.1									<0.05	
Aldrin	mg/kg	0.1									<0.05	
Heptachlor Epoxide	mg/kg	0.1									<0.05	
gamma-Chlordane	mg/kg	0.1										
alpha-chlordane	mg/kg	0.1										
Chlordane	mg/kg	0.1			90	70						
Endosulfan I	mg/kg	0.1									<0.05	
pp-DDE	mg/kg	0.1										
Dieldrin	mg/kg	0.1									<0.05	
Aldrin and Dieldrin	mg/kg	0.1			10	10					<0.05	
Endrin	mg/kg	0.1			20	20					<0.05	
pp-DDD	mg/kg	0.1									<0.05	
Endosulfan II	mg/kg	0.1										
Endosulfan	mg/kg	0.1			400	340						
pp-DDT	mg/kg	0.1									<0.2	
DDT (Total)	mg/kg	0.1	180									
DDT+DDE+DDD	mg/kg	0.1			600	400					<0.05	
Endrin Aldehyde	mg/kg	0.1									<0.05	
Endosulfan Sulphate	mg/kg	0.1									<0.05	
Methoxychlor	mg/kg	0.1			500	400					<0.2	
Azinphos-methyl (Guthion)	mg/kg	0.1									<0.05	
Bromophos-ethyl	mg/kg	0.1									<0.05	
Chlorpyriphos	mg/kg	0.1			340	250					<0.05	
Chlorpyriphos-methyl	mg/kg	0.1									<0.05	
Diazinon	mg/kg	0.1									<0.05	
Dichlorvos	mg/kg	0.1									<0.05	
Dimethoate	mg/kg	0.1									<0.05	
Ethion	mg/kg	0.1									<0.05	
Fenitrothion	mg/kg	0.1										
Malathion	mg/kg	0.1									<0.05	
Parathion	mg/kg	0.1									<0.2	
Ronnel	mg/kg	0.1										
Dichlorodifluoromethane	mg/kg	1					<1					
Chloromethane	mg/kg	1					<1					
Vinyl Chloride	mg/kg	1					<1					
Bromomethane	mg/kg	1					<1					
Chloroethane	mg/kg	1					<1					
Trichlorofluoromethane	mg/kg	1					<1					
1,1-Dichloroethene	mg/kg	1					<1					
trans-1,2-dichloroethene	mg/kg	1					<1					
1,1-dichloroethane	mg/kg	1					<1					
cis-1,2-dichloroethene	mg/kg	1					<1					
bromochloromethane	mg/kg	1					<1					
chloroform	mg/kg	1					<1					
2,2-dichloropropane	mg/kg	1					<1					
1,2-dichloroethane	mg/kg	1					<1					
1,1,1-trichloroethane	mg/kg	1					<1					
1,1-dichloropropene	mg/kg	1					<1					
carbon tetrachloride	mg/kg	1					<1					
dibromomethane	mg/kg	1					<1					
1,2-dichloropropane	mg/kg	1					<1					
trichloroethene	mg/kg	1					<1					
bromodichloromethane	mg/kg	1					<1					
trans-1,3-dichloropropene	mg/kg	1					<1					
cis-1,3-dichloropropene	mg/kg	1					<1					
1,1,2-trichloroethane	mg/kg	1					<1					
1,3-dichloropropane	mg/kg	1					<1					
dibromochloromethane	mg/kg	1					<1					
1,2-dibromoethane	mg/kg	1					<1					
tetrachloroethene	mg/kg	1					<1					
1,1,1,2-tetrachloroethane	mg/kg	1					<1					
chlorobenzene	mg/kg	1					<1					
bromoform	mg/kg	1					<1					
1,1,2,2-tetrachloroethane	mg/kg	1					<1					
1,2,3-trichloropropane	mg/kg	1					<1					
bromobenzene	mg/kg	1					<1					
2-chlorotoluene	mg/kg	1					<1					
4-chlorotoluene	mg/kg	1					<1					
1,3-dichlorobenzene	mg/kg	1					<1					
1,4-dichlorobenzene	mg/kg	1					<1					
1,2-dichlorobenzene	mg/kg	1					<1					
1,2-dibromo-3-chloropropane	mg/kg	1					<1					
1,2,4-trichlorobenzene	mg/kg	1					<1					
hexachlorobutadiene	mg/kg	1					<1					
1,2,3-trichlorobenzene	mg/kg	1					<1					
Asbestos ID in soil												
Trace Analysis												
Sample mass tested	g											
Sample Description	-											
Asbestos ID in soil (as per AS4964)	-											
Trace Analysis	-											
Total Asbestos	g/kg	<0.1										
Asbestos ID in soil <0.1g/kg	-	N/A										
ACM >7mm Estimation	g	--			0.04%	0.02%						
FA and AF Estimation	g	--										
ACM >7mm Estimation	%(w/w)	<0.01										
FA and AF Estimation	%(w/w)	<0.001			0.001%	0.001%						

Notes:

Benzo(a)pyrene - High reliability ecological guideline for fresh B(a)P, Urban residential and public open space, 85% level of protection, derived ecological guideline (95% confidence limit).
Ecological Investigation Levels - Exposure Setting - Urban Residential/Public Open Space; EIL for copper, nickel and zinc are based on CEC value for BH4_1.2-1.5 and this may be conservative for all soil/fill types.
Ecological Screening Levels - Exposure Setting - Urban Residential/Public Open Space - fine soil texture
(*)-PFOS value is interim soil- ecological indirect exposure for Residential and Parkland from PFAS National Enviormental Management Plan, January 2018

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 9: Groundwater Analytical Results

Parameter	HSL B - High Density Residential - SAND 2m- <4m	ANZECC 2000 Marine Aquatic Ecosystems 95% Level of Protection	AS 2159-2009 Piling - Design and installation: Exposure Classification for Concrete Piles - Piles in Soil (Table 6.5.2(B))		Sample ID	BH01	BH01	BH03	BH04	QAQC 1_BH4	QAQC 2_BH4
					Date Sampled	05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018	5/03/2018
					Laboratory Report	186497	186497	186497	186497	186497	ES1806886
					Sample Type	Primary	Lab Duplicate	Primary	Primary	Field Duplicate for BH04	Field Triplicate for BH04
				Units	**PQL**						
TRH C_6 - C_9				ug/L	**10**	19	23	<10	210	200	160
TRH C_6 - C_{10}				ug/L	**10**	46	53	<10	450	440	400
TPHC_6-C_{10} less BTEX (F1)	1000			ug/L	**10**	33	40	<10	320	310	290
Benzene	800	700		ug/L	**1**	<1	<1	<1	<1	<1	<1
Toluene	NL	180 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<2
Ethylbenzene	NL	80 [1]		ug/L	**1**	<1	<1	<1	7	7	6
m+p-xylene		m-xylene - 75 [1] p-xylene - 200 [1]		ug/L	**2**	8	8	<2	84	82	70
o-Xylene		350		ug/L	**1**	5	5	<1	40	39	35
Xylenes total	NL	-		ug/L	**3**	13	13	<PQL	124	121	105
naphthalene	NL	70		ug/L	**1**	<1	<1	<1	4	4	<5
TRH C10 - C14				ug/L	**50**	150	81	<50	270	410	120
TRH C15 - C28				ug/L	**100**	<100	<100	<100	<100	<100	<100
TRH C29 - C36				ug/L	**100**	<100	<100	<100	<100	<100	<50
C10-C36 Petroleum Hydrocarbons				ug/L	**100**						
TRH >C10-C16				ug/L	**50**	120	66	<50	170	260	<100
TRH >C10 - C16 less Naphthalene (F2)	1000			ug/L	**50**	120	[NT]	<50	170	250	<100
TRH >C16-C34				ug/L	**100**	<100	<100	<100	<100	<100	<100
TRH >C34-C40				ug/L	**100**	<100	<100	<100	<100	<100	<100
Naphthalene		70		ug/L	**1**	<1	<1	<1	3	4	<1
Acenaphthylene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Acenaphthene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Fluorene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Phenanthrene		2 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<1
Anthracene		0.4 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<1
Fluoranthene		1.4 [1]		ug/L	**1**	<1	<1	<1	<1	2	<1
Pyrene				ug/L	**1**	<1	<1	<1	<1	2	<1
Benzo(a)anthracene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Chrysene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene				ug/L	**2**	<2	<2	<2	<2	<2	
Benzo(a)pyrene		0.2 [1]		ug/L	**1**	<1	<1	<1	<1	1	<0.5
Indeno(1,2,3-c,d)pyrene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene				ug/L	**1**	<1	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ calc (zero)				ug/L	**5**						
Benzo(a)pyrene TEQ calc(half)				ug/L							
Benzo(a)pyrene TEQ calc(PQL)				ug/L							
Total Positive PAHs				ug/L	**1**	NIL (+)VE	NIL (+)VE	NIL (+)VE	3.4	8.6	
Arsenic (Total)		2.3 [2]		ug/L	**1**	<1		<1	<1	<1	29 *
Cadmium		5.5		ug/L	**0.1**	0.1		0.2	<0.1	<0.1	1.3
Chromium (total)				ug/L	**1**	<1		<1	<1	<1	442
Copper		1.3		ug/L	**1**	<1		<1	<1	<1	499 *
Lead		4.4		ug/L	**1**	<1		<1	<1	<1	449 *
Nickel		70		ug/L	**1**	10		2	3	3	90 *
Zinc		15		ug/L	**1**	41		85	3	<1	1080 *
Chloride			<1,000	mg/L	**1**	490		33	44		
Sulphate			<5,000	mg/L	**1**	84		67	95		
Dichlorodifluoromethane				ug/L	**10**	<10	<10	<10	<10	<10	<50
Chloromethane				ug/L	**10**	<10	<10	<10	<10	<10	<50
Vinyl Chloride				ug/L	**10**	<10	<10	<10	<10	<10	<50
Methyl tert-butyl ether (MTBE)				ug/L	**0.1**						
Bromomethane				ug/L	**10**	<10	<10	<10	<10	<10	<50
Chloroethane				ug/L	**10**						<50
Trichlorofluoromethane				ug/L	**10**	<10	<10	<10	<10	<10	<50
1,1-Dichloroethene				ug/L	**1**	<1	<1	<1	<1	<1	<5
Trans-1,2-dichloroethene				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,1-dichloroethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
Cis-1,2-dichloroethene				ug/L	**1**	<1	<1	<1	<1	<1	<5
Bromochloromethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
Chloroform		770 [1]		ug/L	**1**	2	2	4	7	7	<5
2,2-dichloropropane				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,2-dichloroethane		1900 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
1,1,1-trichloroethane		270 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
1,1-dichloropropene				ug/L	**1**	<1	<1	<1	<1	<1	<5
Carbon tetrachloride		240 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
Benzene		700		ug/L	**1**						<1
Dibromomethane		-		ug/L	**1**	<1	<1	<1	<1	<1	<5
1,2-dichloropropane		900 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
Trichloroethene				ug/L	**1**	<1	<1	<1	<1	<1	<5
Bromodichloromethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
trans-1,3-dichloropropene				ug/L	**1**	<1	<1	<1	<1	<1	<5
cis-1,3-dichloropropene				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,1,2-trichloroethane		1900		ug/L	**1**	<1	<1	<1	<1	<1	<5
Toluene		180 [1]		ug/L	**1**						<2
1,3-dichloropropane		1100 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
Dibromochloromethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,2-dibromoethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
Tetrachloroethene				ug/L	**1**	<1	<1	<1	<1	<1	<5
trans-1,4-Dichloro-2-butene				ug/L	**1**						<5
cis-1,4-Dichloro-2-butene				ug/L	**1**						<5
1,1,1,2-tetrachloroethane				ug/L	**1**	<1	<1	<1	<1	<1	<5
Chlorobenzene				ug/L	**1**	<1	<1	<1	<1	<1	<5
Ethylbenzene		80 [1]		ug/L	**1**						6
Iodomethane				ug/L	**1**						<5
Bromoform				ug/L	**1**	<1	<1	<1	<1	<1	<5
m+p-xylene		m-xylene - 75 [1] p-xylene - 200 [1]		ug/L	**2**	8	8	<2	84	82	70
1,1,2,2-tetrachloroethane		400 [1]		ug/L	**1**	<1	<1	<1	<1	<1	<5
o-xylene				ug/L	**1**	5	5	<1	40	39	35
1,2,3-trichloropropane				ug/L	**1**	<1	<1	<1	<1	<1	<5
Pentachloroethane				ug/L	**1**						<5
Bromobenzene				ug/L	**1**	<1	<1	<1	<1	<1	<5
2-chlorotoluene				ug/L	**1**						<5
4-chlorotoluene				ug/L	**1**						<5
1,3-dichlorobenzene				ug/L	**1**	<1	<1	<1	<1	<1	
1,4-dichlorobenzene		60		ug/L	**1**	<1	<1	<1	<1	<1	
Vinyl acetate				ug/L	**10**	<10	<10	<10	<10	<10	
1,2-dichlorobenzene		160		ug/L	**1**	<1	<1	<1	<1	<1	
1,2-dibromo-3-chloropropane				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,2,4-trichlorobenzene		170		ug/L	**1**	<1	<1	<1	<1	<1	<5
Hexachlorobutadiene				ug/L	**1**	<1	<1	<1	<1	<1	<5
1,2,3-trichlorobenzene		10		ug/L	**1**	<1	<1	<1	<1	<1	<5
Phenol		320		ug/L	**1**	0.07	0.06	<0.05	0.09	0.1	

Perfluorohexanesulfonic acid (PFHxS)				µg/L	0.01	0.001		0.018	0.0078	0.0084	0.02
Perfluorooctanesulfonic acid (PFOS)		0.13		µg/L	0.01	0.001		0.036	0.0054	0.0059	0.01
Perfluorooctanoic acid (PFOA)		220		µg/L	0.01	0.001		0.01	0.0028	0.0033	0.01
6:2 FTS				µg/L	0.01	<0.0004		0.0005	0.001	0.001	0.05
8:2 FTS				µg/L	0.01	<0.0004		<0.0004	<0.0004	<0.0004	0.05

* The metals results for QAQC2 BH4 are representative of Total Metals and not representative of dissolved metals. The elevated levels are a result of sediment in the sample.

[1] Low reliability trigger value; should only be used as indicative interim working level.

[2] Environmental Concern Level (ECL) for most toxic form of Arsenic (As), As (III), of 2.3 µg/L was applied for As (Total). NOTE the low reliability marine guideline trigger value for the less toxic form of As, As (V), is 4.5 µg/L. The ECL or the low reliability marine guideline trigger value should only be used as indicative interim working levels.

[3] Environmental Concern Level (ECL); should only be used as indicative interim working level.

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 11: Waste Classification

				Sample ID	BH1_0.3-0.6	BH1_1.2-1.5	BH1_1.2-1.5	BH2_0.3-0.6	BH2_2.0-2.3	BH1_0.4-0.8	BH1_0.4-0.8	QAQC1_BH1_0.4-0.8	BH1_1.2-1.5	BH4_0.3-0.8	BH4_1.2-1.5	BH4_1.2-1.5	BH6_0.3-0.8	BH6_0.3-0.8	BH6_1.2-1.5
				Depth (mbgl)	0.3-0.6	1.2-1.5	1.2-1.5	0.3-0.6	2.0-2.3	0.4-0.8	0.4-0.8	0.4-0.8	1.2-1.5	0.3-0.8	1.2-1.5	1.2-1.5	0.3-0.8	0.3-0.8	1.2-1.5
				Date Sampled	27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018	28/02/2018	28/02/2018	28/02/2018	28/02/2018	03/01/2018	03/01/2018	01/03/2018	02/03/2018	02/03/2018	02/03/2018
				Date Extracted	Fill	Natural	Natural	Fill	Natural	Fill	Fill	Fill	Natural	Fill	Natural	Natural	Fill	Fill	Natural
				Soil Unit	18611b	18611b	18611b	18611b	18611b	18621z	18621z	18621z	18621z	18629S	18629S	18637k	18637k	18637k	18637k-B
				Lab report	Primary	Primary	Lab Duplicate	Primary	Primary	Primary	Lab Duplicate	Filed Duplicate	Primary	Primary	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary
Parameters	Unit	PQL	Waste Classification Criteria CT1 *	Restricted Solid Waste CT2 *															
*** Refer to Table 3 for TCLP test results of shaded samples for additional waste classification.**																			
TRH C6 - C9	mg/kg	25	650	2600	<25	<25		<25	<25	<25		<25	<25	<25			<25	<25	<25
TRH C6 - C10	mg/kg	25			<25	<25		<25	<25	<25		<25	<25	<25			<25	<25	<25
FRACTION 1	mg/kg	25			<25	<25		<25	<25	<25		<25	<25	<25			<25	<25	<25
Benzene	mg/kg	0.2	10	40	<0.2	<0.2		<0.2	<0.2	<0.2		<0.2	<0.2	<0.2			<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	288	1152	<0.5	<0.5		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5			<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	600	2400	<1	<1		<1	<1	<1		<1	<1	<1			<1	<1	<1
m+p-xylene	mg/kg	2	1000	4000	<2	<2		<2	<2	<2		<2	<2	<2			<2	<2	<2
o-Xylene	mg/kg	1	1000	4000	<1	<1		<1	<1	<1		<1	<1	<1			<1	<1	<1
Xylenes (total)	mg/kg		1000	4000	<1	<1		<1	<1	<1		<1	<1	<1			<1	<1	<1
Naphthalene	mg/kg	1			<1	<1		<1	<1	<1		<1	<1	<1			85	160	<1
Total Phenolics	mg/kg	5	288	1152															
TRH C10 - C14	mg/kg	50			<50	<50		<50	<50	<50		<50	<50	<50			150	66	<50
TRH C15 - C28	mg/kg	100			<100	<100		280	<100	<100		<100	<100	<100			1000	390	<100
TRH C29 - C36	mg/kg	100			<100	<100		160	<100	<100		<100	<100	<100			360	150	<100
TRH total C10 - C36	mg/kg	50	10000**	40000															
TRH >C10-C16	mg/kg	50			<50	<50		<50	<50	<50		<50	<50	<50			270	110	<50
FRACTION 2	mg/kg	50			<50	<50		<50	<50	<50		<50	<50	<50			190	<50	<50
TRH >C16-C34	mg/kg	100			<100	<100		400	<100	<100		<100	<100	<100			1200	470	<100
TRH >C34-C40	mg/kg	100			<100	<100		<100	<100	<100		<100	<100	<100			140	<100	<100
Total +ve TRH (>C10-C40)	mg/kg				<50	<50		400	<50	<50		<50	<50	<50			1600	580	<50
Naphthalene	mg/kg	0.1			<0.1	<0.1		0.3	<0.1	<0.1		<0.1	<0.1	<0.1			200	28	0.6
Acenaphthylene	mg/kg	0.1			<0.1	<0.1		2.3	<0.1	0.1		<0.1	<0.1	<0.1			58	7.9	0.2
Acenaphthene	mg/kg	0.1			<0.1	<0.1		0.2	<0.1	<0.1		<0.1	<0.1	<0.1			18	1.8	<0.1
Fluorene	mg/kg	0.1			<0.1	<0.1		0.8	<0.1	<0.1		<0.1	<0.1	<0.1			94	10	<0.1
Phenanthrene	mg/kg	0.1			0.1	<0.1		10	0.1	0.7		<0.1	0.2	0.5			360	45	0.4
Anthracene	mg/kg	0.1			<0.1	<0.1		2.6	<0.1	0.2		<0.1	<0.1	0.2			92	11	0.2
Fluoranthene	mg/kg	0.1			0.3	<0.1		18	0.3	1.5		0.2	0.4	0.9			250	29	1.1
Pyrene	mg/kg	0.1			0.3	<0.1		20	0.4	1.7		0.2	0.3	0.8			250	29	1.2
Benzo(a)anthracene	mg/kg	0.1			0.2	<0.1		9.7	0.2	0.8		0.1	0.2	0.4			110	12	0.9
Chrysene	mg/kg	0.1			0.1	<0.1		6.9	0.2	1		0.1	0.2	0.5			98	11	0.8
Benzo(b+k)fluoranthene	mg/kg	0.2			0.3	<0.2		11	0.3	3.6		0.4	0.6	0.7			130	15	1
Benzo(a)pyrene	mg/kg	0.05	0.8	10	0.2	<0.05		7.5	0.2	3.1		0.1	0.2	0.4			98	11	1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1			<0.1	<0.1		3.3	<0.1	0.8		<0.1	<0.1	0.3			37	4	0.6
Dibenz(a,h)anthracene	mg/kg	0.1			<0.1	<0.1		1.3	<0.1	0.2		<0.1	<0.1	<0.1			12	1.1	0.2
Benzo(g,h,i)perylene	mg/kg	0.1			<0.1	<0.1		4.1	0.1	0.9		<0.1	<0.1	0.2			47	5.3	0.8
Benzo(a)pyrene TEQ	mg/kg	0.5			<0.5	<0.5		11	<0.5	1.8		<0.5	<0.5	0.6			140	15	1.4
Total +ve	mg/kg		200**	800	1.4	<0.05		98	1.9	13		1.2	2	4.7			1900	220	9
Individual aroclors (PCB)	mg/kg	0.1		50	<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	0.1			<1	<1	
Arsenic	mg/kg	4	100	400	5	<4		7	<4	41	33	7	9	52			6	4	4
Cadmium	mg/kg	0.4	20	80	<0.4	<0.4		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.5			<0.4	<0.4	<0.4
Chromium	mg/kg	1	100	400	11	<1		9	13	5	8	4	4	6			11	8	10
Copper	mg/kg	1	-	-	40	<1		53	21	24	33	8	10	18			150	120	110
Lead	mg/kg	1	100	400	440	2		43	100	130	31	32	190	300			330	300	120
Mercury	mg/kg	0.1	4	16	1	<0.1		0.9	0.2	0.9	1	0.2	0.2	0.9			0.5	0.5	1
Nickel	mg/kg	1	40	160	6	<1		6	3	4	5	1	2	4			4	4	22
Zinc	mg/kg	1	-	-	200	17		120	32	170	180	28	28	410			150	150	140
Asbestos ID in soil																			
Trace Analysis																			
Exchangeable Ca	meq/100g	0.1				1.1	0.7								3.4	3.2			
Exchangeable K	meq/100g	0.1				<0.1	<0.1								0.3	0.3			
Exchangeable Mg	meq/100g	0.1				0.13	<0.1								0.35	0.33			
Exchangeable Na	meq/100g	0.1				<0.1	<0.1								<0.1	<0.1			
Cation Exchange Capacity	meq/100g	1				1.3	<1								4.1	3.8			
HCB	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
alpha-BHC	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
gamma-BHC	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
beta-BHC	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Heptachlor	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
delta-BHC	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Aldrin	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Heptachlor Epoxide	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
gamma-Chlordane	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
alpha-chlordane	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Chlordane	mg/kg	0.1																	
Endosulfan I	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
pp-DDE	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Dieldrin	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Aldrin and Dieldrin	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1						
Endrin	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
pp-DDD	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Endosulfan II	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Endosulfan	mg/kg	0.1								<0.1		<0.1	<0.1						
pp-DDT	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
DDT (Total)	mg/kg	0.1								<0.1		<0.1							
DDT+DDE+DDD	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Endrin Aldehyde	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Endosulfan Sulphate	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Methoxychlor	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Azinphos-methyl (Guthion)	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Bromophos-ethyl	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Chlorpyriphos	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Chlorpyriphos-methyl	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Diazinon	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Dichlorvos	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Dimethoate	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Ethion	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Fenitrothion	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Malathion	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Parathion	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Ronnel	mg/kg	0.1			<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1			<0.1	<0.1	
Dichlorodifluoromethane	mg/kg	1						<1		<1									
Chloroethane	mg/kg	1						<1		<1									
Vinyl Chloride	mg/kg	1						<1		<1									
Bromomethane	mg/kg	1						<1		<1									
Chloroethane	mg/kg	1						<1		<1									
Trichlorofluoromethane	mg/kg	1						<1		<1									
1,1-Dichloroethene	mg/kg	1						<1		<1									
trans-1,2-dichloroethene	mg/kg	1						<1		<1									
1,1-dichloroethane	mg/kg	1						<1		<1									
cis-1,2-dichloroethene	mg/kg	1						<1		<1									
bromochloromethane	mg/kg	1						<1		<1									
chloroform	mg/kg	1						<1		<1									
2,2-dichloropropane	mg/kg	1						<1		<1									
1,2-dichloroethane	mg/kg	1						<1		<1									
1,1,1-trichloroethane	mg/kg	1						<1		<1									
1,1-dichloropropene	mg/kg	1						<1		<1									
carbon tetrachloride	mg/kg	1						<1		<1									
dibromomethane	mg/kg	1						<1		<1									
1,2-dichloropropane	mg/kg	1						<1		<1									
trichloroethene	mg/kg	1						<1		<1									
bromodichloromethane	mg/kg	1						<1		<1									
trans-1,3-dichloropropene	mg/kg	1						<1		<1									
cis-1,3-dichloropropene	mg/kg	1						<1		<1									
1,1,2-trichloroethane	mg/kg	1						<1		<1									
1,3-dichloropropane	mg/kg	1						<1		<1									
dibromochloromethane	mg/kg	1						<1		<1									
1,2-dibromoethane	mg/kg	1						<1		<1									
tetrachloroethene	mg/kg	1						<1		<1									
1,1,1,2-tetrachloroethane	mg/kg	1						<1		<1									
chlorobenzene	mg/kg	1						<1		<1									
bromoform	mg/kg	1						<1		<1									
1,1,2,2-tetrachloroethane	mg/kg	1						<1		<1									
1,2,3-trichloropropane	mg/kg	1						<1		<1									
bromobenzene	mg/kg	1						<1		<1									
2-chlorotoluene	mg/kg	1						<1		<1									
4-chlorotoluene	mg/kg	1						<1		<1									
1,3-dichlorobenzene	mg/kg	1						<1		<1									
1,4-dichlorobenzene	mg/kg	1						<1		<1									
1,2-dichlorobenzene	mg/kg	1						<1		<1									
1,2-dibromo-3-chloropropane	mg/kg	1						<1		<1									
1,2,4-trichlorobenzene	mg/kg	1						<1		<1									
hexachlorobutadiene	mg/kg	1						<1		<1									
1,2,3-trichlorobenzene	mg/kg	1						<1		<1									
Sample mass tested	g				1185.5			1428.9		1426.8				1007.93			909.85		
Sample Description	-				Brown coarse-grained soil & rocks			Brown coarse-grained soil & rocks		Grey sandy soil & rocks				Brown fine-grained soil & rocks			Brown coarse- grained soil & rocks		
Asbestos ID in soil (as per AS4964)	-				No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected			No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected		No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected				No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected			No asbestos detected at reporting limit of 0.1g/kg: Organic fibre detected		
Trace Analysis	-				No asbestos detected			No asbestos detected		No asbestos detected				No asbestos detected			No asbestos detected		
Total Asbestos#1	g/kg	<0.1			<0.1			<0.1		<0.1				<0.1			<0.1		
Asbestos ID in soil <0.1g/kg*	-	N/A			No visible asbestos detected			No visible asbestos detected		No visible asbestos detected				No visible asbestos detected			No visible asbestos detected		
ACM >7mm Estimation*	g	-			-			-		-				-			-		
FA and AF Estimation*	g	-			-			-		-				-			-		
ACM >7mm Estimation*	%(w/w)	<0.01			<0.01			<0.01		<0.01				<0.01			<0.01		
FA and AF Estimation*#2	%(w/w)	<0.001			<0.001			<0.001		<0.001				<0.001			<0.001		

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 11: Waste Classification

Parameters	Unit	PQL	Waste Classification Criteria CT1 *	Restricted Solid Waste CT2 *	Sample ID	BH5_0.3-0.9	BH5_1.2-1.5	BH7_0.3-0.9	BH7_1.2-1.5	BH8_0.3-0.9	BH8_1.2-1.5	BH9_0.3-0.9	BH9_1.2-1.5	BH8_1.2-1.5	BH8_1.2-1.5	BH10_0.3-0.9	BH10_0.3-0.9	BH10_1.2-1.5	BH10_1.2-1.5
					Depth (mbgl)	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	0.3-0.9	1.2-1.5	1.2-1.5	1.2-1.5	0.3-0.9	0.3-0.9	1.2-1.5	1.2-1.5
					Date Sampled	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018
					Date Extracted	Fill	Natutal	Fill	Natutal	Fill	Natural	Fill	Natural	Natural	Natural	Fill	Fill	Natural	Natural
					Soil Unit	18637S	18637S	18637S	18637S-B	18637S	18637S	18637S	18637S	18637S-A	18637S-A	18659T	18659T	18659T	18659T
					Lab report	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Lab Duplicate
*** Refer to Table 3 for TCLP test results**																			
TRH C6 - C9	mg/kg	25	650	2600		<25		<25		<25		<25		<25	<25	<25	<25	<25	
TRH C6 - C10	mg/kg	25				<25		<25		<25		<25		<25	<25	<25	<25	<25	
FRACTION 1	mg/kg	25				<25		<25		<25		<25		<25	<25	<25	<25	<25	
Benzene	mg/kg	0.2	10	40		<0.2		<0.2		<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	mg/kg	0.5	288	1152		<0.5		<0.5		<0.5		<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	mg/kg	1	600	2400		<1		<1		<1		<1		<1	<1	<1	<1	<1	
m+p-xylene	mg/kg	2	1000	4000		<2		<2		<2		<2		<2	<2	<2	<2	<2	
o-Xylene	mg/kg	1	1000	4000		<1		<1		<1		<1		<1	<1	<1	<1	<1	
Xylenes (total)	mg/kg		1000	4000		<1		<1		<1		<1		<1	<1	<1	<1	<1	
Naphthalene	mg/kg	1				<1		<1		5		<1		<1	<1	<1	<1	<1	
Total Phenolics	mg/kg	5	288	1152															
TRH C10 - C14	mg/kg	50				<50		<50		<50		<50		<50	<50	<50	<50	<50	
TRH C15 - C28	mg/kg	100				<100		450		240		<100		<100	<100	970	1200	<100	
TRH C29 - C36	mg/kg	100				<100		260		160		<100		<100	<100	800	1100	<100	
TRH total C10 - C36	mg/kg	50	10000**	40000															
TRH >C10-C16	mg/kg	50				<50		<50		<50		<50		<50	<50	<50	<50	<50	
FRACTION 2	mg/kg	50				<50		<50		<50		<50		<50	<50	<50	<50	<50	
TRH >C16-C34	mg/kg	100				<100		640		360		<100		<100	<100	1600	2000	<100	
TRH >C34-C40	mg/kg	100				<100		200		120		<100		<100	<100	390	570	<100	
Total +ve TRH (>C10-C40)	mg/kg					<50		830		480		<50		<50	<50	2000	2600	<50	
Naphthalene	mg/kg	0.1				0.2		0.8	<0.1	4		0.4		0.3	0.2	2.3	2.1	<0.1	
Acenaphthylene	mg/kg	0.1				0.2		2.8	<0.1	2		0.7		0.4	0.2	2.8	3.6	<0.1	
Acenaphthene	mg/kg	0.1				<0.1		0.5	<0.1	<0.1		0.1		<0.1	<0.1	<1	<1	<0.1	
Fluorene	mg/kg	0.1				0.1		3.2	<0.1	0.3		0.5		0.2	0.2	2.9	2.3	<0.1	
Phenanthrene	mg/kg	0.1				1.1		22	<0.1	5.2		4.3		2	1.2	28	25	<0.1	
Anthracene	mg/kg	0.1				0.3		6.4	<0.1	1.8		1.3		0.8	0.4	12	10	<0.1	
Fluoranthene	mg/kg	0.1				1.2		24	<0.1	14		6.2		3.1	1.8	61	70	<0.1	
Pyrene	mg/kg	0.1				1.1		22	<0.1	15		6.3		3	1.9	61	80	<0.1	
Benzo(a)anthracene	mg/kg	0.1				0.6		12	<0.1	8		3.3		1.7	1	28	35	<0.1	
Chrysene	mg/kg	0.1				0.5		8.6	<0.1	6.7		2.6		1.4	0.8	32	39	<0.1	
Benzo(b+k)fluoranthene	mg/kg	0.2				0.8		15	<0.2	10		4.5		2.5	1	53	63	<0.2	
Benzo(a)pyrene	mg/kg	0.05	0.8	10		0.5		10	<0.05	7		3		1.6	0.98	37	44	<0.05	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1				0.2		4.1	<0.1	2.8		1.3		0.8	0.4	35	42	<0.1	
Dibenz(a,h)anthracene	mg/kg	0.1				<0.1		1.4	<0.1	1		0.5		0.3	0.1	6.3	7.4	<0.1	
Benzo(g,h,i)perylene	mg/kg	0.1				0.2		4.9	<0.1	3.5		1.5		1	0.5	35	43	<0.1	
Benzo(a)pyrene TEQ	mg/kg	0.5				0.7		15	<0.5	10		4.4		2.6	1.4	56	66	<0.5	
Total +ve	mg/kg	-	200**	800		7		140	<0.05	81		36		19	11	600	670	<0.05	
Individual aroclors (PCB)	mg/kg	0.1		50		<0.1		<0.5		<0.5		<0.1		<0.1	<0.1	<1	<1	<0.1	
Arsenic	mg/kg	4	100	400		10		5	8	7		8		<4	<4	<4	<4	<4	
Cadmium	mg/kg	0.4	20	80		<0.4		<0.4	<0.4	<0.4		<0.4		<0.4	<0.4	<0.4	<0.4	<0.4	
Chromium	mg/kg	1	100	400		12		13	4	10		12		3	3	6	5	<1	
Copper	mg/kg	1	-	-		750		90	8	73		84		8	10	47	48	<1	
Lead	mg/kg	1	100	400		220		170	39	660		240		39	42	89	100	1	
Mercury	mg/kg	0.1	4	16		1.5		0.5	0.2	0.5		1.1		0.3	0.4	0.3	0.4	<0.1	
Nickel	mg/kg	1	40	160		5		8	6	17		8		3	3	6	5	<1	
Zinc	mg/kg	1				340		330	27	160		240		47	48	110	130	9	
Asbestos ID in soil																			
Trace Analysis																			
Exchangeable Ca	meq/100g	0.1																	
Exchangeable K	meq/100g	0.1																	
Exchangeable Mg	meq/100g	0.1																	
Exchangeable Na	meq/100g	0.1																	
Cation Exchange Capacity	meq/100g	1																	
HCB	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
alpha-BHC	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
gamma-BHC	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
beta-BHC	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Heptachlor	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
delta-BHC	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Aldrin	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Heptachlor Epoxide	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
gamma-Chlordane	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
alpha-chlordane	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Chlordane	mg/kg	0.1																	
Endosulfan I	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
pp-DDE	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Dieldrin	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Aldrin and Dieldrin	mg/kg	0.1																	
Endrin	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
pp-DDD	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Endosulfan II	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Endosulfan	mg/kg	0.1																	
pp-DDT	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
DDT (Total)	mg/kg	0.1																	
DDT+DDE+DDD	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Endrin Aldehyde	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Endosulfan Sulphate	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Methoxychlor	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Azinphos-methyl (Guthion)	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Bromophos-ethyl	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Chlorpyriphos	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Chlorpyriphos-methyl	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Diazinon	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Dichlorvos	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Dimethoate	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Ethion	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Fenitrothion	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Malathion	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Parathion	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Ronnel	mg/kg	0.1				<0.1		<0.1		<0.1		<0.1		<0.1	<0.1	<1	<1	<0.1	
Dichlorodifluoromethane	mg/kg	1				<1		<1											
Chloromethane	mg/kg	1				<1		<1											
Vinyl Chloride	mg/kg	1				<1		<1											
Bromomethane	mg/kg	1				<1		<1											
Chloroethane	mg/kg	1				<1		<1											
Trichlorofluoromethane	mg/kg	1				<1		<1											
1,1-Dichloroethene	mg/kg	1				<1		<1											
trans-1,2-dichloroethene	mg/kg	1				<1		<1											
1,1-dichloroethane	mg/kg	1				<1		<1											
cis-1,2-dichloroethene	mg/kg	1				<1		<1											
bromochloromethane	mg/kg	1				<1		<1											
chloroform	mg/kg	1				<1		<1											
2,2-dichloropropane	mg/kg	1				<1		<1											
1,2-dichloroethane	mg/kg	1				<1		<1											
1,1,1-trichloroethane	mg/kg	1				<1		<1											
1,1-dichloropropene	mg/kg	1				<1		<1											
carbon tetrachloride	mg/kg	1				<1		<1											
dibromomethane	mg/kg	1				<1		<1											
1,2-dichloropropane	mg/kg	1				<1		<1											
trichloroethene	mg/kg	1				<1		<1											
bromodichloromethane	mg/kg	1				<1		<1											
trans-1,3-dichloropropene	mg/kg	1				<1		<1											
cis-1,3-dichloropropene	mg/kg	1				<1		<1											
1,1,2-trichloroethane	mg/kg	1				<1		<1											
1,3-dichloropropane	mg/kg	1				<1		<1											
dibromochloromethane	mg/kg	1				<1		<1											
1,2-dibromoethane	mg/kg	1				<1		<1											
tetrachloroethene	mg/kg	1				<1		<1											
1,1,1,2-tetrachloroethane	mg/kg	1				<1		<1											
chlorobenzene	mg/kg	1				<1		<1											
bromoform	mg/kg	1				<1		<1											
1,1,2,2-tetrachloroethane	mg/kg	1				<1		<1											
1,2,3-trichloropropane	mg/kg	1				<1		<1											
bromobenzene	mg/kg	1				<1		<1											
2-chlorotoluene	mg/kg	1				<1		<1											
4-chlorotoluene	mg/kg	1				<1		<1											
1,3-dichlorobenzene	mg/kg	1				<1		<1											
1,4-dichlorobenzene	mg/kg	1				<1		<1											
1,2-dichlorobenzene	mg/kg	1				<1		<1											
1,2-dibromo-3-chloropropane	mg/kg	1				<1		<1											
1,2,4-trichlorobenzene	mg/kg	1				<1		<1											
hexachlorobutadiene	mg/kg	1				<1		<1											
1,2,3-trichlorobenzene	mg/kg	1				<1		<1											
Sample mass tested	g					1122.91		1185.08		1290.67		704.73				1588.3			
Sample Description	-					Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks		Brown coarse- grained soil & rocks				Brown sandy soil & rocks			
Asbestos ID in soil (as per AS4964)	-					No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected		No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected				No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected			
Trace Analysis	-					No asbestos detected		No asbestos detected		No asbestos detected		No asbestos detected				No asbestos detected			
Total Asbestos#1	g/kg	<0.1				<0.1		<0.1		<0.1		<0.1				<0.1			
Asbestos ID in soil <0.1g/kg*	-	N/A				No visible asbestos detected		No visible asbestos detected		No visible asbestos detected		No visible asbestos detected				No visible asbestos detected			
ACM >7mm Estimation*	g	-				-		-		-		-				-			
FA and AF Estimation*	g	-				-		-		-		-				-			
ACM >7mm Estimation*	%(w/w)	<0.01				<0.01		<0.01		<0.01		<0.01				<0.01			
FA and AF Estimation*#2	%(w/w)	<0.001				<0.001		<0.001		<0.001		<0.001				<0.001			

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 11: Waste Classification

Parameters	Unit	PQL	Waste Classification Criteria CT1 *	Restricted Solid Waste CT2 *	Sample ID	BH11_0.3-0.7	BH11_0.3-0.7	BH11_1.3-1.6	BH11_1.3-1.6	BH1_0.4-0.8	QAQC1	QAQC2	BH2_1.2-1.5
					Depth (mbgl)	0.3-0.7	0.3-0.7	1.2-1.5	1.2-1.5	0.4-0.8	0.4-0.8	0.4-0.8	1.2-1.5
					Date Sampled	06/03/2018	06/03/2018	06/03/2018	06/03/2018	28/02/2018	28/02/2018	28/02/2018	28/02/2018
					Date Extracted	Fill	Fill	Natural	Natural	Fill	Fill	Fill	Natural
					Soil Unit	180297	180297	180297-A	180297-A	180650B	180650B	180650B	180650B
					Lab report	Primary	Lab Duplicate	Primary	Lab Duplicate	Primary	Field Duplicate of BH1_0.4-0.8	Field Triplicate of BH1_0.4-0.8	
			*** Refer to Table 3 for TCLP test results**										
TRH C6 - C9	mg/kg	25	650	2600	<25							<10	
TRH C6 - C10	mg/kg	25			<25							<10	
FRACTION 1	mg/kg	25			<25							<10	
Benzene	mg/kg	0.2	10	40	<0.2							<0.2	
Toluene	mg/kg	0.5	288	1152	<0.5							<0.5	
Ethylbenzene	mg/kg	1	600	2400	<1							<0.5	
m+p-xylene	mg/kg	2	1000	4000	<2							<0.5	
o-Xylene	mg/kg	1	1000	4000	<1							<0.5	
Xylenes (total)	mg/kg		1000	4000	<1							<0.5	
Naphthalene	mg/kg	1			<1							<1	
Total Phenolics	mg/kg	5	288	1152									
TRH C10 - C14	mg/kg	50			<50							<50	
TRH C15 - C28	mg/kg	100			390							<100	
TRH C29 - C36	mg/kg	100			410							<100	
TRH total C10 - C36	mg/kg	50	10000**	40000								<50	
TRH >C10-C16	mg/kg	50			<50							<50	
FRACTION 2	mg/kg	50			<50							<50	
TRH >C16-C34	mg/kg	100			690							<100	
TRH >C34-C40	mg/kg	100			190							<100	
Total +ve TRH (>C10-C40)	mg/kg				880							<50	
Naphthalene	mg/kg	0.1			0.4		<0.1					<0.5	
Acenaphthylene	mg/kg	0.1			1.7		<0.1					<0.5	
Acenaphthene	mg/kg	0.1			<0.1		<0.1					<0.5	
Fluorene	mg/kg	0.1			0.2		<0.1					<0.5	
Phenanthrene	mg/kg	0.1			7.8		<0.1					<0.5	
Anthracene	mg/kg	0.1			2.4		<0.1					<0.5	
Fluoranthene	mg/kg	0.1			16		<0.1					<0.5	
Pyrene	mg/kg	0.1			17		<0.1					<0.5	
Benzo(a)anthracene	mg/kg	0.1			8.7		<0.1					<0.5	
Chrysene	mg/kg	0.1			8		<0.1					<0.5	
Benzo(b+k)fluoranthene	mg/kg	0.2			15		<0.2						
Benzo(a)pyrene	mg/kg	0.05	0.8	10	2.7		<0.05					<0.5	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1			6		<0.1					<0.5	
Dibenz(a,h)anthracene	mg/kg	0.1			0.5		<0.1					<0.5	
Benzo(g,h,i)perylene	mg/kg	0.1			8.8		<0.1					<0.5	
Benzo(a)pyreme TEQ	mg/kg	0.5			6.3		<0.5					1.2	
Total +ve	mg/kg	1	200**	800	95		<0.05						
Individual aroclors (PCB)	mg/kg	0.1		50	<0.5							<0.1	
Arsenic	mg/kg	4	100	400	490		820	770				<5	
Cadmium	mg/kg	0.4	20	80	0.7		<0.4	<0.4				<1	
Chromium	mg/kg	1	100	400	12		11	11				3	
Copper	mg/kg	1	-	-	60		2	2				6	
Lead	mg/kg	1	100	400	280		14	12				23	
Mercury	mg/kg	0.1	4	16	0.9		<0.1	<0.1				0.1	
Nickel	mg/kg	1	40	160	8		1	2				2	
Zinc	mg/kg	1			500		46	48				19	
Asbestos ID in soil													
Trace Analysis													
Exchangeable Ca	meq/100g	0.1											
Exchangeable K	meq/100g	0.1											
Exchangeable Mg	meq/100g	0.1											
Exchangeable Na	meq/100g	0.1											
Cation Exchange Capacity	meq/100g	1											
HCB	mg/kg	0.1			<0.1								
alpha-BHC	mg/kg	0.1			<0.1								
gamma-BHC	mg/kg	0.1			<0.1								
beta-BHC	mg/kg	0.1			<0.1								
Heptachlor	mg/kg	0.1			<0.1								
delta-BHC	mg/kg	0.1			<0.1								
Aldrin	mg/kg	0.1			<0.1								
Heptachlor Epoxide	mg/kg	0.1			<0.1								
gamma- Chlordane	mg/kg	0.1			<0.1								
alpha-chlordane	mg/kg	0.1			<0.1								
Chlordane	mg/kg	0.1											
Endosulfan I	mg/kg	0.1			<0.1								
pp-DDE	mg/kg	0.1			<0.1								
Dieldrin	mg/kg	0.1			<0.1								
Aldrin and Dieldrin	mg/kg	0.1											
Endrin	mg/kg	0.1			<0.1								
pp-DDD	mg/kg	0.1			<0.1								
Endosulfan II	mg/kg	0.1			<0.1								
Endosulfan	mg/kg	0.1											
pp-DDT	mg/kg	0.1			<0.1								
DDT (Total)	mg/kg	0.1											
DDT+DDE+DDD	mg/kg	0.1			<0.1								
Endrin Aldehyde	mg/kg	0.1			<0.1								
Endosulfan Sulphate	mg/kg	0.1			<0.1								
Methoxychlor	mg/kg	0.1			<0.1								
Azinphos-methyl (Guthion)	mg/kg	0.1			<0.1								
Bromophos-ethyl	mg/kg	0.1			<0.1								
Chlorpyriphos	mg/kg	0.1			<0.1								
Chlorpyriphos-methyl	mg/kg	0.1			<0.1								
Diazinon	mg/kg	0.1			<0.1								
Dichlorvos	mg/kg	0.1			<0.1								
Dimethoate	mg/kg	0.1			<0.1								
Ethion	mg/kg	0.1			<0.1								
Fenitrothion	mg/kg	0.1			<0.1								
Malathion	mg/kg	0.1			<0.1								
Parathion	mg/kg	0.1			<0.1								
Ronnel	mg/kg	0.1			<0.1								
Dichlorodifluoromethane	mg/kg	1			<1		<1	<1					
Chloroethane	mg/kg	1			<1		<1	<1					
Vinyl Chloride	mg/kg	1			<1		<1	<1					
Bromomethane	mg/kg	1			<1		<1	<1					
Chloroethane	mg/kg	1			<1		<1	<1					
Trichlorofluoromethane	mg/kg	1			<1		<1	<1					
1,1-Dichloroethene	mg/kg	1			<1		<1	<1					
trans-1,2-dichloroethene	mg/kg	1			<1		<1	<1					
1,1-dichloroethane	mg/kg	1			<1		<1	<1					
cis-1,2-dichloroethene	mg/kg	1			<1		<1	<1					
bromochloromethane	mg/kg	1			<1		<1	<1					
chloroform	mg/kg	1			<1		<1	<1					
2,2-dichloropropane	mg/kg	1			<1		<1	<1					
1,2-dichloroethane	mg/kg	1			<1		<1	<1					
1,1,1-trichloroethane	mg/kg	1			<1		<1	<1					
1,1-dichloropropene	mg/kg	1			<1		<1	<1					
carbon tetrachloride	mg/kg	1			<1		<1	<1					
dibromomethane	mg/kg	1			<1		<1	<1					
1,2-dichloropropane	mg/kg	1			<1		<1	<1					
trichloroethene	mg/kg	1			<1		<1	<1					
bromodichloromethane	mg/kg	1			<1		<1	<1					
trans-1,3-dichloropropene	mg/kg	1			<1		<1	<1					
cis-1,3-dichloropropene	mg/kg	1			<1		<1	<1					
1,1,2-trichloroethane	mg/kg	1			<1		<1	<1					
1,3-dichloropropane	mg/kg	1			<1		<1	<1					
dibromochloromethane	mg/kg	1			<1		<1	<1					
1,2-dibromoethane	mg/kg	1			<1		<1	<1					
tetrachloroethene	mg/kg	1			<1		<1	<1					
1,1,1,2-tetrachloroethane	mg/kg	1			<1		<1	<1					
chlorobenzene	mg/kg	1			<1		<1	<1					
bromoform	mg/kg	1			<1		<1	<1					
1,1,2,2-tetrachloroethane	mg/kg	1			<1		<1	<1					
1,2,3-trichloropropane	mg/kg	1			<1		<1	<1					
bromobenzene	mg/kg	1			<1		<1	<1					
2-chlorotoluene	mg/kg	1			<1		<1	<1					
4-chlorotoluene	mg/kg	1			<1		<1	<1					
1,3-dichlorobenzene	mg/kg	1			<1		<1	<1					
1,4-dichlorobenzene	mg/kg	1			<1		<1	<1					
1,2-dichlorobenzene	mg/kg	1			<1		<1	<1					
1,2-dibromo-3-chloropropane	mg/kg	1			<1		<1	<1					
1,2,4-trichlorobenzene	mg/kg	1			<1		<1	<1					
hexachlorobutadiene	mg/kg	1			<1		<1	<1					
1,2,3-trichlorobenzene	mg/kg	1			<1		<1	<1					
Sample mass tested	g				1041.99								
Sample Description	-				Brown sandy soil & rocks								
Asbestos ID in soil (as per AS4964)	-				No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected								
Trace Analysis	-				No asbestos detected								
Total AsbestosFI	g/kg	<0.1			<0.1								
Asbestos ID in soil <0.1g/kg*	-	NA			No visible asbestos detected								
ACM >7mm Estimation*	g	--			--								
FA and AF Estimation*	g	--			--								
ACM >7mm Estimation*	%(w/w)	<0.01			<0.01								
FA and AF Estimation*#2	%(w/w)	<0.001			<0.001								

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 12: TCLP Results

Parameter	Units	PQL	General Solid Waste leachable concentration (TCLP1) (mg/L)	General Solid Waste Specific Contaminant Concentration (mg/kg)	Restricted Solid Waste leachable concentration (TCLP2) (mg/L)	Restricted Solid Waste Specific Contaminant Concentration (mg/kg)	Investigation	186116-A		186116-A		186212-A		186295-A		186597-A		186597-A	
							Sample	BH3_0.3-0.6_metal		BH2_0.3-0.6_PAH&lead		BH1_0.4-0.8_PAH&lead		BH4_0.3-0.8_metal		BH10_0.3-0.9_PAHs		BH11_0.3-0.7_PAH&,metals	
							Depth	0.3-0.6		0.3-0.6		0.4-0.8		0.3-0.8		0.3-0.9		0.3-0.7	
							Date of Sample	27/02/2018		27/02/2018		28/02/2018		1/03/2018		6/03/2018		6/03/2018	
							Material Unit	Fill		Fill		Fill		Fill		Fill		Fill	
								TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)
Naphthalene in TCLP	mg/L	0.001								<0.001	0.3	<0.001	<0.1			<0.001	2.3	<0.001	0.4
Acenaphthylene in TCLP	mg/L	0.001								<0.001	2.3	<0.001	0.1			<0.001	2.8	<0.001	1.7
Acenaphthene in TCLP	mg/L	0.001								<0.001	0.2	<0.001	<0.1			<0.001	<1	<0.001	<0.1
Fluorene in TCLP	mg/L	0.001								<0.001	0.8	<0.001	<0.1			<0.001	2.9	<0.001	0.2
Phenanthrene in TCLP	mg/L	0.001								<0.001	10	<0.001	0.7			0.007	28	<0.001	7.8
Anthracene in TCLP	mg/L	0.001								<0.001	2.6	<0.001	0.2			0.002	12	<0.001	2.4
Fluoranthene in TCLP	mg/L	0.001								<0.001	18	<0.001	1.5			0.006	61	<0.001	16
Pyrene in TCLP	mg/L	0.001								<0.001	20	<0.001	1.7			0.005	61	<0.001	17
Benzo(a)anthracene in TCLP	mg/L	0.001								<0.001	9.7	<0.001	0.8			<0.001	28	<0.001	8.7
Chrysene in TCLP	mg/L	0.001								<0.001	6.9	<0.001	1			<0.001	32	<0.001	8
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002								<0.002	11	<0.002	3.6			<0.002	53	<0.002	15
Benzo(a)pyrene in TCLP	mg/L	0.001	0.04	10	0.16	23				<0.001	7.5	<0.001	1.1			<0.001	37	<0.001	2.7
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001								<0.001	3.3	<0.001	0.8			<0.001	35	<0.001	6
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001								<0.001	1.3	<0.001	0.2			<0.001	6.3	<0.001	0.5
Benzo(g,h,i)perylene in TCLP	mg/L	0.001								<0.001	4.1	<0.001	0.9			<0.001	35	<0.001	8.8
Total +ve PAH's	mg/L		N/A	200	N/A	800				NIL (+)VE	98	NIL (+)VE	13			0.02	400	NIL (+)VE	95
Surrogate p-Terphenyl-d14	%									114		104							
pH of soil for fluid# determ.	pH units	0.1						8.8		8.8		8.4		8.6		9.8		9.4	
pH of soil TCLP (after HCl)	pH units	0.1						1.8		1.9		1.9		1.9		2		1.8	
Extraction fluid used	-	1						1		1		1		1		1		1	
pH of final Leachate	pH units	0.1						5.1		5.6		5.1		5		5.2		5.4	
Arsenic in TCLP	mg/L	0.05	5	500	20	2000		<0.05	5					0.3	52			2.8	490
Cadmium in TCLP	mg/L	0.01	1	100	4	400		<0.01	<0.4					<0.01	0.5			<0.01	0.7
Chromium in TCLP	mg/L	0.01	5	1900	20	7600		0.02	11					<0.01	6			<0.01	12
Copper in TCLP	mg/L	0.01						0.01	40					<0.01	18			0.05	60
Lead in TCLP	mg/L	0.03	5	1500	20	6000		0.3	440	0.1	220	0.04	100	0.04	190			0.33	280
Mercury in TCLP	mg/L	0.0005	0.2	50	0.8	200		<0.0005	1					<0.0005	0.9			<0.0005	0.9
Nickel in TCLP	mg/L	0.02	2	1050	8	4200		<0.02	6					<0.02	4			0.03	8
Zinc in TCLP	mg/L	0.02						0.7	200					2.5	410			4.8	500
(PFHxS)+ (PFOS)	µg/kg	0.01																	
	µg/kg	0.01																	
Perfluorooctanoic acid (PFOA)	µg/kg	0.01																	
6:2 FTS	µg/kg	0.01																	
8:2 FTS	µg/kg	0.01																	

Project: 9-11 Gibbons Street, Redfern
Client: St George Community Housing
CES Project Number: CES180204-SGC
Table 12: TCLP Results

Parameter	Units	PQL	General Soild Waste leachable concentration (TCLP1) (mg/L)	General Solid Waste Specific Contaminant Concentration (mg/kg)	Restricted Solid Waste leachable concentration (TCLP2) (mg/L)	Restricted Solid Waste Specific Contaminant Concentration (mg/kg)	Investigation	186376-B		186376-B		186376-B		186376-B		186376-B	
							Sample	BH6_0.3-0.8_Meatals & PAHs		BH5_0.3-0.9_Metals		BH7_0.3-0.9_Metals& PAHs		BH8_0.3-0.9_Metals& PAHs&PFAS		BH9_0.3-0.9_Metals& PAHs	
							Depth	0.3-0.8		0.3-0.9		0.3-0.9		0.3-0.9		0.3-0.9	
							Date of Sample	2/03/2018		2/03/2018		2/03/2018		2/03/2018		2/03/2018	
							Material Unit	Fill		Fill		Fill		Fill		Fill	
								TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)	TCLP Concentration (mg/L)	CT Concentration (mg/kg)
Naphthalene in TCLP	mg/L	0.001						1.1	200			0.021	0.8	0.001	4	0.001	0.4
Acenaphthylene in TCLP	mg/L	0.001						0.11	58			0.002	2.8	<0.001	2	<0.001	0.7
Acenaphthene in TCLP	mg/L	0.001						0.028	18			<0.001	0.5	<0.001	<0.1	<0.001	0.1
Fluorene in TCLP	mg/L	0.001						0.086	94			0.003	3.2	<0.001	0.3	<0.001	0.5
Phenanthrene in TCLP	mg/L	0.001						0.12	360			0.007	22	0.001	5.2	<0.001	4.3
Anthracene in TCLP	mg/L	0.001						0.02	92			0.001	6.4	<0.001	1.8	<0.001	1.3
Fluoranthene in TCLP	mg/L	0.001						0.017	250			0.001	24	<0.001	14	<0.001	6.2
Pyrene in TCLP	mg/L	0.001						0.014	250			<0.001	22	<0.001	15	<0.001	6.3
Benzo(a)anthracene in TCLP	mg/L	0.001						0.002	110			<0.001	12	<0.001	8	<0.001	3.3
Chrysene in TCLP	mg/L	0.001						0.002	98			<0.001	8.6	<0.001	6.7	<0.001	2.6
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002						<0.002	130			<0.002	15	<0.002	10	<0.002	4.5
Benzo(a)pyrene in TCLP	mg/L	0.001	0.04	10	0.16	23		0.001	98			<0.001	10	<0.001	7	<0.001	3
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001						<0.001	37			<0.001	4.1	<0.001	2.8	<0.001	1.3
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001						<0.001	12			<0.001	1.4	<0.001	1	<0.001	0.5
Benzo(g,h,i)perylene in TCLP	mg/L	0.001						<0.001	47			<0.001	4.9	<0.001	3.5	<0.001	1.5
Total +ve PAH's	mg/L		N/A	200	N/A	800		1.5	1900			0.036	140	0.002	81	0.001	36
Surrogate p-Terphenyl-d14	%																
pH of soil for fluid# determ.	pH units	0.1						9.2		9.1		8.9		8.7		9.3	
pH of soil TCLP (after HCl)	pH units	0.1						2		1.9		1.8		1.8		1.8	
Extraction fluid used	-	1						1		1		1		1		1	
pH of final Leachate	pH units	0.1						5.6		5.9		5.1		5.1		5.1	
Arsenic in TCLP	mg/L	0.05	5	500	20	2000		<0.05	6	<0.05	10	<0.05	5	<0.05	7	<0.05	8
Cadmium in TCLP	mg/L	0.01	1	100	4	400		<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4
Chromium in TCLP	mg/L	0.01	5	1900	20	7600		<0.01	11	<0.01	12	<0.01	13	<0.01	10	<0.01	12
Copper in TCLP	mg/L	0.01						0.1	150	0.04	750	0.04	90	0.04	73	0.01	84
Lead in TCLP	mg/L	0.03	5	1500	20	6000		0.5	330	0.2	220	0.04	170	0.34	660	0.04	240
Mercury in TCLP	mg/L	0.0005	0.2	50	0.8	200		<0.0005	0.5	<0.0005	1.5	<0.0005	0.5	<0.0005	0.5	<0.0005	1.1
Nickel in TCLP	mg/L	0.02	2	1050	8	4200		<0.02	4	<0.02	5	<0.02	8	<0.02	17	<0.02	8
Zinc in TCLP	mg/L	0.02						0.5	150	0.6	340	0.9	330	1.1	160	1	240
(PFHxS)+ (PFOS)	µg/kg	0.01												<0.01	<0.1		
	µg/kg	0.01												<0.01	0.2		
Perfluorooctanoic acid (PFOA)	µg/kg	0.01												<0.01	<0.1		
6:2 FTS	µg/kg	0.01												<0.01	<0.1		
8:2 FTS	µg/kg	0.01												<0.01	<0.1		

Appendix C Field Borehole Logs

BH101

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 4
Bore Diameter (mm):

Eastings (GDA 94): 333503.557232
Northings (GDA 94): 6248222.65031
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Method	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	ASPHALT/CONCRETE		
		0.30		Fill	SILTY CLAY, dark brown, heterogeneous, soft, dry, low plasticity. Inclusions of trace slag, glass fragments.	BH101 0.3-0.4 PID = 0.2 ppm	No odour, staining or ACM observed
		0.60		Fill	CLAYEY SAND, crushed sandstone, red-brown, heterogeneous, dry, coarse, medium dense.		
		0.65		Fill	SILTY SAND, dark brown, heterogeneous, dray-damp, fine-medium, trace clay. Inclusions of ceramic and glass fragments.	BH101 0.7-0.9 PID = 0.8 ppm	No odour, staining or ACM observed
	1						
		1.20		SM	SILTY SAND, brown, heterogeneous, medium-coarse, dry-damp.	BH101 1.2-1.4 PID = 0.7 ppm	No odour, staining or ACM observed
		1.50		CH-MH	SILTY CLAY, red-brown with grey mottles, heterogeneous, dry-damp, medium plasticity, firm.		
	2					BH101 1.8-2.0 PID = 0.4 ppm	No odour, staining or ACM observed
		2.00		CH-MH	SILTY CLAY, red with grey mottles, heterogeneous, dry, medium plasticity, firm- stiff.		
	3					BH101 2.5-3.0 PID = 0.4 ppm	No odour, staining or ACM observed
	4					BH101 3.5-3.7 PID = 0.3 ppm	No odour, staining or ACM observed
		4.00			Borehole BH101 terminated at 4m		
	5						
	6						
	7						

BH102

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 4.6
Bore Diameter (mm):

Eastings (GDA 94): 333493.449657
Northings (GDA 94): 6248220.98767
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Method	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	ASPHALT/CONCRETE		
		0.30		Fill	SILTY CLAY, dark brown, heterogeneous, dry, low plasticity, soft. Inclusions of ash, trace slag and glass fragments.	BH102 0.4-0.6 PID = 1.2 ppm	No odour, staining or ACM observed
		0.55		Fill	SILTY CLAY, brown, heterogeneous, dry, medium plasticity, soft. Inclusions of gravels.	BH102 0.6-0.7 PID = 0.5 ppm	No odour, staining or ACM observed
	1	0.80		Fill	SILTY CLAY, dark brown, heterogeneous, dry, medium plasticity, soft. Inclusions of trace glass and brick fragments.	BH102 0.8-1.0 PID = 0.3 ppm	No odour, staining or ACM observed
		1.50		SM	SILTY SAND, dark brown, heterogenous, dry-damp, soft.	BH102 1.5-1.7 PID = 0.7 ppm	No odour, staining or ACM observed
		1.70		CH-MH	SILTY CLAY, brown, heterogenous, dry-damp, medium plasticity, firm.		
	2					BH102 1.8-2.0 PID = 0.4 ppm	No odour, staining or ACM observed
		2.40		CH-MH	SILTY CLAY, red-brown with grey mottles, heterogenous, dry-damp, medium plasticity, firm.	BH102 2.5-2.7 PID = 0.4 ppm	No odour, staining or ACM observed
	3						
						BH102 3.5-3.7 PID = 0.5 ppm	No odour, staining or ACM observed
	4						
						BH102 4.4-4.6 PID = 0.3 ppm	No odour, staining or ACM observed
		4.60			Borehole BH102 terminated at 4.6m		
	5						
	6						
	7						

BH103

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 4
Bore Diameter (mm):

Eastings (GDA 94): 333486.914336
Northings (GDA 94): 6248219.62112
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Method	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	ASPHALT/CONCRETE		
		0.25		Fill	SILTY CLAY, dark brown-black, heterogeneous, soft, dry, low plasticity. Inclusions of trace ash, slag, glass and brick fragments. Increasing ash content with depth.	BH103 0.3-0.5 PID = 1.1 ppm	No odour, staining or ACM observed
		0.50		Fill	SILTY SAND, yellow-brown, heterogenous, dry-damp, medium-coarse.	BH103 0.6-0.8 PID = 1.2 ppm	No odour, staining or ACM observed
		0.75		Fill	SAND, dark brown-black, heterogenous, dry, medium and ash.	BH103 0.8-0.8 PID = 0.8 ppm	No odour, staining or ACM observed
	1	0.80		Fill	CLAYEY SAND, crushed sandstone, red-brown, heterogeneous, dry, coarse, medium dense.		
		1.00		Fill	SILTY SAND, medium brown, heterogeneous, dry-damp, fine. Inclusions of glass fragments, ash and coal fragments.	BH103 1.2-1.4 PID = 0.4 ppm	No odour, staining or ACM observed
		1.40		CL-ML	SILTY CLAY, medium brown, heterogenous, medium plasticity, dry-damp, firm.		
	2					BH103 1.8-2.0 PID = 0.9 ppm	No odour, staining or ACM observed
		2.00		CH-MH	SILTY CLAY, red-brown, heterogenous, medium-high plasticity, firm-stiff.		
	3					BH103 2.5-2.7 PID = 0.7 ppm	No odour, staining or ACM observed
	4					BH103 3.5-3.7 PID = 0.9 ppm	No odour, staining or ACM observed
		4.00			Borehole BH103 terminated at 4m		
	5						
	6						
	7						

BH104

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 2
Bore Diameter (mm):

Eastings (GDA 94): 333480.492579
Northings (GDA 94): 6248229.46559
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Method	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	ASPHALT		
		0.30		Fill	CONCRETE		
		0.65		Fill	SILTY SAND, dark brown, heterogeneous, dry, soft, medium. Inclusions of ceramic, glass and coal fragments.	BH104 0.7-0.8 PID = 1.3 ppm	No odour, staining or ACM observed
		0.75		Fill			
	1	0.80		Fill	CLAYEY SAND, crushed sandstone, light brown, heterogeneous, dry, coarse, medium dense.	BH104 0.8-0.9 PID = 0.5 ppm	No odour, staining or ACM observed
					SILTY SAND, grey-brown, heterogeneous, dry, fine-medium.		
						BH104 1.2-1.4 PID = 0.9 ppm	No odour, staining or ACM observed
		1.60		Fill	CLAYEY SAND, crushed sandstone, light brown, heterogeneous, dry, coarse, medium dense. Inclusions of glass fragments		
	2						
		2.00			Borehole BH104 terminated at 2m		
	3						
	4						
	5						
	6						
	7						

BH105

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 2.9
Bore Diameter (mm):

Eastings (GDA 94): 333509.023324
Northings (GDA 94): 6248228.13467
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Method	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	ASPHALT/CONCRETE		
		0.35		Fill	SILTY CLAY, dark brown-black, heterogeneous, low plasticity, dry, soft. Inclusions of trace slag and gravel.	BH105 0.3-0.5 PID = 1.2 ppm	No odour, staining or ACM observed
		0.60		Fill	CLAYEY SAND, crushed sandstone, red-yellow, heterogeneous, damp, coarse, medium dense.	BH105 0.6-0.8 PID = 0.7 ppm	No odour, staining or ACM observed
	1	0.80		SM	SILTY SAND, brown, heterogeneous, medium-coarse, damp.		
		1.40		CL-ML	SILTY CLAY, medium brown, heterogenous, medium plasticity, damp, firm.		
	2					BH105 1.8-2.0 PID = 0.8 ppm	No odour, staining or ACM observed
						BH105 2.5-2.7 PID = 0.5 ppm	No odour, staining or ACM observed
	3	2.90			Borehole BH105 terminated at 2.9m		
	4						
	5						
	6						
	7						

BOREHOLE JBSG BOREHOLE - 2017.GPJ GINT STD AUSTRALIA.GDT 18/6/18

BH106

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 6
Bore Diameter (mm):

Eastings (GDA 94): 333476.4
Northings (GDA 94): 6248201.2
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Water Level Initial (mbgs):
Surface Finish: Gatic
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 3
Screen Bottom Depth (mbgs): 6

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
SFA						Fill	CONCRETE		
				0.15		Fill	GRAVEL, dark brown, heterogeneous, medium, dry.		
						Fill	SILTY CLAY, heterogeneous, dark brown- black, dry, low plasticity, soft.		
				0.45		Fill	CONCRETE		
				0.60					
			1						
			2	2.00		SM	SILTY SAND, yellow-brown, heterogeneous, medium plasticity, firm, damp.		
			3						
			4	4.00		CH-MH	SILTY CLAY, red-brown with grey mottles, heterogeneous, dry-damp, medium plasticity, firm.		
			5						
			6	6.00			Borehole BH106 terminated at 6m		
			7						

WELL_JBSG WELL - 2017.GPJ GINT STD AUSTRALIA.GDT 18/6/18

BH107

Project Number: 54877gw
Client:
Project Name: Redfern Data Gap Assessment
Site Address:

Date: 11/05/2018
Logged By: SG
Contractor: BG Drilling
Total Hole Depth (mbgs): 6
Bore Diameter (mm):

Eastings (GDA 94): 333493.5
Northings (GDA 94): 6248199.9
Zone/Area/Permit#:
Reference Level:
Elevation (m):

Water Level Initial (mbgs):
Surface Finish: Gatic
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 3
Screen Bottom Depth (mbgs): 6

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube						Fill	ASPHALT/CONCRETE		
				0.30		Fill	SILTY CLAY, heterogeneous, dark brown- black, dry, low plasticity, soft.	BH107 0.3-0.5 PID = 0.2 ppm	No odour, staining or ACM observed
			1	0.80		Fill	SILTY SAND, grey, heterogeneous, medium dry-damp.	BH107 0.8-1.0 PID = 0.1 ppm	No odour, staining or ACM observed
				1.50		Fill	SAND, grey, heterogeneous, medium, damp.		
SFA			2	1.60		SM	SILTY SAND, yellow-brown, heterogeneous, medium plasticity, firm, damp.	BH107 1.8-2.0 PID = 0.4 ppm	No odour, staining or ACM observed
			3					BH107 2.5-2.7 PID = 0.9 ppm	No odour, staining or ACM observed
				3.50		CH-MH	SILTY CLAY, red-brown with grey mottles, heterogeneous, dry-damp, medium plasticity, firm.		
			4						
			5						
			6						
				6.00			Borehole BH107 terminated at 6m		
			7						

Appendix D Calibration / Decontamination Records

PID Calibration Certificate

Instrument PhoCheck Tiger
Serial No. T-105869

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 eV lamp
Alarms	Beeper	✓	**Low** / **High** / **TWA** / **STEL**
	Settings	✓	50ppm / 100ppm / N/A / N/A
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	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		98ppm Isobutylene	NATA	SY137		97.4ppm

Calibrated by: Michelle C Wagner **Michelle Wagner**

Calibration date: **12/03/2018**

Next calibration due: **8/09/2018**

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **12D100011**

airmet
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 7.00		pH 7.00		307928	pH 6.93
2. pH 4.00		pH 4.00		307927	pH 4.11
3. pH 10.00		pH 10.00		304261	pH 9.89
3. mV		227.4mV		306014/311901	226.6mV
4. EC		2.76mS		306341	2.76mS
6. D.O		0.00 ppm		5253	0.03ppm
7. Temp		23°C		MultiTherm	22.8°C

Calibrated by: Sarah Lian **Sarah Lian**

Calibration date: **26/04/2018**

Next calibration due: **27/05/2018**

Gas Calibration Certificate

Instrument GFM430
Serial No. 11239
Sensors CH_4, CO_2, O_2, H_2S, LEL

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation		
	Filter	✓	
	Flow		
	Valves, Diaphragm		
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	CH_4	✓	
	CO_2	✓	
	O_2	✓	
	H_2S	✓	
	LEL	✓	
	CO	✓	
Alarms	Beeper	✓	
	Settings	✓	
Software	Version		
Datalogger	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	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
O2		20.9% Vol O2		Fresh Air	20.8% O2
CO2		40% Vol CO2	NATA	SY136	40.3% CO2
CH4		60% Vol CH4	NATA	SY136	59.3% CH4

Calibrated by: Sarah Lian **Sarah Lian**

Calibration date: **11/05/2018**

Next calibration due: **10/11/2018**

Appendix E Detailed Laboratory Results and Chain of Custody Documentation

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 **598266-S**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 14, 2018

Client Sample ID			**BH101 0.3-0.4**	**BH102 0.35-0.55**	**[G01]BH103 0.3-0.5**	**BH104 0.65-0.75**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-My18063**	**S18-My18064**	**S18-My18065**	**S18-My18066**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 100	< 20
TRH C10-C14	20	mg/kg	36	< 20	3200	< 20
TRH C15-C28	50	mg/kg	480	200	14000	97
TRH C29-C36	50	mg/kg	280	110	3900	77
TRH C10-36 (Total)	50	mg/kg	796	310	21100	174
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.5	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.5	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	0.7	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 1	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	0.6	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 1.5	< 0.3
4-Bromofluorobenzene (surr.)	1	%	70	52	59	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	720	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 100	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 100	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	2700	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	2000	< 50
TRH >C16-C34	100	mg/kg	610	240	14000	130
TRH >C34-C40	100	mg/kg	190	< 100	2300	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	17	7.0	310	0.9
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	17	7.0	310	1.2
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	17	7.0	310	1.5
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	46	< 0.5
Acenaphthylene	0.5	mg/kg	1.7	0.9	120	< 0.5
Anthracene	0.5	mg/kg	2.3	1.8	250	< 0.5
Benz(a)anthracene	0.5	mg/kg	11	4.2	240	0.7
Benzo(a)pyrene	0.5	mg/kg	11	4.1	200	0.7
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	5.9	3.0	130	0.6
Benzo(g.h.i)perylene	0.5	mg/kg	7.2	2.8	110	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	5.0	2.7	130	< 0.5
Chrysene	0.5	mg/kg	9.6	3.5	240	0.7
Dibenz(a.h)anthracene	0.5	mg/kg	2.9	1.6	43	< 0.5

Client Sample ID			BH101 0.3-0.4	BH102 0.35-0.55	[G01]BH103 0.3-0.5	BH104 0.65-0.75
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-My18063**	**S18-My18064**	**S18-My18065**	**S18-My18066**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	27	9.5	700	1.6
Fluorene	0.5	mg/kg	0.7	0.8	260	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	7.2	2.7	88	0.6
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	510	< 0.5
Phenanthrene	0.5	mg/kg	6.1	5.2	1200	0.8
Pyrene	0.5	mg/kg	29	9.0	700	1.6
Total PAH*	0.5	mg/kg	126.6	51.8	4967	7.3
2-Fluorobiphenyl (surr.)	1	%	91	119	74	74
p-Terphenyl-d14 (surr.)	1	%	65	95	72	60
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	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
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	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	106	113	1.0	105
Tetrachloro-m-xylene (surr.)	1	%	72	88	82	88
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	106	113	1.0	105
Tetrachloro-m-xylene (surr.)	1	%	72	88	82	88

Client Sample ID			BH101 0.3-0.4	BH102 0.35-0.55	[G01]BH103 0.3-0.5	BH104 0.65-0.75
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-My18063**	**S18-My18064**	**S18-My18065**	**S18-My18066**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	8.1	10	4.0	5.2
Cadmium	0.4	mg/kg	0.4	< 0.4	< 0.4	0.4
Chromium	5	mg/kg	13	8.1	7.0	8.7
Copper	5	mg/kg	240	180	130	110
Lead	5	mg/kg	390	400	110	490
Mercury	0.1	mg/kg	0.6	0.4	0.2	2.7
Nickel	5	mg/kg	11	10	5.8	6.0
Zinc	5	mg/kg	710	180	91	580
% Moisture	1	%	9.5	12	8.3	6.7

Client Sample ID			BH105 0.3-0.5	BH107 0.3-0.5	BH107 0.8-1.0	QC01
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-My18067**	**S18-My18068**	**S18-My18069**	**S18-My18070**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
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	29	48	< 20	< 20
TRH C15-C28	50	mg/kg	220	370	250	< 50
TRH C29-C36	50	mg/kg	140	250	160	< 50
TRH C10-36 (Total)	50	mg/kg	389	668	410	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	0.2	0.3	< 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	%	125	79	111	97
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	280	500	320	< 100
TRH >C34-C40	100	mg/kg	110	170	110	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.3	8.8	5.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.5	8.8	5.3	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.8	8.8	5.3	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	0.7	0.7	0.9	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.6	4.6	3.8	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.5	5.5	3.3	< 0.5

Client Sample ID			BH105 0.3-0.5	BH107 0.3-0.5	BH107 0.8-1.0	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-My18067	S18-My18068	S18-My18069	S18-My18070
Date Sampled			May 11, 2018	May 11, 2018	May 11, 2018	May 11, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.4	3.7	2.4	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.9	5.1	2.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.0	3.5	2.5	< 0.5
Chrysene	0.5	mg/kg	2.4	4.3	3.2	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	1.6	0.9	< 0.5
Fluoranthene	0.5	mg/kg	4.5	6.0	6.0	< 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	1.3	3.8	1.8	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	2.7	2.5	3.0	< 0.5
Pyrene	0.5	mg/kg	4.9	6.7	6.3	< 0.5
Total PAH*	0.5	mg/kg	26.9	48.6	36.6	< 0.5
2-Fluorobiphenyl (surr.)	1	%	103	95	92	85
p-Terphenyl-d14 (surr.)	1	%	88	77	79	81
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	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
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	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	112	101	106	104
Tetrachloro-m-xylene (surr.)	1	%	88	103	84	93
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			BH105 0.3-0.5	BH107 0.3-0.5	BH107 0.8-1.0	QC01
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-My18067**	**S18-My18068**	**S18-My18069**	**S18-My18070**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	112	101	106	104
Tetrachloro-m-xylene (surr.)	1	%	88	103	84	93
Heavy Metals						
Arsenic	2	mg/kg	9.5	3.9	3.3	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	15	9.0	9.1	5.2
Copper	5	mg/kg	65	280	40	9.7
Lead	5	mg/kg	330	200	140	64
Mercury	0.1	mg/kg	1.6	1.2	1.2	0.3
Nickel	5	mg/kg	17	11	16	15
Zinc	5	mg/kg	230	170	260	290
% Moisture	1	%	10	11	9.1	4.9

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 (regarding both quality and NATA accreditation).

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	May 17, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 17, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 17, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Melbourne	May 17, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 17, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	May 17, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	May 17, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Melbourne	May 17, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	May 14, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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Site # 23736

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Address: Level 1, 50 Margaret St
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NSW 2000

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598266
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:08 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	BH101 0.3-0.4	May 11, 2018		Soil	S18-My18063	X		X	X	X	X	X	X	X
2	BH102 0.35-0.55	May 11, 2018		Soil	S18-My18064	X		X	X	X	X	X	X	X
3	BH103 0.3-0.5	May 11, 2018		Soil	S18-My18065			X	X	X	X	X	X	X
4	BH104 0.65-0.75	May 11, 2018		Soil	S18-My18066			X	X	X	X	X	X	X
5	BH105 0.3-0.5	May 11, 2018		Soil	S18-My18067			X	X	X	X	X	X	X
6	BH107 0.3-0.5	May 11, 2018		Soil	S18-My18068			X	X	X	X	X	X	X
7	BH107 0.8-1.0	May 11, 2018		Soil	S18-My18069			X	X	X	X	X	X	X
8	QC01	May 11, 2018		Soil	S18-My18070			X	X	X	X	X	X	X

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Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
9	TB	May 11, 2018		Water	S18-My18071							X		
10	TS	May 11, 2018		Water	S18-My18072							X		
11	BH101 0.7-0.9	May 11, 2018		Soil	S18-My18140		X							
12	BH101 1.2-1.4	May 11, 2018		Soil	S18-My18141		X							
13	BH101 1.8-2.0	May 11, 2018		Soil	S18-My18142		X							
14	BH101 2.5-3.0	May 11, 2018		Soil	S18-My18143		X							
15	BH101 3.5-3.7	May 11, 2018		Soil	S18-My18144		X							
16	BH102 0.55-0.65	May 11, 2018		Soil	S18-My18145		X							
17	BH102 0.8-1.0	May 11, 2018		Soil	S18-My18146		X							
18	BH102 1.5-1.7	May 11, 2018		Soil	S18-My18147		X							
19	BH102 1.8-2.0	May 11, 2018		Soil	S18-My18148		X							

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Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
20	BH102 2.5-2.7	May 11, 2018		Soil	S18-My18149		X							
21	BH102 3.5-3.7	May 11, 2018		Soil	S18-My18150		X							
22	BH102 4.4-4.6	May 11, 2018		Soil	S18-My18151		X							
23	BH103 0.6-0.75	May 11, 2018		Soil	S18-My18152		X							
24	BH103 0.75-0.8	May 11, 2018		Soil	S18-My18153		X							
25	BH103 1.2-1.4	May 11, 2018		Soil	S18-My18154		X							
26	BH103 1.8-2.0	May 11, 2018		Soil	S18-My18155		X							
27	BH103 2.5-2.7	May 11, 2018		Soil	S18-My18156		X							
28	BH103 3.5-3.7	May 11, 2018		Soil	S18-My18157		X							
29	BH104 0.8-0.9	May 11, 2018		Soil	S18-My18158		X							
30	BH104 1.2-1.4	May 11, 2018		Soil	S18-My18159		X							

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Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
31	BH105 0.6-0.8	May 11, 2018		Soil	S18-My18160		X							
32	BH105 1.8-2.0	May 11, 2018		Soil	S18-My18161		X							
33	BH105 2.5-2.7	May 11, 2018		Soil	S18-My18162		X							
34	BH107 1.8-2.0	May 11, 2018		Soil	S18-My18163		X							
35	BH107 2.5-2.7	May 11, 2018		Soil	S18-My18164		X							
Test Counts						2	25	8	8	8	8	10	8	8

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 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	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	82			70-130	Pass	
TRH C10-C14	%	90			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	80			70-130	Pass	
Toluene	%	85			70-130	Pass	
Ethylbenzene	%	86			70-130	Pass	
m&p-Xylenes	%	85			70-130	Pass	
Xylenes - Total	%	86			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	104			70-130	Pass	
TRH C6-C10	%	77			70-130	Pass	
TRH >C10-C16	%	79			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	92			70-130	Pass	
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	%	72			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	%	99			70-130	Pass	
Benzo(k)fluoranthene	%	86			70-130	Pass	
Chrysene	%	90			70-130	Pass	
Dibenz(a.h)anthracene	%	88			70-130	Pass	
Fluoranthene	%	108			70-130	Pass	
Fluorene	%	93			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	128			70-130	Pass	
Naphthalene	%	95			70-130	Pass	
Phenanthrene	%	85			70-130	Pass	
Pyrene	%	106			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	103			70-130	Pass	
4.4'-DDE	%	105			70-130	Pass	
4.4'-DDT	%	97			70-130	Pass	
a-BHC	%	103			70-130	Pass	
Aldrin	%	108			70-130	Pass	
b-BHC	%	99			70-130	Pass	
d-BHC	%	98			70-130	Pass	
Dieldrin	%	108			70-130	Pass	
Endosulfan I	%	108			70-130	Pass	
Endosulfan II	%	108			70-130	Pass	
Endosulfan sulphate	%	109			70-130	Pass	
Endrin	%	108			70-130	Pass	
Endrin aldehyde	%	105			70-130	Pass	
Endrin ketone	%	105			70-130	Pass	
g-BHC (Lindane)	%	102			70-130	Pass	
Heptachlor	%	97			70-130	Pass	
Heptachlor epoxide	%	108			70-130	Pass	
Hexachlorobenzene	%	100			70-130	Pass	
Methoxychlor	%	95			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	89			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	103			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	103			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	86			75-125	Pass	
Nickel	%	101			80-120	Pass	
Zinc	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(b&j)fluoranthene	M18-My16719	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-My21962	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Copper	M18-My19187	NCP	%	109			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	M18-My19187	NCP	%	118			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S18-My18064	CP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S18-My18064	CP	%	80			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-My18064	CP	%	89			70-130	Pass	
Acenaphthylene	S18-My18064	CP	%	95			70-130	Pass	
Anthracene	S18-My18064	CP	%	88			70-130	Pass	
Benz(a)anthracene	S18-My18064	CP	%	92			70-130	Pass	
Benzo(a)pyrene	S18-My18064	CP	%	70			70-130	Pass	
Benzo(g.h.i)perylene	S18-My18064	CP	%	78			70-130	Pass	
Benzo(k)fluoranthene	S18-My18064	CP	%	79			70-130	Pass	
Chrysene	S18-My18064	CP	%	70			70-130	Pass	
Dibenz(a.h)anthracene	S18-My18064	CP	%	127			70-130	Pass	
Fluoranthene	S18-My18064	CP	%	98			70-130	Pass	
Fluorene	S18-My18064	CP	%	91			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-My18064	CP	%	112			70-130	Pass	
Naphthalene	S18-My18064	CP	%	89			70-130	Pass	
Phenanthrene	S18-My18064	CP	%	110			70-130	Pass	
Pyrene	S18-My18064	CP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-My18065	CP	%	111			75-125	Pass	
Cadmium	S18-My18065	CP	%	103			75-125	Pass	
Chromium	S18-My18065	CP	%	104			75-125	Pass	
Lead	S18-My18065	CP	%	79			75-125	Pass	
Mercury	S18-My18065	CP	%	80			70-130	Pass	
Nickel	S18-My18065	CP	%	123			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-My18066	CP	%	81			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-My18066	CP	%	80			70-130	Pass	
Toluene	S18-My18066	CP	%	82			70-130	Pass	
Ethylbenzene	S18-My18066	CP	%	85			70-130	Pass	
m&p-Xylenes	S18-My18066	CP	%	84			70-130	Pass	
o-Xylene	S18-My18066	CP	%	91			70-130	Pass	
Xylenes - Total	S18-My18066	CP	%	87			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-My18066	CP	%	110			70-130	Pass	
TRH C6-C10	S18-My18066	CP	%	79			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	S18-My18068	CP	%	104			70-130	Pass	
4.4'-DDE	S18-My18068	CP	%	99			70-130	Pass	
4.4'-DDT	S18-My18068	CP	%	109			70-130	Pass	
a-BHC	S18-My18068	CP	%	92			70-130	Pass	
Aldrin	S18-My18068	CP	%	97			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
b-BHC	S18-My18068	CP	%	89			70-130	Pass	
d-BHC	S18-My18068	CP	%	90			70-130	Pass	
Dieldrin	S18-My18068	CP	%	129			70-130	Pass	
Endosulfan I	S18-My18068	CP	%	90			70-130	Pass	
Endosulfan II	S18-My18068	CP	%	125			70-130	Pass	
Endosulfan sulphate	S18-My18068	CP	%	99			70-130	Pass	
Endrin	S18-My18068	CP	%	113			70-130	Pass	
Endrin aldehyde	S18-My18068	CP	%	90			70-130	Pass	
Endrin ketone	S18-My18068	CP	%	101			70-130	Pass	
g-BHC (Lindane)	S18-My18068	CP	%	91			70-130	Pass	
Heptachlor	S18-My18068	CP	%	105			70-130	Pass	
Heptachlor epoxide	S18-My18068	CP	%	96			70-130	Pass	
Hexachlorobenzene	S18-My18068	CP	%	95			70-130	Pass	
Methoxychlor	S18-My18068	CP	%	129			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	M18-My17584	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-My18063	CP	mg/kg	36	22	49	30%	Fail	Q15
TRH C15-C28	S18-My18063	CP	mg/kg	480	500	4.0	30%	Pass	
TRH C29-C36	S18-My18063	CP	mg/kg	280	310	12	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M18-My17584	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M18-My17584	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-My17584	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-My17584	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-My17584	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M18-My17584	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-My17584	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-My17584	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-My18063	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-My18063	CP	mg/kg	610	650	7.0	30%	Pass	
TRH >C34-C40	S18-My18063	CP	mg/kg	190	230	18	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-My18063	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-My18063	CP	mg/kg	1.7	1.6	3.0	30%	Pass	
Anthracene	S18-My18063	CP	mg/kg	2.3	2.2	5.0	30%	Pass	
Benz(a)anthracene	S18-My18063	CP	mg/kg	11	10.0	11	30%	Pass	
Benzo(a)pyrene	S18-My18063	CP	mg/kg	11	10	5.0	30%	Pass	
Benzo(b&j)fluoranthene	S18-My18063	CP	mg/kg	5.9	5.4	10	30%	Pass	
Benzo(g.h.i)perylene	S18-My18063	CP	mg/kg	7.2	6.8	7.0	30%	Pass	
Benzo(k)fluoranthene	S18-My18063	CP	mg/kg	5.0	5.5	10	30%	Pass	
Chrysene	S18-My18063	CP	mg/kg	9.6	8.4	13	30%	Pass	
Dibenz(a.h)anthracene	S18-My18063	CP	mg/kg	2.9	2.5	14	30%	Pass	
Fluoranthene	S18-My18063	CP	mg/kg	27	23	13	30%	Pass	
Fluorene	S18-My18063	CP	mg/kg	0.7	1.1	36	30%	Fail	Q15
Indeno(1.2.3-cd)pyrene	S18-My18063	CP	mg/kg	7.2	6.6	10	30%	Pass	
Naphthalene	S18-My18063	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-My18063	CP	mg/kg	6.1	6.2	1.0	30%	Pass	
Pyrene	S18-My18063	CP	mg/kg	29	26	11	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	A18-My17760	NCP	%	12	12	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-My18065	CP	mg/kg	4.0	3.9	1.0	30%	Pass	
Cadmium	S18-My18065	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-My18065	CP	mg/kg	7.0	7.0	1.0	30%	Pass	
Copper	S18-My18065	CP	mg/kg	130	130	1.0	30%	Pass	
Lead	S18-My18065	CP	mg/kg	110	110	<1	30%	Pass	
Mercury	S18-My18065	CP	mg/kg	0.2	0.2	<1	30%	Pass	
Nickel	S18-My18065	CP	mg/kg	5.8	5.8	1.0	30%	Pass	
Zinc	S18-My18065	CP	mg/kg	91	93	2.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S18-My18067	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S18-My18067	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	S18-My18067	CP	mg/kg	< 0.1	< 0.1	<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
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 | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson

National Operations 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 **598266-W**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 14, 2018

Client Sample ID			**TB**	[R20]**TS**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**S18-My18071**	**S18-My18072**
Date Sampled			**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit		
BTEX				
Benzene	0.001	mg/L	< 0.001	85
Toluene	0.001	mg/L	< 0.001	81
Ethylbenzene	0.001	mg/L	< 0.001	96
m&p-Xylenes	0.002	mg/L	< 0.002	94
o-Xylene	0.001	mg/L	< 0.001	99
Xylenes - Total	0.003	mg/L	< 0.003	95
4-Bromofluorobenzene (surr.)	1	%	114	110

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 (regarding both quality and NATA accreditation).

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
BTEX	Melbourne	May 15, 2018	14 Day

- Method: TRH C6-C40 - LTM-ORG-2010

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598266
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:08 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	BH101 0.3-0.4	May 11, 2018		Soil	S18-My18063	X		X	X	X	X	X	X	X
2	BH102 0.35-0.55	May 11, 2018		Soil	S18-My18064	X		X	X	X	X	X	X	X
3	BH103 0.3-0.5	May 11, 2018		Soil	S18-My18065			X	X	X	X	X	X	X
4	BH104 0.65-0.75	May 11, 2018		Soil	S18-My18066			X	X	X	X	X	X	X
5	BH105 0.3-0.5	May 11, 2018		Soil	S18-My18067			X	X	X	X	X	X	X
6	BH107 0.3-0.5	May 11, 2018		Soil	S18-My18068			X	X	X	X	X	X	X
7	BH107 0.8-1.0	May 11, 2018		Soil	S18-My18069			X	X	X	X	X	X	X
8	QC01	May 11, 2018		Soil	S18-My18070			X	X	X	X	X	X	X

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598266
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:08 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
9	TB	May 11, 2018		Water	S18-My18071							X		
10	TS	May 11, 2018		Water	S18-My18072							X		
11	BH101 0.7-0.9	May 11, 2018		Soil	S18-My18140		X							
12	BH101 1.2-1.4	May 11, 2018		Soil	S18-My18141		X							
13	BH101 1.8-2.0	May 11, 2018		Soil	S18-My18142		X							
14	BH101 2.5-3.0	May 11, 2018		Soil	S18-My18143		X							
15	BH101 3.5-3.7	May 11, 2018		Soil	S18-My18144		X							
16	BH102 0.55-0.65	May 11, 2018		Soil	S18-My18145		X							
17	BH102 0.8-1.0	May 11, 2018		Soil	S18-My18146		X							
18	BH102 1.5-1.7	May 11, 2018		Soil	S18-My18147		X							
19	BH102 1.8-2.0	May 11, 2018		Soil	S18-My18148		X							

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NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598266
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:08 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
20	BH102 2.5-2.7	May 11, 2018		Soil	S18-My18149		X							
21	BH102 3.5-3.7	May 11, 2018		Soil	S18-My18150		X							
22	BH102 4.4-4.6	May 11, 2018		Soil	S18-My18151		X							
23	BH103 0.6-0.75	May 11, 2018		Soil	S18-My18152		X							
24	BH103 0.75-0.8	May 11, 2018		Soil	S18-My18153		X							
25	BH103 1.2-1.4	May 11, 2018		Soil	S18-My18154		X							
26	BH103 1.8-2.0	May 11, 2018		Soil	S18-My18155		X							
27	BH103 2.5-2.7	May 11, 2018		Soil	S18-My18156		X							
28	BH103 3.5-3.7	May 11, 2018		Soil	S18-My18157		X							
29	BH104 0.8-0.9	May 11, 2018		Soil	S18-My18158		X							
30	BH104 1.2-1.4	May 11, 2018		Soil	S18-My18159		X							

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
31	BH105 0.6-0.8	May 11, 2018		Soil	S18-My18160		X							
32	BH105 1.8-2.0	May 11, 2018		Soil	S18-My18161		X							
33	BH105 2.5-2.7	May 11, 2018		Soil	S18-My18162		X							
34	BH107 1.8-2.0	May 11, 2018		Soil	S18-My18163		X							
35	BH107 2.5-2.7	May 11, 2018		Soil	S18-My18164		X							
Test Counts						2	25	8	8	8	8	10	8	8

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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	
LCS - % Recovery							
BTEX							
Benzene	%	95			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	104			70-130	Pass	
Xylenes - Total	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	M18-My18018	NCP	%	86			70-130	Pass	
Toluene	M18-My18018	NCP	%	86			70-130	Pass	
Ethylbenzene	M18-My18018	NCP	%	86			70-130	Pass	
m&p-Xylenes	M18-My18018	NCP	%	83			70-130	Pass	
o-Xylene	M18-My18018	NCP	%	89			70-130	Pass	
Xylenes - Total	M18-My18018	NCP	%	85			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	M18-My18017	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M18-My18017	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M18-My18017	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M18-My18017	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M18-My18017	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M18-My18017	NCP	mg/L	< 0.003	< 0.003	<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
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Nibha Vaidya	Analytical Services Manager
Harry Bacalis	Senior Analyst-Volatile (VIC)



Glenn Jackson
National Operations 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	598266-AID
Project Name	REDFERN DATA GAP
Project ID	54877
Received Date	May 14, 2018
Date Reported	May 21, 2018

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 AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w).The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction.The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures.This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred. *NOTE: NATA News March 2014, p.7, states in relation to AS4964: "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". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk).* *This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the 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, June 2011.*

Project Name REDFERN DATA GAP
Project ID 54877
Date Sampled May 11, 2018
Report 598266-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
BH101 0.3-0.4	18-My18063	May 11, 2018	Approximate Sample 253g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.
BH102 0.35-0.55	18-My18064	May 11, 2018	Approximate Sample 327g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres 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 (regarding both quality and NATA accreditation).

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 14, 2018	Indefinite

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Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	BH101 0.3-0.4	May 11, 2018		Soil	S18-My18063	X		X	X	X	X	X	X	X
2	BH102 0.35-0.55	May 11, 2018		Soil	S18-My18064	X		X	X	X	X	X	X	X
3	BH103 0.3-0.5	May 11, 2018		Soil	S18-My18065			X	X	X	X	X	X	X
4	BH104 0.65-0.75	May 11, 2018		Soil	S18-My18066			X	X	X	X	X	X	X
5	BH105 0.3-0.5	May 11, 2018		Soil	S18-My18067			X	X	X	X	X	X	X
6	BH107 0.3-0.5	May 11, 2018		Soil	S18-My18068			X	X	X	X	X	X	X
7	BH107 0.8-1.0	May 11, 2018		Soil	S18-My18069			X	X	X	X	X	X	X
8	QC01	May 11, 2018		Soil	S18-My18070			X	X	X	X	X	X	X

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Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
9	TB	May 11, 2018		Water	S18-My18071							X		
10	TS	May 11, 2018		Water	S18-My18072							X		
11	BH101 0.7-0.9	May 11, 2018		Soil	S18-My18140		X							
12	BH101 1.2-1.4	May 11, 2018		Soil	S18-My18141		X							
13	BH101 1.8-2.0	May 11, 2018		Soil	S18-My18142		X							
14	BH101 2.5-3.0	May 11, 2018		Soil	S18-My18143		X							
15	BH101 3.5-3.7	May 11, 2018		Soil	S18-My18144		X							
16	BH102 0.55-0.65	May 11, 2018		Soil	S18-My18145		X							
17	BH102 0.8-1.0	May 11, 2018		Soil	S18-My18146		X							
18	BH102 1.5-1.7	May 11, 2018		Soil	S18-My18147		X							
19	BH102 1.8-2.0	May 11, 2018		Soil	S18-My18148		X							

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Perth Laboratory - NATA Site # 23736														
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22	BH102 4.4-4.6	May 11, 2018		Soil	S18-My18151		X							
23	BH103 0.6-0.75	May 11, 2018		Soil	S18-My18152		X							
24	BH103 0.75-0.8	May 11, 2018		Soil	S18-My18153		X							
25	BH103 1.2-1.4	May 11, 2018		Soil	S18-My18154		X							
26	BH103 1.8-2.0	May 11, 2018		Soil	S18-My18155		X							
27	BH103 2.5-2.7	May 11, 2018		Soil	S18-My18156		X							
28	BH103 3.5-3.7	May 11, 2018		Soil	S18-My18157		X							
29	BH104 0.8-0.9	May 11, 2018		Soil	S18-My18158		X							
30	BH104 1.2-1.4	May 11, 2018		Soil	S18-My18159		X							

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NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598266
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:08 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X								
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
31	BH105 0.6-0.8	May 11, 2018		Soil	S18-My18160		X							
32	BH105 1.8-2.0	May 11, 2018		Soil	S18-My18161		X							
33	BH105 2.5-2.7	May 11, 2018		Soil	S18-My18162		X							
34	BH107 1.8-2.0	May 11, 2018		Soil	S18-My18163		X							
35	BH107 2.5-2.7	May 11, 2018		Soil	S18-My18164		X							
Test Counts						2	25	8	8	8	8	10	8	8

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. 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	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

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:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Matthew Quigley	Senior Analyst-Asbestos (NSW)



Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

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08220

CHAIN OF CUSTODY

JBS&G

PROJECT NO.:	LABORATORY BATCH NO.:
PROJECT NAME: Eastern Creek Data Gap Standard	SAMPLERS: SG
DATE NEEDED BY:	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) Sjuttemore@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

598266

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Heavy metals	TRH/BTEX	OCP	PAH	PCB	Asbestos*	Hold	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH101 0.3-0.4	SOIL	11/5/18		J+B + ice		X	X	X	X	X	X				* 500mL NEPM (2013)
0.7-0.8				J+B								X			
1.3-1.4				J+B											
1.8-2.0				J											
2.5-3.0				J											
3.5-3.7				J											
BH102 0.35-0.5				J+B		X	X	X	X	X	X				
0.55-0.65				J+B								X			
0.8-1.0				J+B											
1.5-1.7				J											
1.8-2.0				J											
2.5-2.7				J											
3.5-3.7				J											
4.4-4.6				J											
BH103 0.3-0.5				J		X	X	X	X	X					
0.6-0.75				J								X			
0.75-0.8				J											
1.2-1.4				J											
1.8-2.0				J											

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 11/5/18	CONSIGNMENT NOTE NO.	NAME: Elvie D DATE: 11/5/18 5:08pm	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: Eurofins	COOLER TEMP 9.3 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

IMSO FormsO13 – Chain of Custody - Generic

08221

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54827	LABORATORY BATCH NO.:
PROJECT NAME: Kelton Data Gap	SAMPLERS: SG
DATE NEEDED BY: Standard	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	Hea vy metals	TRH/B TEX	CEP	PAH	PCB	Asbestos*	B TEX	Hold	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH103 2.5-2.7	SOIL	11/5/18		J Ice									↓			* 500 mL NEPM 503
BH103 3.5-3.7	"			"									↓			
BH104 0.65-0.75	"			"		X	X	X	X	X			↓			
0.8-0.9	"			"									X			
↓ 1.2-1.4	"			J+6									↓			
BH105 0.3-0.5	"			J		X	X	X	X	X			↓			
0.6-0.8	"			"									X			
1.8-2.0	"			"									↓			
↓ 2.5-2.7	"			"									↓			
BH107 0.3-0.5	"			J		X	X	X	X	X						
0.8-1.0	"			"		X	X	X	X	X						
QC01	"			"		X	X	X	X	X						
BH107 1.8-2.0	"			"									X			
2.5-2.7	"			"									↓			
TB	WATER			VIALS ice												
TS	"			"								X				

598266

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 11/5/18	CONSIGNMENT NOTE NO.	NAME: Elvied	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: 14/5/18 5:08 PM	COOLER TEMP 9.3 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

IMSO Forms013 – Chain of Custody - Generic

08221

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54877	LABORATORY BATCH NO.:
PROJECT NAME: Redfern Data Gap	SAMPLERS: SG
DATE NEEDED BY: Standard.	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) ...Sgunatunga.....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH103 2.5-2.7	SOIL	11/5/18		J ice				
BH103 3.5-3.7	"	"		"				
BH104 0.65-0.95	"	"		"				
0.8-0.9	"	"		"				
1.2-1.4	"	"		J, ice				
BH105 0.3-0.5	"	"		J				
0.6-0.8	"	"		"				
1.8-2.0	"	"		"				
2.5-2.7	"	"		"				
BH107 0.3-0.5	"	"		"				
0.8-1.0	"	"		"				
QC01	"	"		"				
BH107 1.8-2.0	"	"		"				
2.5-2.7	"	"		"				
TP	WATER	"		WATER ice				
TS	"	"		"				

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 11/5/18	CONSIGNMENT NOTE NO.	NAME:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: OF:	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO		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

08220

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: S4877	LABORATORY BATCH NO.:
PROJECT NAME: Redfern Data Gap	SAMPLERS: SG
DATE NEEDED BY: Standard.	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) .....squintorye.....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH101 0.3-0.4	SOIL	11/5/18		J+B + ICE				
0.7-0.9				J				
1.2-1.4				J+B				
1.8-2.0				J				
2.5-3.0				J				
3.5-3.7				J				
BH102 0.35-0.55				J+B				
0.55-0.65				J+B				
0.8-1.0				J+B				
1.5-1.7				J				
1.8-2.0								
2.5-2.7								
3.5-3.7								
4.4-4.6				J				
BH103 0.3-0.5				J				
~~Bh103~~ 0.6-0.75								
0.75-0.8								
1.2-1.4								
1.8-2.0								

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 11/5/18.	CONSIGNMENT NOTE NO.	NAME:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: OF:	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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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 191549

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	**54877, Redfern Data Gap**
Number of Samples	1 Soil
Date samples received	14/05/2018
Date completed instructions received	14/05/2018

Analysis Details

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

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

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

Report Details

Date results requested by	21/05/2018
Date of Issue	18/05/2018

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Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Jeremy Faircloth, Organics Supervisor
Steven Luong, Senior Chemist

Authorised By



Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date extracted	-	15/05/2018
Date analysed	-	16/05/2018
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	<1
Surrogate aaa-Trifluorotoluene	%	88

svTRH (C10-C40) in Soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date extracted	-	15/05/2018
Date analysed	-	16/05/2018
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	%	81

PAHs in Soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date extracted	-	15/05/2018
Date analysed	-	15/05/2018
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	0.2
Acenaphthene	mg/kg	0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	2.6
Anthracene	mg/kg	1
Fluoranthene	mg/kg	7.4
Pyrene	mg/kg	8.2
Benzo(a)anthracene	mg/kg	4.0
Chrysene	mg/kg	3.0
Benzo(b,j+k)fluoranthene	mg/kg	4.9
Benzo(a)pyrene	mg/kg	3.2
Indeno(1,2,3-c,d)pyrene	mg/kg	1.6
Dibenzo(a,h)anthracene	mg/kg	0.3
Benzo(g,h,i)perylene	mg/kg	1.6
Total +ve PAH's	mg/kg	38
Benzo(a)pyrene TEQ calc (zero)	mg/kg	4.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	4.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	4.6
Surrogate p-Terphenyl-d14	%	116

Organochlorine Pesticides in soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date extracted	-	15/05/2018
Date analysed	-	15/05/2018
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-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
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	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	%	106

PCBs in Soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date extracted	-	15/05/2018
Date analysed	-	15/05/2018
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 TCLMX	%	106

Acid Extractable metals in soil		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date prepared	-	15/05/2018
Date analysed	-	15/05/2018
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	2
Copper	mg/kg	6
Lead	mg/kg	49
Mercury	mg/kg	<0.1
Nickel	mg/kg	3
Zinc	mg/kg	21

Moisture		
Our Reference		191549-1
Your Reference	UNITS	QC01A
Date Sampled		11/05/2018
Type of sample		Soil
Date prepared	-	15/05/2018
Date analysed	-	16/05/2018
Moisture	%	7.9

Method ID	Methodology Summary
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-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	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.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-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	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			16/05/2018	[NT]	[NT]	[NT]	[NT]	16/05/2018	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	93	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	93	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	93	[NT]	[NT]	[NT]	[NT]	89	[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	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
Surrogate o-Terphenyl	%		Org-003	82	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	125	[NT]	[NT]	[NT]	[NT]	130	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	106	[NT]	[NT]	[NT]	[NT]	127	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	106	[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	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

08222

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54877	LABORATORY BATCH NO.:
PROJECT NAME: Loddon Data Gap	SAMPLERS: SY
DATE NEEDED BY: Standard.	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	Heavy metals	TRH/BTEX	OCP	PAH	PCB	Asbestos	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
QC01A	SOIL	11/5/18		jar+tic		X	X	X	X	X				
														#191549

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 11/5/18	CONSIGNMENT NOTE NO.	NAME:	COOLER SEAL – Yes..... No..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE:	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	OF: 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

IMSO Forms013 – Chain of Custody - Generic

COC rec'd 140518 1700 JH

08222

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54877	LABORATORY BATCH NO.:
PROJECT NAME: Redfern Data Gap	SAMPLERS: SG
DATE NEEDED BY: Standard	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) .....sgunasinge.....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
QC01A	SOIL	11/5/18		jar+ice				

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 191549

Date Received: 14/5/18
Time Received: 14:02
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: DATE: 11/5/18	CONSIGNMENT NOTE NO.	NAME:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: OF:	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO		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

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	S Gunatunge

Sample Login Details

Your reference	54877, Redfern Data Gap
Envirolab Reference	191549
Date Sample Received	14/05/2018
Date Instructions Received	14/05/2018
Date Results Expected to be Reported	21/05/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.7
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticidesin soil	PCBsin Soil	Acid Extractable metalsin soil
QC01A	✓	✓	✓	✓	✓	✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 1254

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 **599823-S**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 23, 2018

Client Sample ID			**BH103 1.8-2.0**	**BH101 1.2-1.4**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**M18-My30659**	**M18-My30660**
Date Sampled			**May 11, 2018**	**May 11, 2018**
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	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
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	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	71	109
p-Terphenyl-d14 (surr.)	1	%	84	121

Client Sample ID			BH103 1.8-2.0	BH101 1.2-1.4
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**M18-My30659**	**M18-My30660**
Date Sampled			**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	2	mg/kg	2.2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	9.8	< 5
Copper	5	mg/kg	< 5	< 5
Lead	5	mg/kg	8.4	9.7
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5
Zinc	5	mg/kg	< 5	110
% Moisture	1	%	13	8.1

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 (regarding both quality and NATA accreditation).

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	May 24, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 24, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 24, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 24, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	May 24, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	May 24, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 20794

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Site # 23736

Company Name:	JBS & G Australia (NSW) P/L	**Order No.:**		**Received:**	May 23, 2018 4:56 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	**Report #:**	599823	**Due:**	May 25, 2018
		Phone:	02 8245 0300	**Priority:**	2 Day
		Fax:		**Contact Name:**	Sahani Gunatunge
Project Name:	REDFERN DATA GAP				
Project ID:	54877				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Metals M8	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271						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	BH103 1.8-2.0	May 11, 2018		Soil	M18-My30659	X		X	X	X
2	BH101 1.2-1.4	May 11, 2018		Soil	M18-My30660	X		X	X	X
3	BH103 0.3-0.5	May 11, 2018		US Leachate	M18-My30661	X	X			
4	BH107 0.3-0.5	May 11, 2018		US Leachate	M18-My30662	X	X			
5	BH101 0.3-0.4	May 11, 2018		US Leachate	M18-My30663	X	X			
Test Counts						5	3	2	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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							
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							
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	%	80			70-130	Pass	
TRH C10-C14	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	102			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
TRH >C10-C16	%	90			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	88			70-130	Pass	
Acenaphthylene	%	90			70-130	Pass	
Anthracene	%	97			70-130	Pass	
Benz(a)anthracene	%	95			70-130	Pass	
Benzo(a)pyrene	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	%	89			70-130	Pass	
Benzo(g.h.i)perylene	%	87			70-130	Pass	
Benzo(k)fluoranthene	%	78			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a.h)anthracene	%	85			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	90			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	84			70-130	Pass	
Naphthalene	%	91			70-130	Pass	
Phenanthrene	%	76			70-130	Pass	
Pyrene	%	91			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	113			80-120	Pass	
Cadmium	%	112			80-120	Pass	
Chromium	%	120			80-120	Pass	
Copper	%	112			80-120	Pass	
Lead	%	117			80-120	Pass	
Mercury	%	96			75-125	Pass	
Nickel	%	111			80-120	Pass	
Zinc	%	110			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	M18-My26402	NCP	%	74			70-130	Pass	
TRH C10-C14	S18-My23957	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-My26402	NCP	%	95			70-130	Pass	
TRH C6-C10	M18-My26402	NCP	%	70			70-130	Pass	
TRH >C10-C16	S18-My23957	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-My26824	NCP	%	85			70-130	Pass	
Acenaphthylene	M18-My26824	NCP	%	94			70-130	Pass	
Anthracene	M18-My26824	NCP	%	76			70-130	Pass	
Benz(a)anthracene	M18-My26824	NCP	%	108			70-130	Pass	
Benzo(a)pyrene	M18-My26824	NCP	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	M18-My26824	NCP	%	91			70-130	Pass	
Benzo(g.h.i)perylene	M18-My26824	NCP	%	90			70-130	Pass	
Benzo(k)fluoranthene	M18-My26824	NCP	%	94			70-130	Pass	
Chrysene	M18-My26824	NCP	%	74			70-130	Pass	
Dibenz(a.h)anthracene	M18-My26824	NCP	%	73			70-130	Pass	
Fluoranthene	M18-My26824	NCP	%	101			70-130	Pass	
Fluorene	M18-My26824	NCP	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-My26824	NCP	%	75			70-130	Pass	
Naphthalene	M18-My26824	NCP	%	93			70-130	Pass	
Phenanthrene	M18-My26824	NCP	%	75			70-130	Pass	
Pyrene	M18-My26824	NCP	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-My29903	NCP	%	101			75-125	Pass	
Cadmium	M18-My29903	NCP	%	107			75-125	Pass	
Chromium	M18-My29903	NCP	%	53			75-125	Fail	Q08
Copper	M18-My29903	NCP	%	107			75-125	Pass	
Lead	M18-My29903	NCP	%	101			75-125	Pass	
Mercury	M18-My29903	NCP	%	88			70-130	Pass	
Nickel	M18-My29903	NCP	%	110			75-125	Pass	
Zinc	M18-My29903	NCP	%	109			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-My29746	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-My27193	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-My27193	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-My27193	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-My29746	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-My29746	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M18-My27193	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-My27193	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-My27193	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-My29267	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-My29903	NCP	mg/kg	10	10	1.0	30%	Pass	
Cadmium	M18-My29903	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-My29903	NCP	mg/kg	150	150	1.0	30%	Pass	
Copper	M18-My29903	NCP	mg/kg	33	33	2.0	30%	Pass	
Lead	M18-My29903	NCP	mg/kg	16	16	1.0	30%	Pass	
Mercury	M18-My29903	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-My29903	NCP	mg/kg	64	64	1.0	30%	Pass	
Zinc	M18-My29903	NCP	mg/kg	29	28	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-My30659	CP	%	13	13	4.0	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
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

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

National Operations 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 1254

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 **599823-L**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 23, 2018

Client Sample ID			**BH103 0.3-0.5**	**BH107 0.3-0.5**	**BH101 0.3-0.4**
Sample Matrix			**US Leachate**	**US Leachate**	**US Leachate**
Eurofins | mgt Sample No.			**M18-My30661**	**M18-My30662**	**M18-My30663**
Date Sampled			**May 11, 2018**	**May 11, 2018**	**May 11, 2018**
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	0.037	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	0.084	< 0.001	< 0.001
Anthracene	0.001	mg/L	0.017	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	0.007	< 0.001	< 0.001
Fluorene	0.001	mg/L	0.085	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	1.5	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	0.087	< 0.001	< 0.001
Pyrene	0.001	mg/L	0.006	< 0.001	< 0.001
Total PAH*	0.001	mg/L	1.823	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	107	109	125
p-Terphenyl-d14 (surr.)	1	%	95	117	129
USA Leaching Procedure					
Leachate Fluid[C01]		comment	1.0	1.0	1.0
pH (initial)	0.1	pH Units	8.4	8.4	8.6
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1
pH (off)	0.1	pH Units	7.3	5.6	7.8
pH (USA HCl addition)	0.1	pH Units	1.8	1.9	2.0

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 (regarding both quality and NATA accreditation).

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	Melbourne	May 24, 2018	7 Day

- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

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

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

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 599823
Phone: 02 8245 0300
Fax:

Received: May 23, 2018 4:56 PM
Due: May 25, 2018
Priority: 2 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Metals M8	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271						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	BH103 1.8-2.0	May 11, 2018		Soil	M18-My30659	X		X	X	X
2	BH101 1.2-1.4	May 11, 2018		Soil	M18-My30660	X		X	X	X
3	BH103 0.3-0.5	May 11, 2018		US Leachate	M18-My30661	X	X			
4	BH107 0.3-0.5	May 11, 2018		US Leachate	M18-My30662	X	X			
5	BH101 0.3-0.4	May 11, 2018		US Leachate	M18-My30663	X	X			
Test Counts						5	3	2	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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

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

Nibha Vaidya	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson
National Operations 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 | mgt 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 | mgt 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.

Enviro Sample Vic

From: Nibha Vaidya
Sent: Wednesday, 23 May 2018 6:23 PM
To: Enviro Sample Vic
Subject: **1 DAY TAT - FW: Eurofins | mgt Test Results - Report 598266 : Site REDFERN DATA GAP (54877)

Importance: High

Received: D JONES
Report:-

Additional TCLP please – 1 day TAT due tomorrow

Kind Regards,

Nibha Vaidya
Phone : +61 2 9900 8415
Mobile : +61 499 900 805
Email : NibhaVaidya@eurofins.com

From: Sahani Gunatunge [mailto:SGunatunge@jbsg.com.au]
Sent: Wednesday, 23 May 2018 4:56 PM
To: Nibha Vaidya
Subject: FW: Eurofins | mgt Test Results - Report 598266 : Site REDFERN DATA GAP (54877)

EXTERNAL EMAIL*

My18155 – HOLD
My18141 - HOLD

Hi Nibha,
Can I please request the following additional sampling on 24 hr TAT.

- Metals, TRH, PAHs in samples BH103 1.8-2.0 and BH101 1.2-1.4
- TCLP PAHs at samples BH103 0.3-0.5, BH107 0.3-0.5 and BH101 0.3-0.4

My18063
My18068
My18065

23|5
+ 56
598223

Thanks,
Sahani

Sahani Gunatunge | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong
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 | Environmental Approvals | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Stakeholder and Risk Management

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are free of viruses and the recipient is responsible for undertaking appropriate virus scanning. Any advice provided in or attached to this email is subject to limitations.

From: RobertJohnston@eurofins.com [mailto:RobertJohnston@eurofins.com]
Sent: Monday, 21 May 2018 6:43 PM
To: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Subject: Eurofins | mgt Test Results - Report 598266 : Site REDFERN DATA GAP (54877)

Hi Sahani,

Please find attached results for REDFERN DATA GAP (54877).

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 1254

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 **600767-S**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 30, 2018

Client Sample ID			**BH103 0.3-0.5**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**M18-My38457**
Date Sampled			**May 11, 2018**
Test/Reference	LOR	Unit	
TRH - 2013 NEPM Fractions (after silica gel clean-up)			
TRH >C10-C16 (after silica gel clean-up)	50	mg/kg	250
TRH >C16-C34 (after silica gel clean-up)	100	mg/kg	360
TRH >C34-C40 (after silica gel clean-up)	100	mg/kg	< 100
TRH - 1999 NEPM Fractions (after silica gel clean-up)			
TRH C10-C36 (Total) (after silica gel clean-up)	50	mg/kg	570
TRH C10-C14 (after silica gel clean-up)	20	mg/kg	170
TRH C15-C28 (after silica gel clean-up)	50	mg/kg	400
TRH C29-C36 (after silica gel clean-up)	50	mg/kg	< 50
% Moisture	1	%	8.3

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 (regarding both quality and NATA accreditation).

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
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Melbourne	May 30, 2018	14 Day
- Method: LM-LTM-ORG2010			
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	May 30, 2018	14 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A			
% Moisture	Melbourne	May 30, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

eurofins | mgt

ABN– 50 005 085 521
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web : www.eurofins.com.au

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2-5 Kingston Town Close
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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

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

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

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 600767
Phone: 02 8245 0300
Fax:

Received: May 30, 2018 3:28 PM
Due: May 31, 2018
Priority: 1 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						TRH (after Silica Gel cleanup)	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						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	BH103 0.3-0.5	May 11, 2018		Soil	M18-My38457	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

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2. All soil 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. This report replaces any interim results previously issued.

Holding Times

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

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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

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%: Percentage

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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.
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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.
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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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/kg	< 100			100	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/kg	< 100			100	Pass	
Method Blank							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	mg/kg	< 20			20	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/kg	< 50			50	Pass	
LCS - % Recovery							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	%	77			70-130	Pass	
LCS - % Recovery							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	%	78			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
TRH - 2013 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH >C10-C16 (after silica gel clean-up)	M18-My31501	NCP	%	110			70-130	Pass	
Spike - % Recovery									
TRH - 1999 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH C10-C14 (after silica gel clean-up)	M18-My31501	NCP	%	102			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
TRH - 2013 NEPM Fractions (after silica gel clean-up)				Result 1	Result 2	RPD			
TRH >C10-C16 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
TRH - 1999 NEPM Fractions (after silica gel clean-up)				Result 1	Result 2	RPD			
TRH C10-C36 (Total) (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C10-C14 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36 (after silica gel clean-up)	M18-My31500	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-My38457	CP	%	8.3	8.2	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

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson
National Operations 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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Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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Kewdale WA 6105
Phone : +61 8 9251 9600
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:	REDFERN DATA GAP
Project ID:	54877
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	May 30, 2018 3:28 PM
Eurofins | mgt reference:	**600767**

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 | mgt Sample Receipt : 9.3 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:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

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

Note: A copy of these results will also be delivered to the general JBS & G Australia (NSW) P/L email address.

Enviro Sample Vic

From: Nibha Vaidya
Sent: Wednesday, 30 May 2018 3:28 PM
To: Enviro Sample Vic
Cc: Asim Khan
Subject: 1 DAY TAT - FW: Additional Analysis

Additional Sil gel please – **1 day TAT**

Report 598266

Kind Regards,

Nibha Vaidya
Phone : +61 2 9900 8415
Mobile : +61 499 900 805
Email : NibhaVaidya@eurofins.com

From: Sahani Gunatunge [mailto:SGunatunge@jbsg.com.au]
Sent: Wednesday, 30 May 2018 3:08 PM
To: Nibha Vaidya
Subject: Additional Analysis

#600767

EXTERNAL EMAIL*

D.S. 11/5 30/05 3:28PM

Hi Nibha,
Can I please run BH103 0.3-0.5 (S18-My18065) from this batch for TRH with silica gel cleanup on 24 hr TAT.

->G793.

Regards,
Sahani

Chiara Benedetti

Sahani Gunatunge | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong
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 | Environmental Approvals | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Stakeholder and Risk Management

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are free of viruses and the recipient is responsible for undertaking appropriate virus scanning. Any advice provided in or attached to this email is subject to limitations.

From: NibhaVaidya@eurofins.com [mailto:NibhaVaidya@eurofins.com]
Sent: Friday, 25 May 2018 6:14 PM
To: Sahani Gunatunge <SGunatunge@jbsg.com.au>
Subject: Eurofins | mgt Test Results - Report 599823 : Site REDFERN DATA GAP (54877)

Dear Sahani,

Please find attached results for your project in the subject header.

Kind Regards,

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 1254

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 **599357-W**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 18, 2018

Client Sample ID			**BH1**	**BH3**	**BH4**	**BH106**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M18-My27149**	**M18-My27150**	**M18-My27151**	**M18-My27152**
Date Sampled			**May 18, 2018**	**May 18, 2018**	**May 18, 2018**	**May 18, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.04	< 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 C10-36 (Total)	0.1	mg/L	0.1	< 0.1	< 0.1	< 0.1
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001

Client Sample ID			BH1	BH3	BH4	BH106
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M18-My27149	M18-My27150	M18-My27151	M18-My27152
Date Sampled			May 18, 2018	May 18, 2018	May 18, 2018	May 18, 2018
Test/Reference	LOR	Unit				
Volatile Organics						
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Chloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.004	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Styrene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.002	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.006	< 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	%	87	90	61	89
Toluene-d8 (surr.)	1	%	92	91	64	94
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	< 0.04	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.04	< 0.02
TRH >C10-C16	0.05	mg/L	0.14	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.14	< 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
Polycyclic Aromatic Hydrocarbons (low level)						
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	0.00003	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	0.00003	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	0.00002	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001	0.00004	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	0.00003	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001	0.00005	< 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	< 0.00001	0.00009	< 0.00001

Client Sample ID			BH1	BH3	BH4	BH106
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M18-My27149	M18-My27150	M18-My27151	M18-My27152
Date Sampled			May 18, 2018	May 18, 2018	May 18, 2018	May 18, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons (low level)						
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	0.00003	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001	0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001	0.00004	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001	< 0.00001	0.00011	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00001	< 0.00001	0.00048	< 0.00001
2-Fluorobiphenyl (surr.)	1	%	70	66	111	68
p-Terphenyl-d14 (surr.)	1	%	93	105	148	85
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
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	0.019	0.058	0.001	0.030
Lead (filtered)	0.001	mg/L	0.001	0.005	< 0.001	0.002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.025	0.006	0.002	0.006
Zinc (filtered)	0.005	mg/L	0.12	0.16	0.024	0.14

Client Sample ID			BH107	TS	TB	QC01
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M18-My27153	M18-My27154	M18-My27155	M18-My27156
Date Sampled			May 18, 2018	May 18, 2018	May 18, 2018	May 18, 2018
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 C10-36 (Total)	0.1	mg/L	-	-	-	< 0.1
BTEX						
Comments				R20		
Benzene	0.001	mg/L	-	120	< 0.001	-
Toluene	0.001	mg/L	-	120	< 0.001	-
Ethylbenzene	0.001	mg/L	-	110	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	110	< 0.002	-
o-Xylene	0.001	mg/L	-	120	< 0.001	-
Xylenes - Total	0.003	mg/L	-	110	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	141	116	-
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	-	-	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	-	-	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	-	-	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	-	-	< 0.001

Client Sample ID			BH107	TS	TB	QC01
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M18-My27153	M18-My27154	M18-My27155	M18-My27156
Date Sampled			May 18, 2018	May 18, 2018	May 18, 2018	May 18, 2018
Test/Reference	LOR	Unit				
Volatile Organics						
1.2-Dichloropropane	0.001	mg/L	< 0.001	-	-	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	-	-	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	-	-	0.009
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	-	-	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	-	-	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	-	-	0.004
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	-	-	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001	-	-	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001	-	-	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001	-	-	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	-	-	< 0.001
Allyl chloride	0.001	mg/L	< 0.001	-	-	< 0.001
Benzene	0.001	mg/L	< 0.001	-	-	< 0.001
Bromobenzene	0.001	mg/L	< 0.001	-	-	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001	-	-	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	-	-	< 0.001
Bromoform	0.001	mg/L	< 0.001	-	-	< 0.001
Bromomethane	0.001	mg/L	< 0.001	-	-	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001	-	-	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	-	-	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	-	-	< 0.001
Chloroethane	0.001	mg/L	< 0.001	-	-	< 0.001
Chloroform	0.005	mg/L	< 0.005	-	-	< 0.005
Chloromethane	0.001	mg/L	< 0.001	-	-	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	-	-	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	-	-	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001	-	-	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	-	-	< 0.001
Iodomethane	0.001	mg/L	< 0.001	-	-	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001	-	-	< 0.001
o-Xylene	0.001	mg/L	< 0.001	-	-	< 0.001
Styrene	0.001	mg/L	< 0.001	-	-	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	-	-	< 0.001
Toluene	0.001	mg/L	< 0.001	-	-	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	-	-	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	-	-	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	-	-	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	-	-	< 0.003
Total MAH*	0.003	mg/L	< 0.003	-	-	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	-	-	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	-	-	< 0.005
4-Bromofluorobenzene (surr.)	1	%	81	-	-	101
Toluene-d8 (surr.)	1	%	87	-	-	111

Client Sample ID			BH107	TS	TB	QC01
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M18-My27153	M18-My27154	M18-My27155	M18-My27156
Date Sampled			May 18, 2018	May 18, 2018	May 18, 2018	May 18, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	-	-	-	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	-	-	0.04
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	-	-	0.04
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
Polycyclic Aromatic Hydrocarbons (low 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	%	-	-	-	55
p-Terphenyl-d14 (surr.)	1	%	-	-	-	84
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	-	-	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	-	-	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	-	-	0.002
Copper (filtered)	0.001	mg/L	0.060	-	-	< 0.001
Lead (filtered)	0.001	mg/L	0.004	-	-	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Nickel (filtered)	0.001	mg/L	0.006	-	-	0.003
Zinc (filtered)	0.005	mg/L	0.060	-	-	0.023

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 (regarding both quality and NATA accreditation).

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	May 23, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 23, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 23, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Melbourne	May 23, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Volatile Organics	Melbourne	May 23, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons	Melbourne	May 23, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons (low level)	Melbourne	May 23, 2018	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8 filtered	Melbourne	May 23, 2018	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 599357
Phone: 02 8245 0300
Fax:

Received: May 18, 2018 5:14 PM
Due: May 25, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						TRH C6-C10	Metals M8 filtered	BTEX	Volatile Organics	Total Recoverable Hydrocarbons	Polycyclic Aromatic Hydrocarbons (low level)
Melbourne Laboratory - NATA Site # 1254 & 14271						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	BH1	May 18, 2018		Water	M18-My27149		X		X	X	X
2	BH3	May 18, 2018		Water	M18-My27150		X		X	X	X
3	BH4	May 18, 2018		Water	M18-My27151		X		X	X	X
4	BH106	May 18, 2018		Water	M18-My27152		X		X	X	X
5	BH107	May 18, 2018		Water	M18-My27153	X	X		X		
6	TS	May 18, 2018		Water	M18-My27154			X			
7	TB	May 18, 2018		Water	M18-My27155			X			
8	QC01	May 18, 2018		Water	M18-My27156		X		X	X	X
Test Counts						1	6	2	6	5	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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 (low 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			0.00001	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	114			70-130	Pass	
TRH C10-C14	%	81			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	96			70-130	Pass	
m&p-Xylenes	%	91			70-130	Pass	
Xylenes - Total	%	92			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	81			70-130	Pass	
1.1.1-Trichloroethane	%	99			70-130	Pass	
1.2-Dichlorobenzene	%	103			70-130	Pass	
1.2-Dichloroethane	%	108			70-130	Pass	
Trichloroethene	%	92			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	107			70-130	Pass	
TRH C6-C10	%	120			70-130	Pass	
TRH >C10-C16	%	84			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (low level)							
Acenaphthene	%	91			70-130	Pass	
Acenaphthylene	%	80			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	104			70-130	Pass	
Benzo(a)pyrene	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	%	100			70-130	Pass	
Benzo(g.h.i)perylene	%	101			70-130	Pass	
Benzo(k)fluoranthene	%	99			70-130	Pass	
Chrysene	%	110			70-130	Pass	
Dibenz(a.h)anthracene	%	96			70-130	Pass	
Fluoranthene	%	94			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	98			70-130	Pass	
Naphthalene	%	77			70-130	Pass	
Phenanthrene	%	95			70-130	Pass	
Pyrene	%	98			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	92			80-120	Pass	
Cadmium (filtered)	%	94			80-120	Pass	
Chromium (filtered)	%	95			80-120	Pass	
Copper (filtered)	%	93			80-120	Pass	
Lead (filtered)	%	95			80-120	Pass	
Mercury (filtered)	%	100			70-130	Pass	
Nickel (filtered)	%	93			80-120	Pass	
Zinc (filtered)	%	92			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-My23948	NCP	%	73			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-My23948	NCP	%	73			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M18-My28504	NCP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	M18-My28504	NCP	%	75			70-130	Pass	
Chromium (filtered)	M18-My28504	NCP	%	84			70-130	Pass	
Copper (filtered)	M18-My28504	NCP	%	76			70-130	Pass	
Lead (filtered)	M18-My28504	NCP	%	80			70-130	Pass	
Mercury (filtered)	M18-My28504	NCP	%	72			70-130	Pass	
Nickel (filtered)	M18-My28504	NCP	%	81			70-130	Pass	
Zinc (filtered)	M18-My28504	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (low level)				Result 1					
Acenaphthene	M18-My27151	CP	%	84			70-130	Pass	
Acenaphthylene	M18-My27151	CP	%	77			70-130	Pass	
Anthracene	M18-My27151	CP	%	84			70-130	Pass	
Benz(a)anthracene	M18-My27151	CP	%	99			70-130	Pass	
Benzo(a)pyrene	M18-My27151	CP	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	M18-My27151	CP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	M18-My27151	CP	%	91			70-130	Pass	
Benzo(k)fluoranthene	M18-My27151	CP	%	92			70-130	Pass	
Chrysene	M18-My27151	CP	%	99			70-130	Pass	
Dibenz(a.h)anthracene	M18-My27151	CP	%	87			70-130	Pass	
Fluoranthene	M18-My27151	CP	%	90			70-130	Pass	
Fluorene	M18-My27151	CP	%	85			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-My27151	CP	%	89			70-130	Pass	
Naphthalene	M18-My27151	CP	%	74			70-130	Pass	
Phenanthrene	M18-My27151	CP	%	87			70-130	Pass	
Pyrene	M18-My27151	CP	%	94			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M18-My27914	NCP	%	104			70-130	Pass	
Toluene	M18-My27914	NCP	%	103			70-130	Pass	
Ethylbenzene	M18-My27914	NCP	%	97			70-130	Pass	
m&p-Xylenes	M18-My27914	NCP	%	96			70-130	Pass	
o-Xylene	M18-My27914	NCP	%	101			70-130	Pass	
Xylenes - Total	M18-My27914	NCP	%	97			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			
Arsenic (filtered)	M18-My28504	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M18-My28504	NCP	mg/L	0.0009	0.0009	2.0	30%	Pass	
Chromium (filtered)	M18-My28504	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M18-My28504	NCP	mg/L	0.001	< 0.001	8.0	30%	Pass	
Lead (filtered)	M18-My28504	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	M18-My28504	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M18-My28504	NCP	mg/L	0.11	0.11	1.0	30%	Pass	
Zinc (filtered)	M18-My28504	NCP	mg/L	0.28	0.28	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M18-My27150	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M18-My27150	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M18-My27150	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M18-My27150	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M18-My27150	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M18-My27150	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons (low level)				Result 1	Result 2	RPD			
Acenaphthene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Acenaphthylene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Anthracene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benz(a)anthracene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(a)pyrene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(k)fluoranthene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Chrysene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluoranthene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluorene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Naphthalene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Phenanthrene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Pyrene	M18-My27150	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-My25001	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S18-My25001	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S18-My25001	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S18-My25001	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S18-My25001	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S18-My25001	NCP	mg/L	< 0.003	< 0.003	<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.
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson
National Operations 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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08224

CHAIN OF CUSTODY

JBS&G

PROJECT NO: Redfern Data Gap
PROJECT NAME: No 54877
DATE NEEDED BY: Standard
PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) sgunatunga@jbsg.com.au (3) .....@jbsg.com.au

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	PAH (lowlevel)	TRH/VOC	Heavy metals *	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH1	Water	18/5/18				X	X	X				* dissolved metals.
BH3						X	X	X				
BH4						X	X	X				
BH106						X	X	X				
BH107						X	X	X				
TS							X	X				
TB									X			
QC01									X			
* QC01A						X	X	X				
						X	X	X				Please forward to Envirolab.

RELINQUISHED BY:
NAME: DATE: 18/05/2018
OF: JBS&G
NAME: DATE:
OF:

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO.
TRANSPORT CO.
CONSIGNMENT NOTE NO.
TRANSPORT CO

RECEIVED BY:
NAME: DATE: 18/05/18
OF: Envirolab Mgt
NAME: DATE: 21/5
OF:

FOR RECEIVING LAB USE ONLY:
COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
COOLER TEMP ..... deg C
COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
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

57935

3224

CHAIN OF CUSTODY

JBS&G

PROJECT NAME: Redfern Data Gap
PROJECT NO: 54877
DATE NEEDED BY: Standard
PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) ....sgunatunge....@jbsg.com.au (3) .....@jbsg.com.au
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	PAH (low level)	TRH/VOC	Heavy metals *	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH1	Water	18/5/18				X	X	X				* dissolved metals.
BH3						X	X	X				
BH4						X	X	X				
BH106						X	X	X				
BH107							X	X				
TS									X			
TB									X			
QC01						X	X	X				
QC01A						X	X	X				please forward to Envirolab

RELINQUISHED BY:
NAME: [signature] DATE: 18/05/2018
OF: JBS&G
NAME: DATE:
OF:

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO.
TRANSPORT CO.
CONSIGNMENT NOTE NO.
TRANSPORT CO

RECEIVED BY:
NAME: [illegible] DATE: 18/05/18
OF: Envirolab
NAME: DATE:
OF:

FOR RECEIVING LAB USE ONLY:
COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
COOLER TEMP ..... deg C
COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
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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CERTIFICATE OF ANALYSIS 13858

Client Details

Client	JBS & G Australia Pty Ltd
Attention	S Gunatunge
Address	1/50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**54877**
Number of Samples	1 Water
Date samples received	23/05/2018
Date completed instructions received	23/05/2018

Analysis Details

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

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

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

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

Report Details

Date results requested by	30/05/2018
Date of Issue	30/05/2018

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Results Approved By
Pamela Adams, Laboratory Manager, Melbourne

Authorised By



Pamela Adams, Laboratory Manager

VOCs in water		
Our Reference		13858-1
Your Reference	UNITS	QC01A
Date Sampled		18/05/2018
Type of sample		Water
Date extracted	-	24/05/2018
Date analysed	-	24/05/2018
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
Bromoform	µg/L	<1

VOCs in water		
Our Reference		13858-1
Your Reference	UNITS	QC01A
Date Sampled		18/05/2018
Type of sample		Water
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	3
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	6
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	%	109
Surrogate toluene-d8	%	104
Surrogate 4-BFB	%	92

vTRH(C6-C10)/BTEXN in Water		
Our Reference		13858-1
Your Reference	UNITS	QC01A
Date Sampled		18/05/2018
Type of sample		Water
Date extracted	-	24/05/2018
Date analysed	-	24/05/2018
TRH C_6 - C_9	µg/L	10
TRH C_6 - C_{10}	µg/L	25
TRH C_6 - C_{10} less BTEX (F1)	µg/L	25
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	<1
Surrogate Dibromofluoromethane	%	106
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	94

TRH Water(C10-C40) NEPM		
Our Reference		13858-1
Your Reference	UNITS	QC01A
Date Sampled		18/05/2018
Type of sample		Water
Date extracted	-	28/05/2018
Date analysed	-	28/05/2018
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	%	88

PAHs in Water - Low Level		
Our Reference	UNITS	13858-1
Your Reference		QC01A
Date Sampled		18/05/2018
Type of sample		Water
Date extracted	-	28/05/2018
Date analysed	-	29/05/2018
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
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
Total +ve PAH's	µg/L	NIL (+)VE PAH
Benzo(a)pyrene TEQ	µg/L	<0.5
Surrogate p-Terphenyl-d_{14}	%	90

HM in water - dissolved		
Our Reference		13858-1
Your Reference	UNITS	QC01A
Date Sampled		18/05/2018
Type of sample		Water
Date prepared	-	25/05/2018
Date analysed	-	25/05/2018
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	13
Lead-Dissolved	µg/L	2
Nickel-Dissolved	µg/L	4
Zinc-Dissolved	µg/L	39
Mercury-Dissolved	µg/L	<0.05

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-022 ICP-MS	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. 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-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater 2013.
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. 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: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/05/2018	[NT]	[NT]	[NT]	[NT]	24/05/2018	[NT]
Date analysed	-			24/05/2018	[NT]	[NT]	[NT]	[NT]	24/05/2018	[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]	96	[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]	104	[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]	108	[NT]
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	100	[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]	102	[NT]
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	99	[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]	100	[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]	108	[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]
o-xylene	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-1	[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	110	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate toluene-d8	%		Org-013	103	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate 4-BFB	%		Org-013	94	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/05/2018	[NT]	[NT]	[NT]	[NT]	24/05/2018	[NT]
Date analysed	-			24/05/2018	[NT]	[NT]	[NT]	[NT]	24/05/2018	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	95	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Surrogate Dibromofluoromethane	%		Org-016	107	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-016	96	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: TRH Water(C10-C40) NEPM						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			28/05/2018	[NT]	[NT]	[NT]	[NT]	28/05/2018	[NT]
Date analysed	-			28/05/2018	[NT]	[NT]	[NT]	[NT]	28/05/2018	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	122	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	122	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate o-Terphenyl	%		Org-003	89	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PAHs in Water - Low Level					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			28/05/2018	[NT]	[NT]	[NT]	[NT]	28/05/2018	[NT]
Date analysed	-			29/05/2018	[NT]	[NT]	[NT]	[NT]	29/05/2018	[NT]
Naphthalene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Acenaphthylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Acenaphthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Phenanthrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzo(b,j&k)fluoranthene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-012	96	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			25/05/2018	[NT]	[NT]	[NT]	[NT]	25/05/2018	[NT]
Date analysed	-			25/05/2018	[NT]	[NT]	[NT]	[NT]	25/05/2018	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	[NT]	[NT]	94	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Metals analysed by Envirolab Sydney. Report number 192421.

3224

CHAIN OF CUSTODY

11.30

JBS&G

PROJECT NO: Redfern Data Gap
PROJECT NAME: No 54877
DATE NEEDED BY: Standard
LABORATORY BATCH NO.:
SAMPLERS: SG
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) ....sgunatunga....@jbsg.com.au (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	PAH (low level)	TRH/VOC	Heavy metals	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
BH1	Water	18/5/18				X	X	X				* dissolved metals.
BH3	↓	↓				X	X	X				
BH4						X	X	X				
BH106						X	X	X				
BH107							X	X				
TS									X			
TB									X			
QC01						X	X	X				
QC01A						X	X	X				Please forward to Envirolab.

ENVIROLAB
Envirolab Services
16 Dalmore Drive
Caribbean Park
Scoresby VIC 3179
Ph: (03) 9763 2500

Job No: 13858
Date Received: 11.30
Time Received: 23/5/18
Received by:
Temp: Cool/Ambient
Cooling: Icepack
Security: Intact/Broken/None

9.4°C

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DJ DATE: 18/05/2018 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: 18/05/18 OF: Eurofins MGT	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: D JONES DATE: 23/5/18 8:00am OF: EUROFINS/MGT	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... 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

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 1254

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 **598489-TO**
Project name REDFERN DATA GAP
Project ID 54877
Received Date May 14, 2018

Client Sample ID			**SV06 (FRONT)**	**SV05 (FRONT)**	**SV02 (FRONT)**	**SV09 (FRONT)**
Sample Matrix			**Absorbent Tube**	**Absorbent Tube**	**Absorbent Tube**	**Absorbent Tube**
Eurofins | mgt Sample No.			**M18-My19618**	**M18-My19619**	**M18-My19620**	**M18-My19621**
Date Sampled			**May 14, 2018**	**May 14, 2018**	**May 14, 2018**	**May 14, 2018**
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
Isopropanol	10	Total ug	< 10	< 10	< 10	< 10
VOCs in Ambient Air by GC/MS						
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	2.9
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV06 (FRONT)	SV05 (FRONT)	SV02 (FRONT)	SV09 (FRONT)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19618	M18-My19619	M18-My19620	M18-My19621
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	0.5	%	108	106	119	118
4-Bromofluorobenzene (surr.)	0.5	%	93	89	99	99
Dibromofluoromethane (surr.)	1	%	115	112	125	123
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10	10	Total ug	< 10	< 10	< 10	< 10
TRH >C10-C16	10	Total ug	< 10	< 10	< 10	< 10

Client Sample ID			SV07 (FRONT)	DUP1 (FRONT)	EB (FRONT)	FB (FRONT)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19622	M18-My19623	M18-My19624	M18-My19625
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
Isopropanol	10	Total ug	< 10	< 10	< 10	< 10
VOCs in Ambient Air by GC/MS						
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV07 (FRONT)	DUP1 (FRONT)	EB (FRONT)	FB (FRONT)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19622	M18-My19623	M18-My19624	M18-My19625
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	0.5	%	119	114	131	131
4-Bromofluorobenzene (surr.)	0.5	%	97	96	101	103
Dibromofluoromethane (surr.)	1	%	124	120	137	137
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV07 (FRONT)	DUP1 (FRONT)	EB (FRONT)	FB (FRONT)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19622	M18-My19623	M18-My19624	M18-My19625
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10	10	Total ug	< 10	< 10	< 10	< 10
TRH >C10-C16	10	Total ug	< 10	< 10	< 10	< 10

Client Sample ID			SV06 (BACK)	SV05 (BACK)	SV02 (BACK)	SV09 (BACK)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19626	M18-My19627	M18-My19628	M18-My19629
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
Isopropanol	10	Total ug	< 10	< 10	< 10	< 10
VOCs in Ambient Air by GC/MS						
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV06 (BACK)	SV05 (BACK)	SV02 (BACK)	SV09 (BACK)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19626	M18-My19627	M18-My19628	M18-My19629
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	0.5	%	108	117	118	116
4-Bromofluorobenzene (surr.)	0.5	%	86	92	94	93
Dibromofluoromethane (surr.)	1	%	112	120	121	119
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10	10	Total ug	< 10	< 10	< 10	< 10
TRH >C10-C16	10	Total ug	< 10	< 10	< 10	< 10

Client Sample ID			SV07 (BACK)	DUP1 (BACK)	EB (BACK)	FB (BACK)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19630	M18-My19631	M18-My19632	M18-My19633
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
Isopropanol	10	Total ug	< 10	< 10	< 10	< 10
VOCs in Ambient Air by GC/MS						
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV07 (BACK)	DUP1 (BACK)	EB (BACK)	FB (BACK)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19630	M18-My19631	M18-My19632	M18-My19633
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	0.5	%	128	126	131	118
4-Bromofluorobenzene (surr.)	0.5	%	101	101	104	92
Dibromofluoromethane (surr.)	1	%	133	131	135	121
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SV07 (BACK)	DUP1 (BACK)	EB (BACK)	FB (BACK)
Sample Matrix			Absorbent Tube	Absorbent Tube	Absorbent Tube	Absorbent Tube
Eurofins | mgt Sample No.			M18-My19630	M18-My19631	M18-My19632	M18-My19633
Date Sampled			May 14, 2018	May 14, 2018	May 14, 2018	May 14, 2018
Receipt Vac./Pressure (mmHg)						
Final Pressure (psi)						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10	10	Total ug	< 10	< 10	< 10	< 10
TRH >C10-C16	10	Total ug	< 10	< 10	< 10	< 10

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 (regarding both quality and NATA accreditation).

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
Isopropanol	Melbourne	May 15, 2018	14 Days
VOCs in Ambient Air by GC/MS	Melbourne	May 15, 2018	14 Day
- Method: LTM-ORG-2030 VOCs in Ambient Air by GC/MS			
VOC AIR-TRH (Total Recoverable Hydrocarbons)			
Total Recoverable Hydrocarbons	Melbourne	May 15, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
TRH >C10-C16	Melbourne	May 15, 2018	7 Day
- Method: MGT 100A			

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Site # 23736

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Address: Level 1, 50 Margaret St
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NSW 2000

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598489
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:00 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Isopropanol	VOC AIR-TRH (Total Recoverable Hydrocarbons)	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271						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	SV06 (FRONT)	May 14, 2018		Absorbent Tube	M18-My19618	X	X	X
2	SV05 (FRONT)	May 14, 2018		Absorbent Tube	M18-My19619	X	X	X
3	SV02 (FRONT)	May 14, 2018		Absorbent Tube	M18-My19620	X	X	X
4	SV09 (FRONT)	May 14, 2018		Absorbent Tube	M18-My19621	X	X	X
5	SV07 (FRONT)	May 14, 2018		Absorbent Tube	M18-My19622	X	X	X
6	DUP1	May 14, 2018		Absorbent	M18-My19623	X	X	X

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NATA # 1261
Site # 23736

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

Project Name: REDFERN DATA GAP
Project ID: 54877

Order No.:
Report #: 598489
Phone: 02 8245 0300
Fax:

Received: May 14, 2018 5:00 PM
Due: May 21, 2018
Priority: 5 Day
Contact Name: Sahani Gunatunge

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Isopropanol	VOC AIR-TRH (Total Recoverable Hydrocarbons)	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
	(FRONT)			Tube				
7	EB (FRONT)	May 14, 2018		Absorbent Tube	M18-My19624	X	X	X
8	FB (FRONT)	May 14, 2018		Absorbent Tube	M18-My19625	X	X	X
9	SV06 (BACK)	May 14, 2018		Absorbent Tube	M18-My19626	X	X	X
10	SV05 (BACK)	May 14, 2018		Absorbent Tube	M18-My19627	X	X	X
11	SV02 (BACK)	May 14, 2018		Absorbent Tube	M18-My19628	X	X	X
12	SV09 (BACK)	May 14, 2018		Absorbent Tube	M18-My19629	X	X	X
13	SV07 (BACK)	May 14, 2018		Absorbent	M18-My19630	X	X	X

ABN– 50 005 085 521
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NATA # 1261 Site # 20794

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NATA # 1261
Site # 23736

Company Name:	JBS & G Australia (NSW) P/L	**Order No.:**		**Received:**	May 14, 2018 5:00 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	**Report #:**	598489	**Due:**	May 21, 2018
		Phone:	02 8245 0300	**Priority:**	5 Day
		Fax:		**Contact Name:**	Sahani Gunatunge
Project Name:	REDFERN DATA GAP				
Project ID:	54877				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Isopropanol	VOC AIR-TRH (Total Recoverable Hydrocarbons)	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
				Tube				
14	DUP1 (BACK)	May 14, 2018		Absorbent Tube	M18-My19631	X	X	X
15	EB (BACK)	May 14, 2018		Absorbent Tube	M18-My19632	X	X	X
16	FB (BACK)	May 14, 2018		Absorbent Tube	M18-My19633	X	X	X
Test Counts						16	16	16

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. Dilutions are performed on samples due to the presence of high level target species or the presence of high level non-target species.
3. Results are uncorrected for surrogate recoveries.
4. All QC limit exceedances and affected sample results are noted by flags. Each qualifying flag is defined below in section entitled 'Definition of Data Qualifying Flags' and additionally on individual sample results (where relevant).
5. "100% certification" is defined as evaluating the sampling system with humid zero air/N2 and humid calibration gases that pass through all active components of the sampling system. The system is "100% certified" if no significant additions or deletions (less than 0.2 ppbv each of target compounds) have occurred when challenged with the test gas stream.
6. The conversion equation from ppbv to g/m3 uses a temperature of 25 °C and an ambient sea level atmospheric pressure of 1 atmosphere (101.325 kPa) is assumed.
7. All canister samples are only analysed once temperature equilibrium with the laboratory has been achieved.
8. Safe Sampling Volume (SSV) - calculated by taking two-thirds of the breakthrough volume (direct method) and Appendix 1 of Method T0-17.
9. Samples were analysed on an 'as received' basis.
10. This report replaces any interim results previously issued.

Definition of Data Qualifying Flags

Qualifiers may have been used on the data analysis sheets and indicates as follows:

A01 Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
A02 Estimated value.
A03 Exceeds instrument calibration range.
A04 Saturated peak.
A05 Exceeds quality control limits.
A06 Compound analysed for but not detected above the Limit of Reporting (LOR). See data page for project specific U-flag definition.
A07 Non-detected compound associated with low bias in the CCV.
A08 The identification is based on presumptive evidence.
A09 SSV has been exceeded for this compound. It is likely that this compound has been underestimated.
A10 LORs cited do not take into account sample dilution due to canister pressurisation.
A11 Naphthalene elutes outside the >C10-C12 range on the system used for sample analysis. As a result, >C10-C12 TRH value is equivalent to the modified F2 value.

Holding Times

Under conditions of normal usage for sampling ambient air, most Volatile Organic Compounds (VOCs) can be recovered from canisters near their original concentrations after storage times of up to thirty days. For thermal desorption tubes (TDT) samples should be refrigerated at <4°C in a clean environment during storage and analysed within 30 days of sample collection (within one week for limonene, carene, bis-chloromethyl ether and labile sulfur or nitrogen containing volatiles).

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

ppbv: parts per billion by volume
ug/m3: micrograms per cubic metre
kPa: kilopascal
psig: pounds per square inch gauge

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Isopropanol	Total ug	< 10			10	Pass	
Method Blank							
VOCs in Ambient Air by GC/MS							
Naphthalene	Total ug	< 0.5			0.5	Pass	
1.1-Dichloroethane	Total ug	< 0.5			0.5	Pass	
1.1-Dichloroethene	Total ug	< 0.5			0.5	Pass	
1.1-Dichloropropene	Total ug	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	Total ug	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	Total ug	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	Total ug	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	Total ug	< 0.5			0.5	Pass	
1.2-Dibromo-3-chloropropane	Total ug	< 0.5			0.5	Pass	
1.2-Dibromoethane	Total ug	< 0.5			0.5	Pass	
1.2-Dichloroethane	Total ug	< 0.5			0.5	Pass	
1.2-Dichloropropane	Total ug	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	Total ug	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	Total ug	< 0.5			0.5	Pass	
1.3-Dichloropropane	Total ug	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	Total ug	< 0.5			0.5	Pass	
2-Chlorotoluene	Total ug	< 0.5			0.5	Pass	
2.2-Dichloropropane	Total ug	< 0.5			0.5	Pass	
4-Chlorotoluene	Total ug	< 0.5			0.5	Pass	
Benzene	Total ug	< 0.5			0.5	Pass	
Bromochloromethane	Total ug	< 0.5			0.5	Pass	
Bromodichloromethane	Total ug	< 0.5			0.5	Pass	
Bromoform	Total ug	< 0.5			0.5	Pass	
Carbon Tetrachloride	Total ug	< 0.5			0.5	Pass	
Chlorobenzene	Total ug	< 0.5			0.5	Pass	
Chloroform	Total ug	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	Total ug	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	Total ug	< 0.5			0.5	Pass	
Dibromochloromethane	Total ug	< 0.5			0.5	Pass	
Dibromomethane	Total ug	< 0.5			0.5	Pass	
Ethylbenzene	Total ug	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	Total ug	< 0.5			0.5	Pass	
n-Butylbenzene	Total ug	< 0.5			0.5	Pass	
n-Propylbenzene	Total ug	< 0.5			0.5	Pass	
p-Isopropyltoluene	Total ug	< 0.5			0.5	Pass	
sec-Butylbenzene	Total ug	< 0.5			0.5	Pass	
Styrene	Total ug	< 5			5	Pass	
tert-Butylbenzene	Total ug	< 0.5			0.5	Pass	
Tetrachloroethene	Total ug	< 0.5			0.5	Pass	
Toluene	Total ug	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	Total ug	< 0.5			0.5	Pass	
Trichloroethene	Total ug	< 0.5			0.5	Pass	
Trichlorofluoromethane	Total ug	< 0.5			0.5	Pass	
Vinyl chloride	Total ug	< 0.5			0.5	Pass	
Xylenes - Total	Total ug	< 1.5			1.5	Pass	
1.2-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.2.3-Trichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	Total ug	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.3-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	
Hexachlorobutadiene	Total ug	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	Total ug	< 10			10	Pass	
TRH >C10-C16	Total ug	< 10			10	Pass	
LCS - % Recovery							
VOCs in Ambient Air by GC/MS							
1.1-Dichloroethene	%	96			70-130	Pass	
1.1-Dichloropropene	%	83			70-130	Pass	
1.1.1-Trichloroethane	%	117			70-130	Pass	
1.2-Dibromo-3-chloropropane	%	108			75-125	Pass	
1.2-Dichloroethane	%	99			70-130	Pass	
Benzene	%	126			70-130	Pass	
Ethylbenzene	%	83			70-130	Pass	
Toluene	%	81			70-130	Pass	
Trichloroethene	%	126			70-130	Pass	
Xylenes - Total	%	78			70-130	Pass	
1.2-Dichlorobenzene	%	93			70-130	Pass	
1.2.3-Trichlorobenzene	%	84			70-130	Pass	
1.2.4-Trichlorobenzene	%	84			70-130	Pass	
1.4-Dichlorobenzene	%	96			70-130	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

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson
National Operations 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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08223

CHAIN OF CUSTODY

PROJECT NO.: Redfern Data Gap
PROJECT NAME: 54877
DATE NEEDED BY: Standard.

LABORATORY BATCH NO.:
SAMPLERS: SG
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) sgunasinge@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	* VOC	TRH	Isopropanol/ alcohol	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
SV06	Carbon tube		14/5/18.			X	X	X			* 8260 M
SV05	↓					↓	↓	↓			
SV02											
SV09											
SV07											
Dup 1											
EB											
FB											

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 14/5/18.	CONSIGNMENT NOTE NO.	NAME: DATE: 14/05/18	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	OF: Eurofins mgt	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: CANH TO DATE: 15/05	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF: EF/MGT #548489	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 = Othe

Appendix F Detailed ESDAT Quality Assurance / Quality Control

Field Duplicates (SOIL)	SDG	598266	598266		598266	ENVIROLAB 2018-05-14T00:00:00	
Filter: ALL	Field ID	BH107 0.8-1.0	QC01	RPD	BH107 0.8-1.0	QC01A	RPD
	Sampled Date/Time	11/05/2018	11/05/2018		11/05/2018	11/05/2018	

Chem_Gro	ChemNam	Units	EQL						
EPA VIC IV	Organochl	mg/kg	0.1	<0.1	<0.1	0	<0.1		
	Other Orga	mg/kg	0.1	<0.1	<0.1	0	<0.1		
VRG621 (Lab)									
Metals & M	Arsenic (To	mg/kg	2 (Primary): 4 (Interlab)	3.3	<2.0	49	3.3	<4.0	0
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium	mg/kg	5 (Primary): 1 (Interlab)	**9.1**	**5.2**	**55**	**9.1**	**2.0**	**128**
	Copper	mg/kg	5 (Primary): 1 (Interlab)	**40.0**	**9.7**	**122**	**40.0**	**6.0**	**148**
	Lead	mg/kg	5 (Primary): 1 (Interlab)	**140.0**	**64.0**	**75**	**140.0**	**49.0**	**96**
	Mercury (Ir	mg/kg	0.1	**1.2**	**0.3**	**120**	**1.2**	**<0.1**	**169**
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	16.0	15.0	6	**16.0**	**3.0**	**137**
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	260.0	290.0	11	**260.0**	**21.0**	**170**
etalloids									
TPHs (NEF	C6-C9 Fra	mg/kg	20 (Primary): 25 (Interlat	<20.0	<20.0	0	<20.0	<25.0	0
	C10-C14 F	mg/kg	20 (Primary): 50 (Interlat	<20.0	<20.0	0	<20.0	<50.0	0
	C15-C28 F	mg/kg	50 (Primary): 100 (Interla	**250.0**	**<50.0**	**133**	**250.0**	**<100.0**	**86**
	C29-C36 F	mg/kg	50 (Primary): 100 (Interla	**160.0**	**<50.0**	**105**	160.0	<100.0	46
	C10-C36 F	mg/kg	50	**410.0**	**<50.0**	**157**	410.0		
C 1999)									
TRHs (NEF	>C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	>C16-C34	mg/kg	100	**320.0**	**<100.0**	**105**	**320.0**	**<100.0**	**105**
	>C34-C40	mg/kg	100	110.0	<100.0	10	110.0	<100.0	10
	>C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 Fra	mg/kg	20 (Primary): 25 (Interlat	<20.0	<20.0	0	<20.0	<25.0	0
	C6-C10 les	mg/kg	20 (Primary): 25 (Interlat	<20.0	<20.0	0	<20.0	<25.0	0
C 2013)									
BTEX	Benzene	mg/kg	0.1 (Primary): 0.2 (Interla	**0.3**	**<0.1**	**100**	0.3	<0.2	40
	Ethylbenze	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 (Interla	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 (To	mg/kg	0.3 (Primary): 1 (Interlab	<0.3	<0.3	0	<0.3	<1.0	0
Polycyclic A	Acenaphth	mg/kg	0.5 (Primary): 0.1 (Interla	<0.5	<0.5	0	<0.5	0.1	0
	Acenaphth	mg/kg	0.5 (Primary): 0.1 (Interla	<0.5	<0.5	0	<0.5	0.2	0
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interla	**0.9**	**<0.5**	**57**	0.9	1.0	11
	Benz(a)ant	mg/kg	0.5 (Primary): 0.1 (Interla	**3.8**	**<0.5**	**153**	3.8	4.0	5
	Benzo(a)py	mg/kg	0.5 (Primary): 0.05 (Inter	**3.3**	**<0.5**	**147**	3.3	3.2	3
	Benzo(a)py	mg/kg	0.5	**5.3**	**<0.5**	**166**	5.3	4.6	14
	Benzo(a)py	mg/kg	0.5	**5.3**	**0.6**	**159**	5.3	4.6	14
	Benzo(a)py	mg/kg	0.5	**5.3**	**1.2**	**126**	5.3	4.6	14
	Benzo(b,j)f	mg/kg	0.5	**2.4**	**<0.5**	**131**	2.4		
	Benzo(g,h,	mg/kg	0.5 (Primary): 0.1 (Interla	**2.5**	**<0.5**	**133**	2.5	1.6	44
	Benzo(k)flu	mg/kg	0.5	**2.5**	**<0.5**	**133**	2.5		
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interla	**3.2**	**<0.5**	**146**	3.2	3.0	6
	Dibenz(a,h	mg/kg	0.5 (Primary): 0.1 (Interla	**0.9**	**<0.5**	**57**	**0.9**	**0.3**	**100**
	Fluoranthe	mg/kg	0.5 (Primary): 0.1 (Interla	**6.0**	**<0.5**	**169**	6.0	7.4	21
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interla	<0.5	<0.5	0	<0.5	<0.1	0
	Indeno(1,2	mg/kg	0.5 (Primary): 0.1 (Interla	**1.8**	**<0.5**	**113**	1.8	1.6	12
	Naphthaler	mg/kg	0.5 (Primary): 1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Naphthaler	mg/kg	0.5 (Primary): 1 (Interlab	<0.5	<0.5	0	<0.5	<0.1	0
	Phenanthre	mg/kg	0.5 (Primary): 0.1 (Interla	**3.0**	**<0.5**	**143**	3.0	2.6	14
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interla	**6.3**	**<0.5**	**171**	6.3	8.2	26
	PAHs (Tota	mg/kg	0.5	**36.6**	**<0.5**	**195**	36.6		
Aromatic Hydrocarbons									
Chlorinated	Hexachlorc	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
l Benzenes									
Polychlorin	Aroclor 101	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 122	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 123	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 124	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 124	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 125	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Aroclor 126	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	PCBs (Tota	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
ated Biphenyls									
Organochl	4,4-DDE	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Aldrin	mg/kg	0.05 (Primary): 0.1 (Inter	<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 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	beta-BHC	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1		
	Dieldrin	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	DDD	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	DDT	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	DDT+DDE	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	delta-BHC	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Endrin alde	mg/kg	0.05 (Primary): 0.1 (Inter	<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 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Heptachlor	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Lindane	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Methoxych	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0
	Toxaphene	mg/kg	1	<1.0	<1.0	0	<1.0		
rine Pesticides									
Other	% Moisture	%	1	**9.1**	**4.9**	**60**	9.1		

*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: 50 (1-20 x EQL); 50 (20-30 x EQL); 50 (> 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

Field Duplicates (WATER)	SDG	599357	599357		599357	ENVIROLAB 2018-05-23T00:00:00	
Filter: ALL	Field ID	BH4	QC01	RPD	BH4	QC01A	RPD
	Sampled Date/Time	18/05/2018	18/05/2018		18/05/2018	18/05/2018	

Chem_Gro	ChemNam	Units	EQL						
EPA VIC IV	Chlorinated	µg/l	5	<5.0	<5.0	0	<5.0		
	Other Chlo	µg/l	5	<5.0	<5.0	0	<5.0		
VRG621 (Lab)									
VOC	Total MAH	mg/l	0.003	<0.003	<0.003	0	<0.003		
Metals & M	Arsenic (To	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
	Cadmium (	mg/l	0.0002 (Primary): 0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0
	Chromium	mg/l	0.001	**<0.001**	**0.002**	**67**	<0.001	<0.001	0
	Copper (Fi	mg/l	0.001	0.001	<0.001	0	**0.001**	**0.013**	**171**
	Lead (Filte	mg/l	0.001	<0.001	<0.001	0	**<0.001**	**0.002**	**67**
	Mercury (Ir	mg/l	0.0001 (Primary): 0.0000	<0.0001	<0.0001	0	<0.0001	<0.0001	0
	Nickel (Filt	mg/l	0.001	0.002	0.003	40	**0.002**	**0.004**	**67**
	Zinc (Filter	mg/l	0.005 (Primary): 0.001 (	0.024	0.023	4	0.024	0.039	48
etalloids									
Chlorinated	1,1,1,2-tetr	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,1,1-trichl	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,1,2,2-tetr	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,1,2-trichl	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,1-dichlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,2,3-trichl	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,2-dichlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,2-dichlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	1,3-dichlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Bromochlo	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Carbon tet	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Chloroetha	mg/l	0.001 (Primary): 0.01 (Ir	<0.002	<0.001	0	<0.002	<0.01	0
	Chlorometh	mg/l	0.001 (Primary): 0.01 (Ir	<0.002	<0.001	0	<0.002	<0.01	0
	Dichlorodifl	mg/l	0.001 (Primary): 0.01 (Ir	<0.002	<0.001	0	<0.002	<0.01	0
	Dichlorome	mg/l	0.001	<0.002	<0.001	0	<0.002		
	Trichlorofluo	mg/l	0.001 (Primary): 0.01 (Ir	<0.002	<0.001	0	<0.002	<0.01	0
l Alkanes									
Chlorinated	1,1-dichlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	3-chloropro	mg/l	0.001	<0.002	<0.001	0	<0.002		
	4-chlorotol	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	cis-1,2-dich	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	cis-1,3-dich	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Tetrachlor	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	trans-1,2-d	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	trans-1,3-d	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Trichloroet	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Vinyl Chlor	mg/l	0.001 (Primary): 0.01 (Ir	<0.002	<0.001	0	<0.002	<0.01	0
l Alkenes									
Trihalomet	Bromodich	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Chloroform	mg/l	0.005 (Primary): 0.001 (	<0.005	<0.005	0	<0.005	0.001	0
	Dibromoch	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Tribromom	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
anes									
TPHs (NEI	C6-C9 Fra	mg/l	0.02 (Primary): 0.01 (Int	<0.04	<0.02	0	<0.04	0.01	0
	C10-C14 F	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	C15-C28 F	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	C29-C36 F	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	C10-C36 F	mg/l	0.1	<0.1	<0.1	0	<0.1		
C 1999)									
TRHs (NEI	>C10-C16	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	>C16-C34	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	>C34-C40	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	>C10-C16	mg/l	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	C6-C10 Fra	mg/l	0.02 (Primary): 0.01 (Int	<0.04	0.04	0	<0.04	0.025	0
	C6-C10 les	mg/l	0.02 (Primary): 0.01 (Int	<0.04	0.04	0	<0.04	0.025	0
C 2013)									
BTEX	Benzene	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Ethylbenze	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Toluene	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Xylene (o)	mg/l	0.001	<0.002	<0.001	0	<0.002	<0.001	0
	Xylene (m	mg/l	0.002	<0.004	<0.002	0	<0.004	<0.002	0
	Xylene (To	mg/l	0.003	<0.006	<0.003	0	<0.006		
Polycyclic A	Acenaphth	mg/l	0.00001 (Primary): 0.000	<0.0	<0.0	0	<0.0	<0.0001	0
	Acenaphth	mg/l	0.00001 (Primary): 0.000	<0.0	<0.0	0	<0.0	<0.0001	0
	Anthracene	mg/l	0.00001 (Primary): 0.000	<0.0	<0.0	0	<0.0	<0.0001	0
	Benz(a)ant	mg/l	0.00001 (Primary): 0.000	**0.0**	**<0.0**	**100**	0.0	<0.0001	0
	Benzo(a)py	mg/l	0.00001 (Primary): 0.000	**0.0**	**<0.0**	**100**	0.0	<0.0001	0
	Benzo(b,j)f	mg/l	0.00001	**0.0**	**<0.0**	**67**	0.0		
	Benzo(g,h,	mg/l	0.00001 (Primary): 0.000	**0.0**	**<0.0**	**120**	0.0	<0.0001	0
	Benzo(k)flu	mg/l	0.00001	**0.0**	**<0.0**	**100**	0.0		
	Chrysene	mg/l	0.00001 (Primary): 0.000	**0.0001**	**<0.0**	**133**	0.0001	<0.0001	0
	Dibenz(a,h	mg/l	0.00001 (Primary): 0.000	<0.0	<0.0	0	<0.0	<0.0001	0
	Fluoranthe	mg/l	0.00001 (Primary): 0.000	**0.0001**	**<0.0**	**160**	0.0001	<0.0001	0
	Fluorene	mg/l	0.00001 (Primary): 0.000	<0.0	<0.0	0	<0.0	<0.0001	0
	Indeno(1,2	mg/l	0.00001 (Primary): 0.000	**0.0**	**<0.0**	**100**	0.0	<0.0001	0
	Naphthaler	mg/l	0.01 (Primary): 0.001 (Ir	<0.01	<0.01	0	<0.01	<0.0001	0
	Naphthaler	mg/l	0.00001 (Primary): 0.001	0.0	<0.0	0	0.0	<0.0001	0
	Phenanthre	mg/l	0.00001 (Primary): 0.000	**0.0**	**<0.0**	**120**	0.0	<0.0001	0
	Pyrene	mg/l	0.00001 (Primary): 0.000	**0.0001**	**<0.0**	**167**	0.0001	<0.0001	10
	PAHs (Tota	mg/l	0.00001	**0.0005**	**<0.0**	**192**	**0.0005**	**0.0**	**200**
Aromatic Hydrocarbons									
Monocyclic	1,2,4-trime	mg/l	0.001	**<0.002**	**0.009**	**127**	**<0.002**	**0.006**	**100**
	1,3,5-trime	mg/l	0.001	**<0.002**	**0.004**	**67**	<0.002	0.003	40

Field Duplicates (WATER)
Filter: ALL

				SDG	599357	599357		599357	ENVIROLAB 2018-05-23T00:00:00	
				Field ID	BH4	QC01	RPD	BH4	QC01A	RPD
				Sampled Date/Time	18/05/2018	18/05/2018		18/05/2018	18/05/2018	
	Bromobenz	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	Isopropylbe	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	Styrene	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
Aromatic Hydrocarbons										
Miscellane	1,2-dibrom	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	2-Butanone	mg/l	0.001		<0.002	<0.001	0	<0.002		
	4-Methyl-2	mg/l	0.001		<0.002	<0.001	0	<0.002		
	Bromometl	mg/l	0.001 (Primary): 0.01 (Ir		<0.002	<0.001	0	<0.002	<0.01	0
	Dibromome	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	Iodometha	mg/l	0.001		<0.002	<0.001	0	<0.002		
ous Hydrocarbons										
Chlorinated	1,2-Dichlor	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	1,3-dichlor	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	1,4-dichlor	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
	Chloroben	mg/l	0.001		<0.002	<0.001	0	<0.002	<0.001	0
l Benzenes										
Solvents	2-Propanol	µg/l	1		<2.0	<1.0	0	<2.0		
Organic Su	Carbon dis	mg/l	0.001		<0.002	<0.001	0	<0.002		

*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: 50 (1-20 x EQL); 50 (20-30 x EQL); 50 (> 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 u

Field Duplicates (GAS)
Filter: ALL

SDG	598489	598489		598489	598489	
Field ID	SV06 (FRONT)	DUP1 (FRONT)	**RPD**	SV06 (BACK)	DUP1 (BACK)	**RPD**
Sampled Date/Time	14/05/2018	14/05/2018		14/05/2018	14/05/2018	

Chem_Grc	ChemNam	Units	EQL						
Organic Alc	Isopropyl a	mg/m3	1.667	<1.667	<1.667	0	<1.667	<1.667	0
cohols									
Chlorinated	1,1,1,2-tetr	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,1,1-trichl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,1,2,2-tetr	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,1,2-trichl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,1-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2,3-trichl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2-dibrom	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,3-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	2,2-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Bromochlo	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Carbon tet	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Trichloroflu	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
l Alkanes									
Chlorinated	1,1-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,1-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	2-chlorotol	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	4-chlorotol	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	cis-1,2-dich	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	cis-1,3-dich	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Tetrachlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	trans-1,3-d	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Trichloroeth	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Vinyl Chlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
l Alkenes									
Trihalomeths	Bromodich	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Chloroform	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Dibromoch	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Tribromom	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
anes									
TRHs (NEP	>C10-C16	mg/m3	1.667	<1.667	<1.667	0	<1.667	<1.667	0
	C6-C10 Fra	mg/m3	1.667	<1.667	<1.667	0	<1.667	<1.667	0
PC 2013)									
BTEX	Benzene	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Ethylbenze	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Toluene	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Xylene (To	mg/m3	0.25005	<0.2501	<0.2501	0	<0.2501	<0.2501	0
Polycyclic A	Naphthaler	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
Aromatic Hydrocarbons									
Monocyclic	1,2,4-trime	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,3,5-trime	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	4-isopropyl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Isopropylbe	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	n-butyl ben	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	n-propyl be	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	sec-butyl b	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Styrene	mg/m3	0.8335	<0.8335	<0.8335	0	<0.8335	<0.8335	0
	Tert-butyl b	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
Aromatic Hydrocarbons									
Miscellane	1,2-dibrom	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Dibromome	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
ous Hydrocarbons									
Chlorinated	1,2,3-trichl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2,4-trichl	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,2-Dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,3-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	1,4-dichlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
	Chloroben	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	0
l Benzenes									
Miscellane	Hexachlor	mg/m3	0.08335	<0.0834	<0.0834	0	<0.0834	<0.0834	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: 50 (1-20 x EQL); 50 (20-30 x EQL); 50 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relat

Appendix G Statistical Analyses

	A	B
1		
2	Sample	BaP TEQ
3	BH101 0.3-0	16.98
4	BH102 0.35	7.023
5	BH103 0.3-0	305.3
6	BH104 0.65	1.175
7	BH105 0.3-0	3.523
8	BH107 0.3-0	8.754
9	BH107 0.8-1	5.307
10	BH2_0.3-0.6	11
11	BH1_0.4-0.8	1.8
12	BH4_0.3-0.8	0.6
13	BH6_0.3-0.8	140
14	BH5_0.3-0.9	0.7
15	BH7_0.3-0.9	15
16	BH8_0.3-0.9	10
17	BH9_0.3-0.9	4.4
18	BH10_0.3-0	66
19	BH11_0.3-0	6.3

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	22/06/2018 10:11:03 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C1

General Statistics

Total Number of Observations	17	Number of Distinct Observations	17
		Number of Missing Observations	1
Minimum	0.6	Mean	35.52
Maximum	305.3	Median	7.023
SD	77.73	Std. Error of Mean	18.85
Coefficient of Variation	2.188	Skewness	3.082

Normal GOF Test

Shapiro Wilk Test Statistic	0.498	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.418	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.215	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	68.44	95% Adjusted-CLT UCL (Chen-1995)	81.59
		95% Modified-t UCL (Johnson-1978)	70.79

Gamma GOF Test

A-D Test Statistic	1.315	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.812	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.287	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.223	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.435	k star (bias corrected MLE)	0.398
Theta hat (MLE)	81.59	Theta star (bias corrected MLE)	89.31
nu hat (MLE)	14.8	nu star (bias corrected)	13.52
MLE Mean (bias corrected)	35.52	MLE Sd (bias corrected)	56.32
		Approximate Chi Square Value (0.05)	6.246
Adjusted Level of Significance	0.0346	Adjusted Chi Square Value	5.735

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	76.9	95% Adjusted Gamma UCL (use when n<50)	83.77

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.952	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.153	**Lilliefors Lognormal GOF Test**

55	5% Lilliefors Critical Value					0.215	Data appear Lognormal at 5% Significance Level					
56	**Data appear Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-0.511	Mean of logged Data					2.079
60	Maximum of Logged Data					5.721	SD of logged Data					1.711
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					180.2	90% Chebyshev (MVUE) UCL					71.6
64	95% Chebyshev (MVUE) UCL					90.9	97.5% Chebyshev (MVUE) UCL					117.7
65	99% Chebyshev (MVUE) UCL					170.3						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					66.53	95% Jackknife UCL					68.44
72	95% Standard Bootstrap UCL					65.81	95% Bootstrap-t UCL					169.2
73	95% Hall's Bootstrap UCL					175.7	95% Percentile Bootstrap UCL					68.05
74	95% BCA Bootstrap UCL					91.49						
75	90% Chebyshev(Mean, Sd) UCL					92.08	95% Chebyshev(Mean, Sd) UCL					117.7
76	97.5% Chebyshev(Mean, Sd) UCL					153.3	99% Chebyshev(Mean, Sd) UCL					223.1
77												
78	**Suggested UCL to Use**											
79	99% Chebyshev (Mean, Sd) UCL					223.1						
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												

Appendix H Monitoring Well Location Survey

STUART DE NETT
LAND SURVEYORS

14 May 2018

Our Ref: 12040

RE: MONITORING WELLS
PROPERTY: 9-11 GIBBONS STREET, REDFERN

	MGA COORDINATES		AHD HEIGHTS		
Point	**Easting**	**Northing**	**Top of Pipe**	**Surface Level**	**Type**
MW01	333476.4	6248201.2	24.45	24.55	Flush
MW02	333493.5	6248199.9	24.335	24.425	Flush

Methodology: RTK GNSS for position (+/-10mm)
Differential leveling for MW height (+/-3mm)

AHD Origin: PM 53328 RL 28.866

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 I Proposed Development Plans (June 2018)

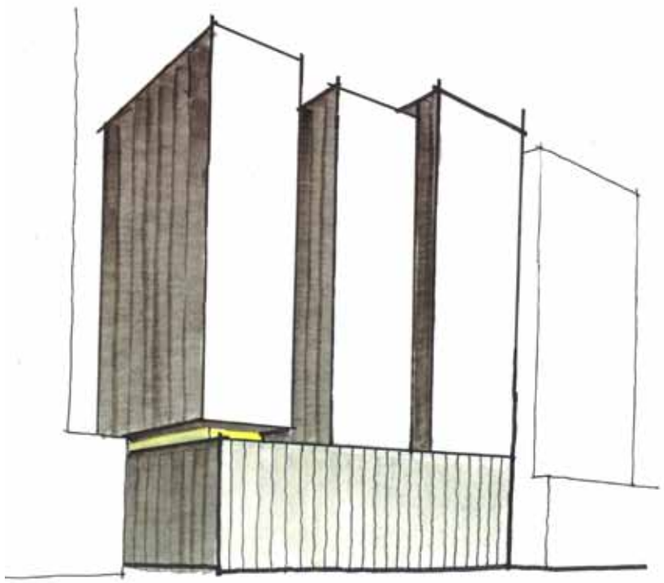
DKO Architecture
Places designed for people

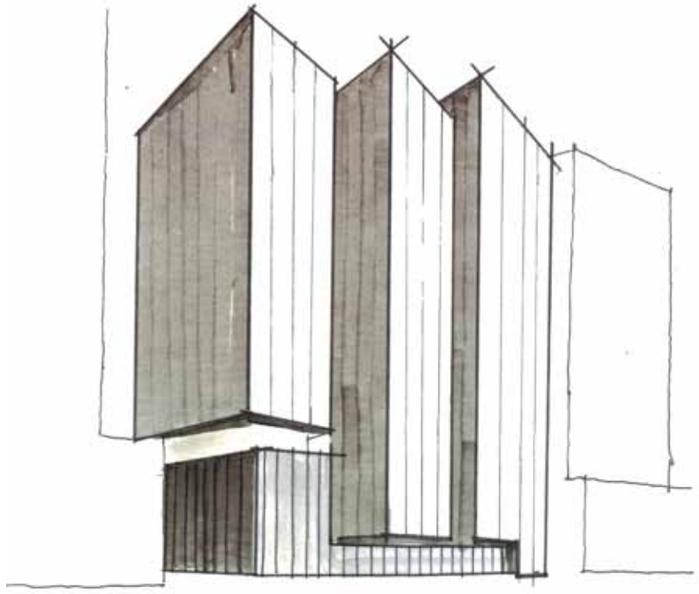
Redfern
11 Gibbons Street

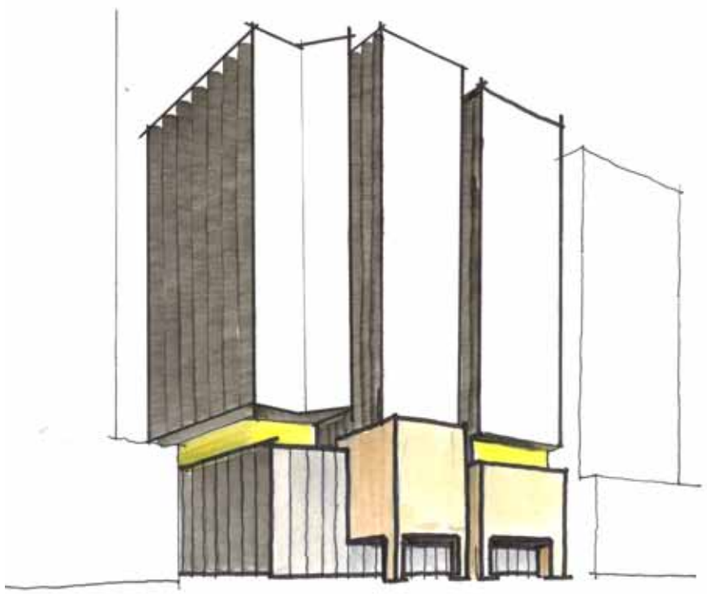
Redfern, NSW

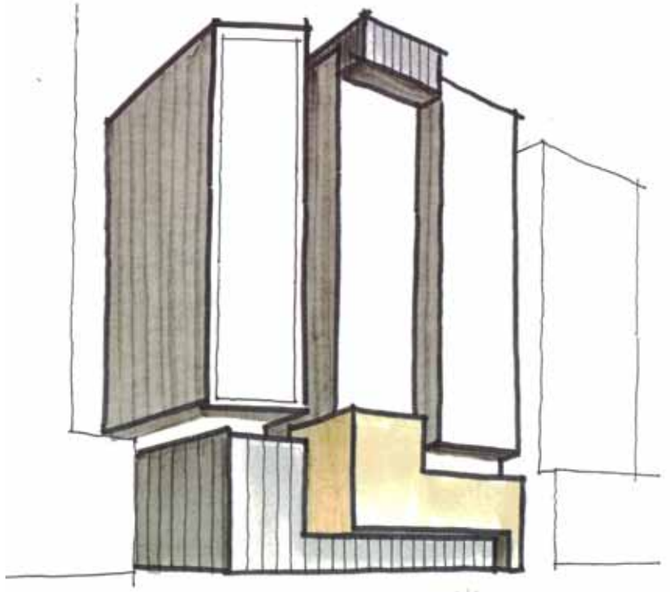
DRP Presentation
June 2018

DKO

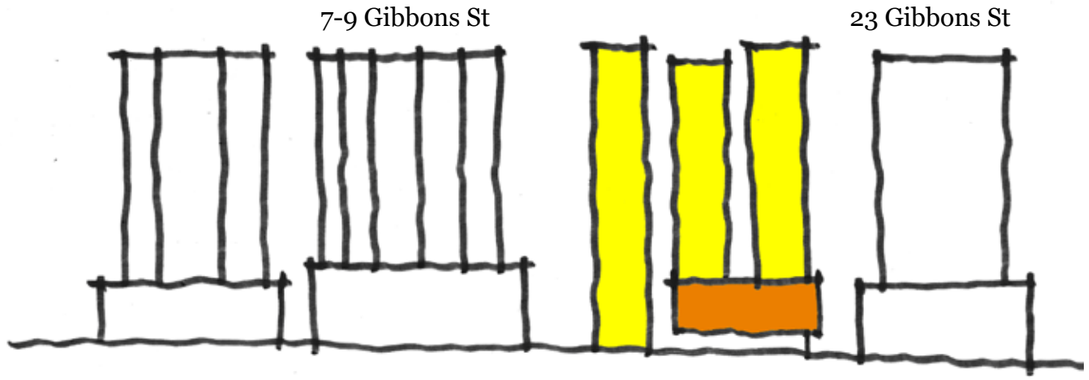




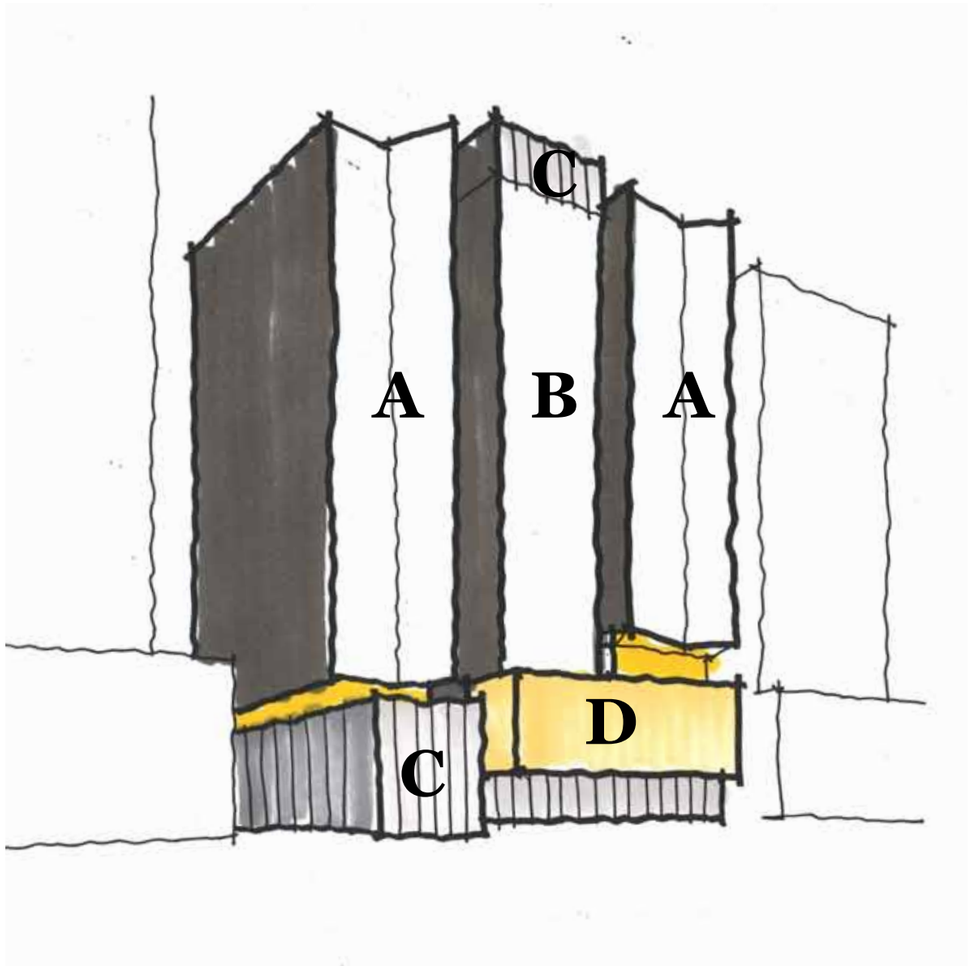


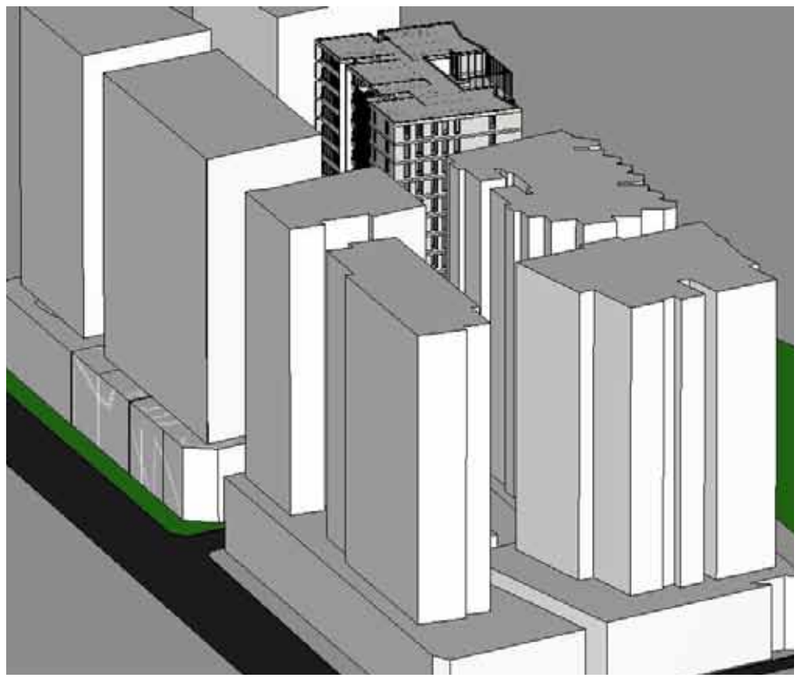



7-9 Gibbons St
23 Gibbons St

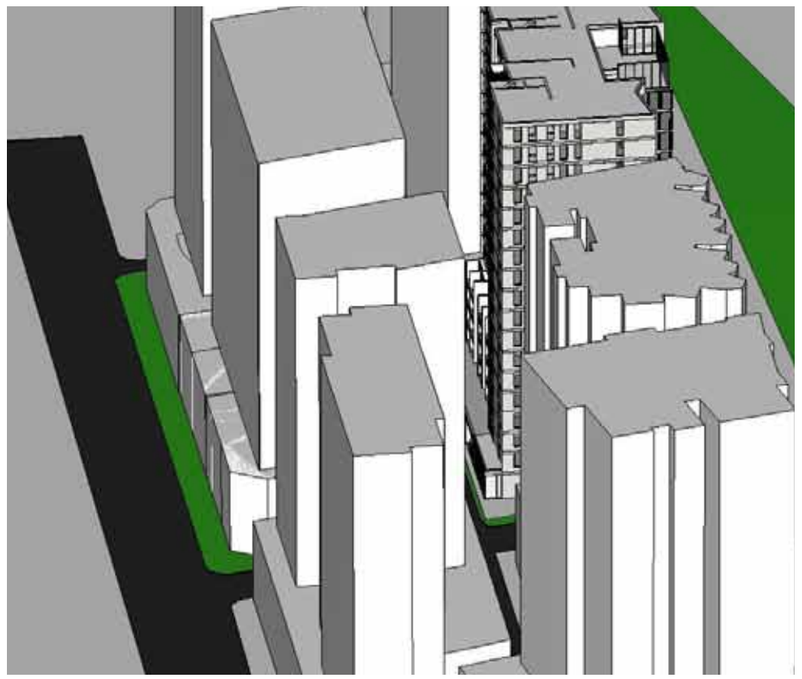

7-9 Gibbons St
23 Gibbons St


7-9 Gibbons St
23 Gibbons St

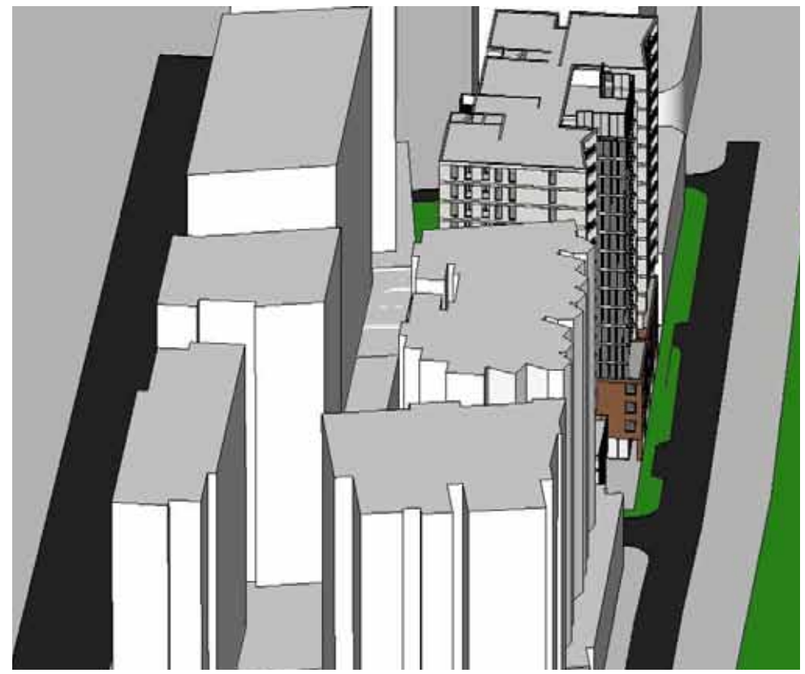

C
A
B
A
C
D



1 21st June 9am



2 21st June 10am



3 21st June 11am



4 21st June 12am



5 21st June 1pm



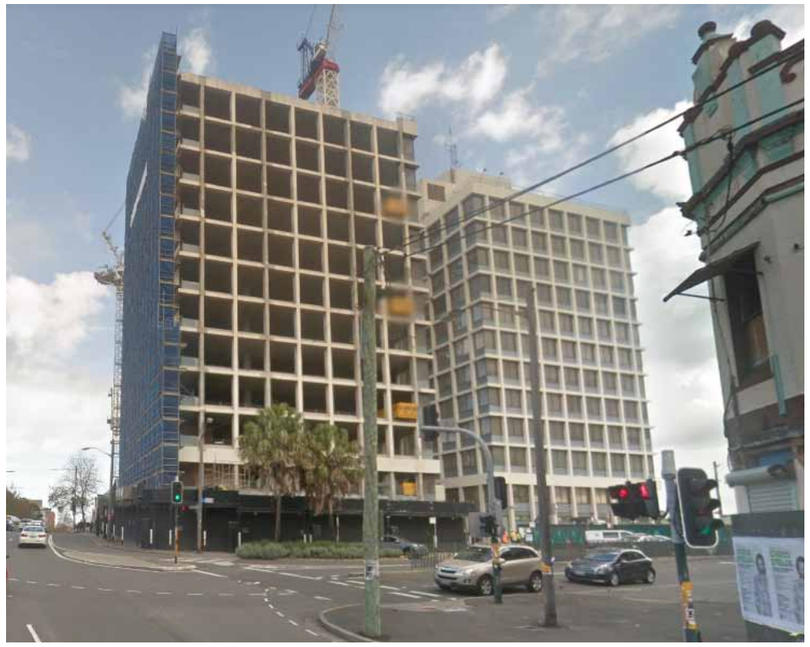
6 21st June 2pm



7 21st June 3pm



Streetscape Context



Gibbons Street







Regent Street



Cope Street

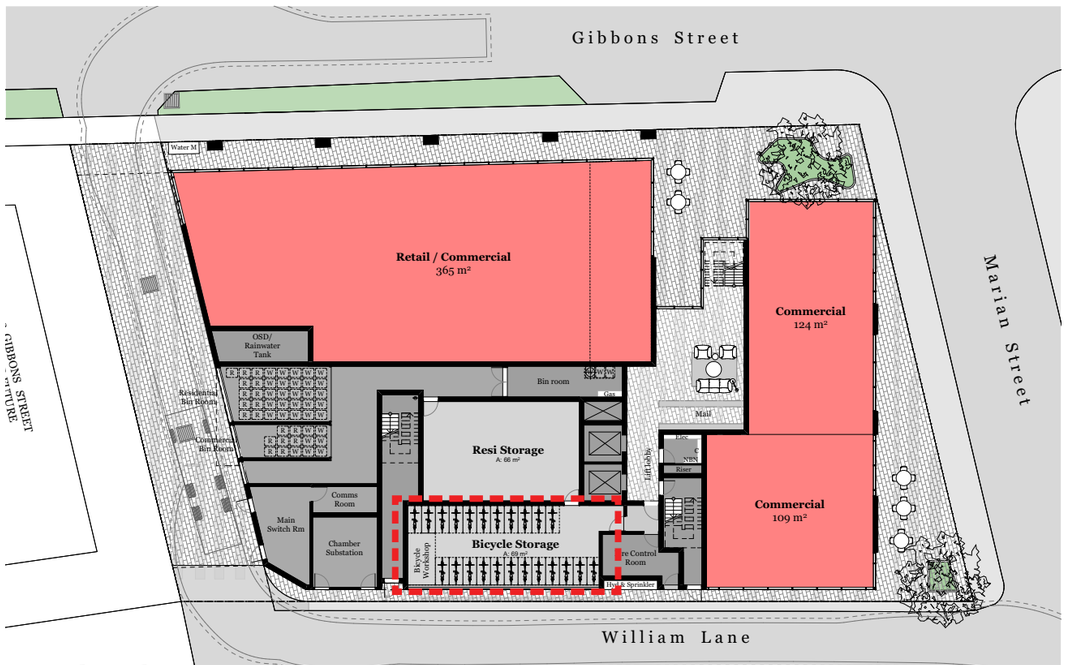


Streetscape Perspective

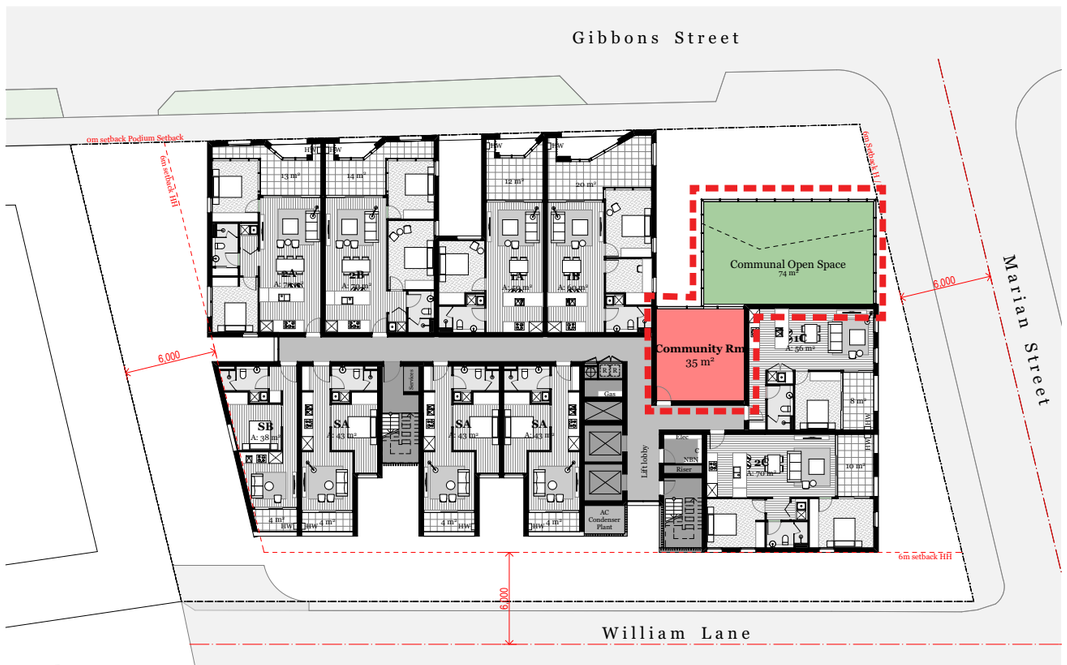


Streetscape Perspective

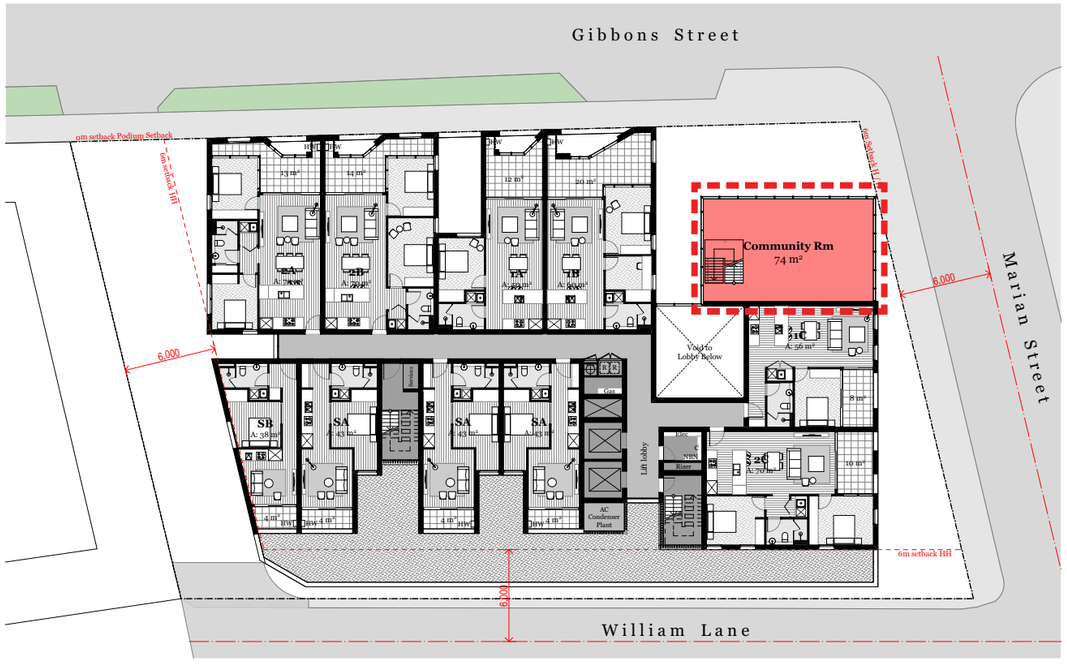




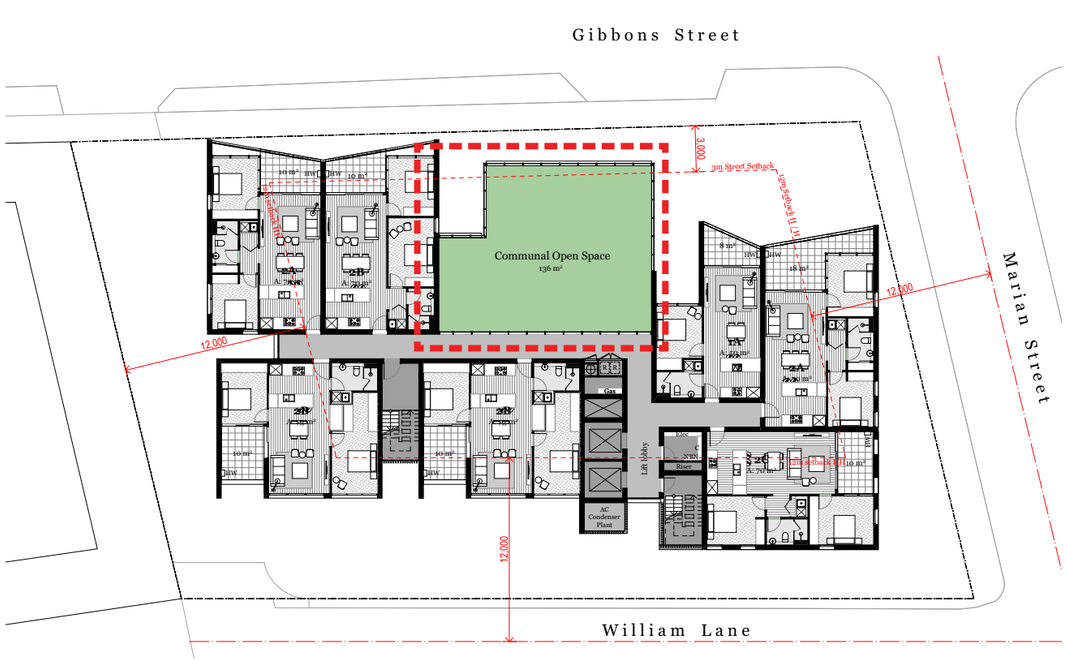
Ground Level



Level 2



Level 1



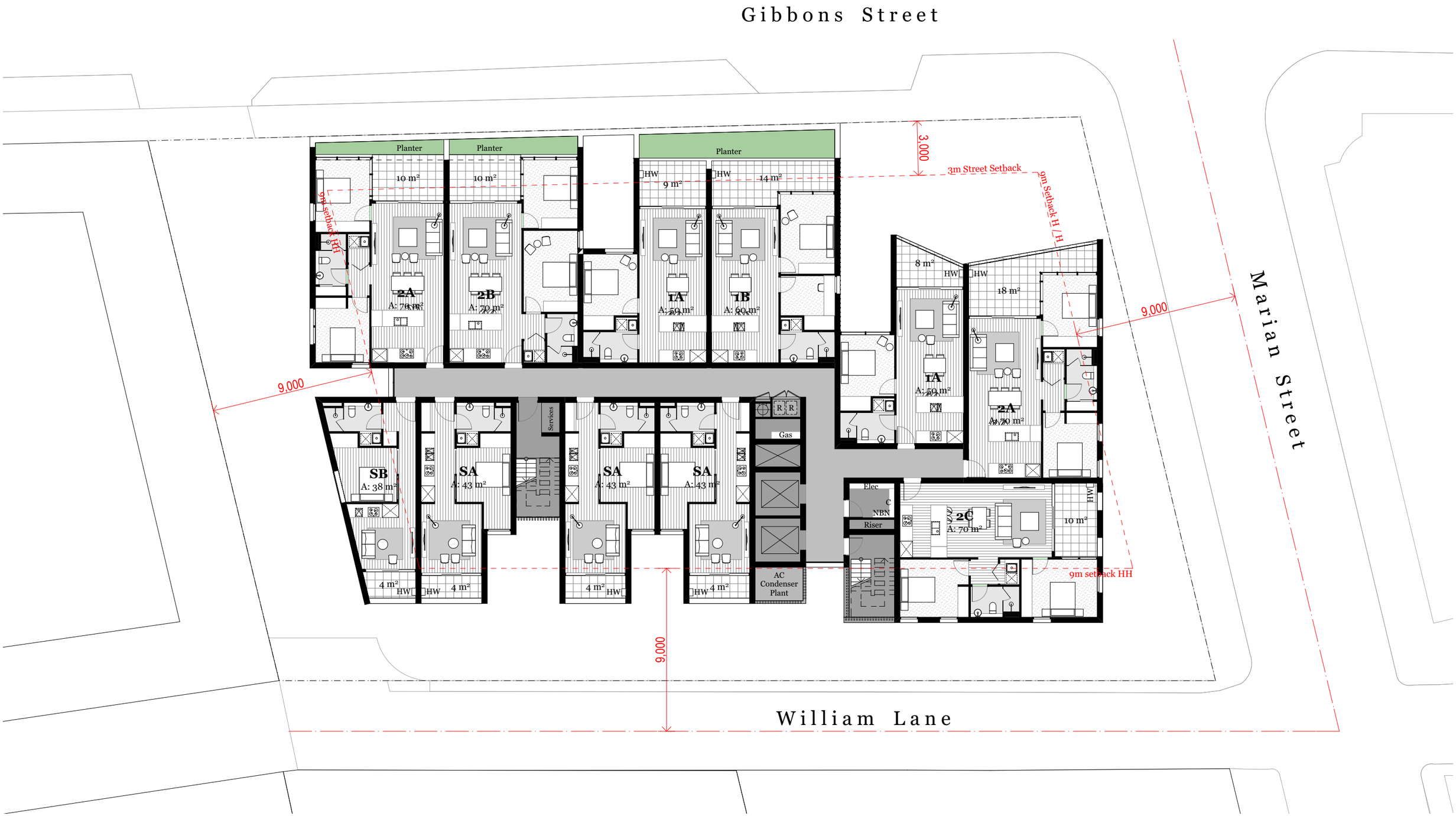
Level 17

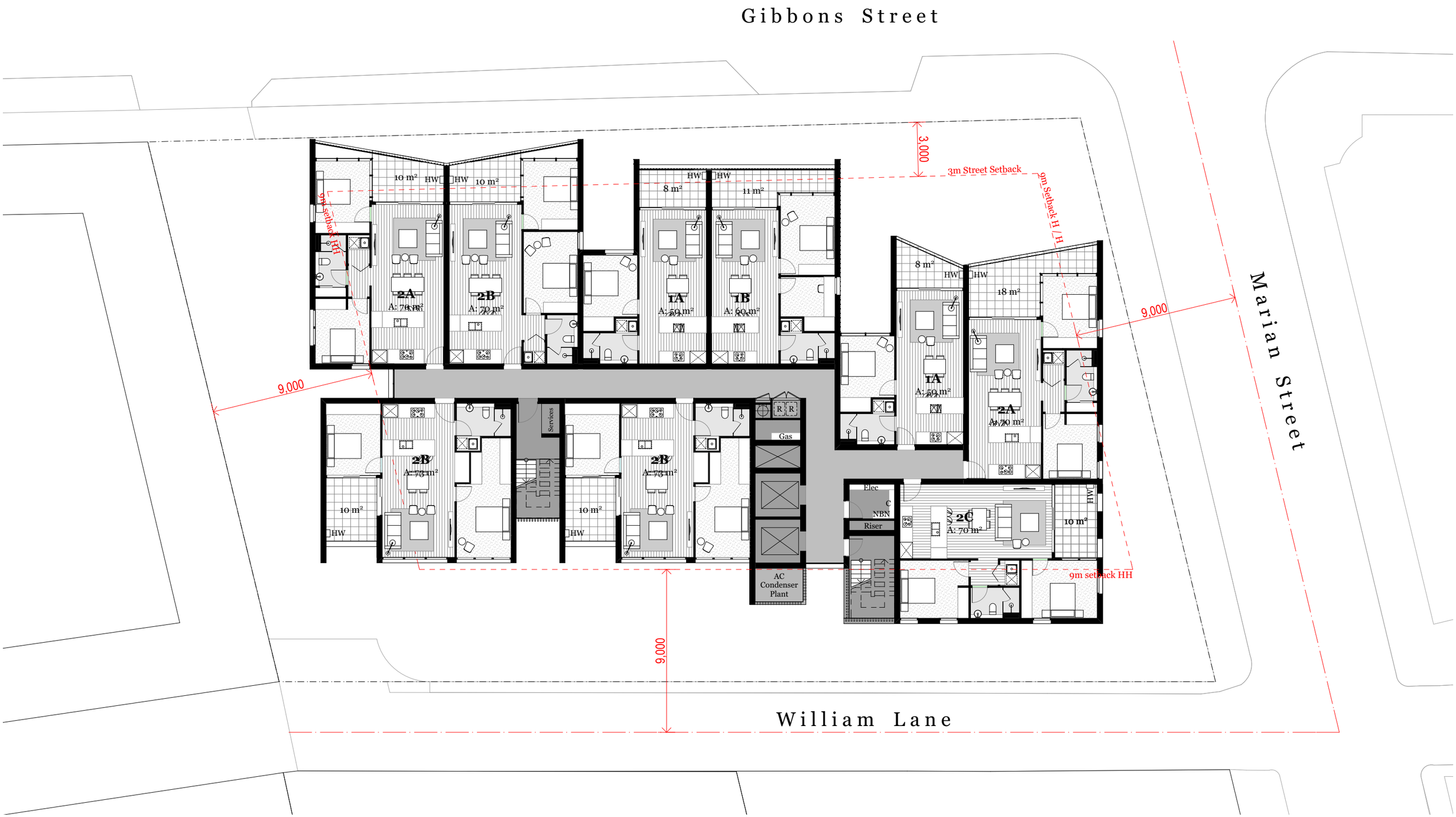

Gibbons Street
Water M
Retail / Commercial
365 m²
OSD/
Rainwater
Tank
Residential
Bin Room
Commercial
Bin Room
Bin room
Gas
Resi Storage
A: 66 m²
Comms
Room
Main
Switch Rm
Chamber
Substation
Bicycle Storage
A: 69 m²
Bicycle
Workshop
Fire Control
Room
Hyd & Sprinkler
Lift lobby
Mail
Elec
C
NBN
Riser
Commercial
124 m²
Commercial
109 m²
Marian Street
23 GIBBONS STREET
TOWER FUTURE
7-9 GIBBONS STREET
RESIDENTIAL TOWER
EXISTING
William Lane

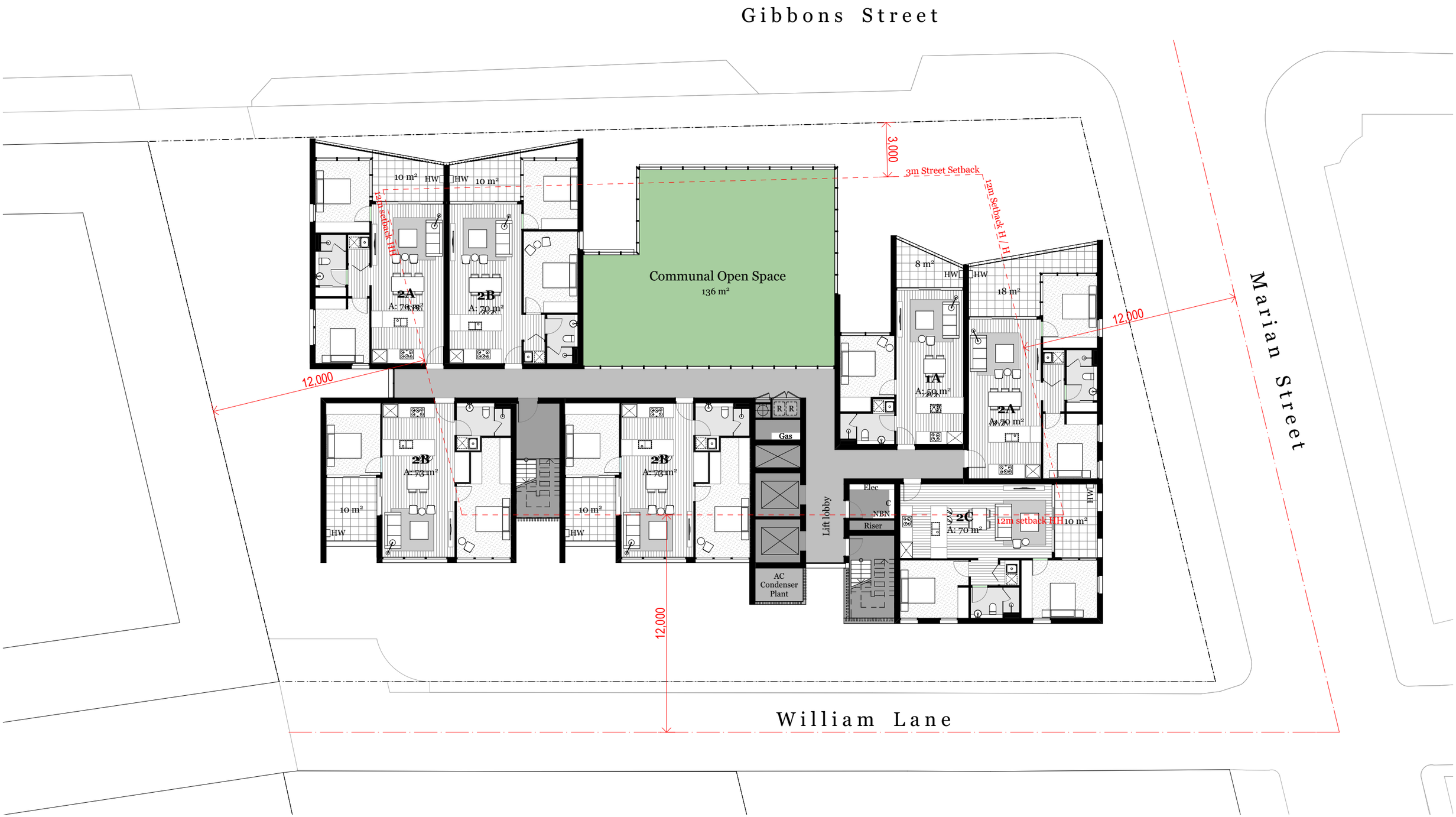

Gibbons Street
0m setback Podium Setback
6m setback HH
6m Setback H / H
6.000
Marian Street
13 m²
14 m²
12 m²
20 m²
HW
2A
A: 76 m²
2B
A: 70 m²
1A
A: 59 m²
1B
A: 60 m²
Community Rm
74 m²
Void to
Lobby Below
1C
A: 56 m²
8 m²
SB
A: 38 m²
SA
A: 43 m²
Services
R R
Gas
Lift lobby
Elec
C
NBN
Riser
2C
A: 70 m²
10 m²
4 m²
AC
Condenser
Plant
6m setback HH
6.000
William Lane

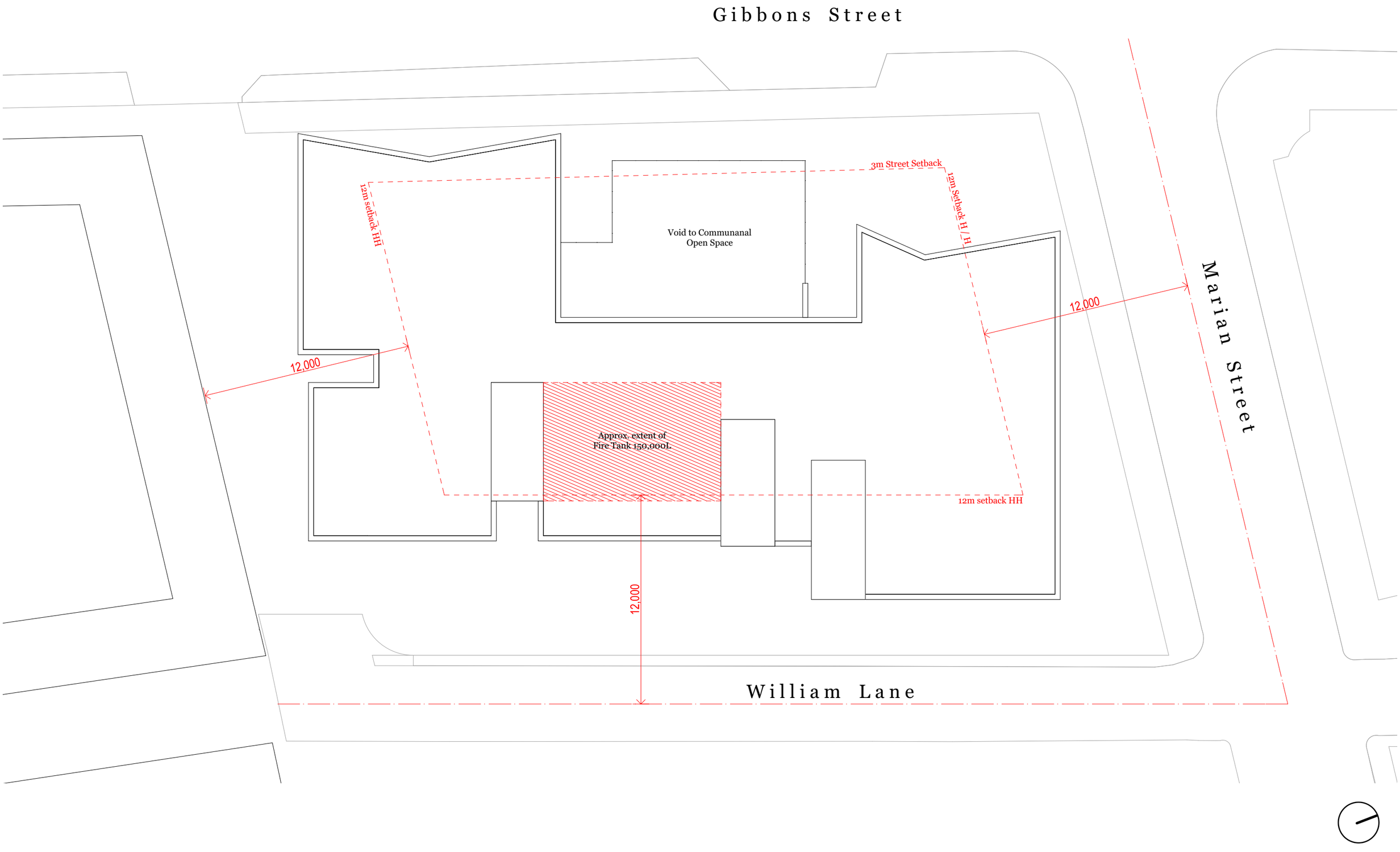

Gibbons Street
0m setback Podium Setback
6m setback HH
6m Setback H / H
6,000
6,000
6,000
Marian Street
William Lane
6m setback HH
13 m²
14 m²
12 m²
20 m²
HW
2A
A: 76 m²
2B
A: 70 m²
1A
A: 59 m²
1B
A: 60 m²
Communal Open Space
74 m²
Community Rm
35 m²
1C
A: 56 m²
8 m²
HW
SB
A: 38 m²
SA
A: 43 m²
SA
A: 43 m²
SA
A: 43 m²
Services
R
R
Gas
Lift lobby
Elec
C
NBN
Riser
2C
A: 70 m²
10 m²
HW
AC
Condenser
Plant
4 m²
HW
4 m²
4 m²
HW
4 m²
HW


Gibbons Street
3m Street Setback
3,000
6m Setback H / H
6m setback HH
6,000
6,000
Marian Street
William Lane
13 m²
14 m²
12 m²
20 m²
8 m²
18 m²
HW
2A
A: 76 m²
2B
A: 70 m²
1A
A: 50 m²
1B
A: 60 m²
1A
A: 50 m²
2A
A: 70 m²
SB
A: 38 m²
SA
A: 43 m²
SA
A: 43 m²
SA
A: 43 m²
4 m²
Services
R R
Gas
AC
Condenser
Plant
Elec
C
NBN
Riser
2C
A: 70 m²
10 m²


Gibbons Street
Marian Street
William Lane
Planter
Planter
Planter
10 m²
10 m²
HW
9 m²
HW
14 m²
3,000
3m Street Setback
9m Setback H / H
9m setback H/H
9,000
8 m²
HW
HW
18 m²
2A
A: 76 m²
2B
A: 70 m²
1A
A: 59 m²
1B
A: 60 m²
1A
A: 59 m²
2A
A: 70 m²
9,000
R R
Services
Gas
SB
A: 38 m²
SA
A: 43 m²
SA
A: 43 m²
SA
A: 43 m²
Elec
C
NBN
Riser
2C
A: 70 m²
HW
10 m²
4 m²
HW
HW
4 m²
4 m²
HW
HW
4 m²
AC
Condenser
Plant
9m setback HH
9,000


Gibbons Street
3,000
3m Street Setback
9m Setback H / H
9,000
9m setback HH
10 m²
HW
2A
A: 76 m²
2B
A: 70 m²
8 m²
11 m²
1A
A: 50 m²
1B
A: 60 m²
18 m²
2A
A: 70 m²
2B
A: 75 m²
10 m²
Services
R R
Gas
Elec
C
NBN
Riser
2C
A: 70 m²
AC
Condenser
Plant
9,000
Marian Street
William Lane


Gibbons Street
Marian Street
William Lane
3,000
3m Street Setback
12m Setback H/H
12,000
12,000
12,000
12m setback H/H
Communal Open Space
136 m²
10 m²
HW
10 m²
HW
2A
A: 76 m²
2B
A: 70 m²
8 m²
HW
HW
18 m²
1A
A: 50 m²
2A
A: 70 m²
2B
A: 75 m²
2B
A: 75 m²
10 m²
HW
10 m²
HW
R
R
Gas
Lift lobby
Elec
C
NBN
Riser
2C
A: 70 m²
10 m²
HW
AC
Condenser
Plant


Gibbons Street
3m Street Setback
12m Setback H / H
12m setback HH
12,000
Void to Communanal
Open Space
Approx. extent of
Fire Tank 150,000L
12m setback HH
12,000
Marian Street
William Lane

Site Area	1,578m2
Proposed FSR	8.16
Proposed GFA	12,883m2
Proposed Unit Total	157
2Hour Solar Access	78.3%
No Solar Access	14.6%
Cross Ventilation	62.8%
Communal Open Space	210m2

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		Name	Name	Signature	Date
A	Sahani Gunatunge	Seth Molinari	Draft for client review		22 June 2018
0	Sahani Gunatunge	Seth Molinari	Seth Molinari		28 June 2018

