REPORT TO

HAMMONDCARE

ON

ADDITIONAL SITE INVESTIGATION

FOR

PROPOSED HOSPITAL REDEVELOPMENT

AT

GREENWICH HOSPITAL, 97-115 RIVER ROAD, GREENWICH, NSW

Date: 5 May 2022
Ref: E32507BRrpt5Rev2

JKEnvironments
www.jkenvironments.com.au

T: +61 2 9888 5000
JK Environments Pty Ltd
ABN 90 633 911 403

dlcs ISO 9001 certified ISO 45001 certified ISO 14001 certified

Report prepared by:

Craig Ridley
Senior Environmental Scientist

Report reviewed by:

Vittal Boggaram
Principal Associate | Environmental Scientist

For and on behalf of
JKE
PO BOX 976
NORTH RYDE BC NSW 1670

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Executive Summary

HammondCare ('the client') commissioned JK Environments (JKE) to undertake an Additional Site Investigation (ASI) for the proposed hospital redevelopment at Greenwich Hospital, 97-115 River Road, Greenwich, NSW. This ASI report is to be submitted to the Department of Planning and Environment (DPE) in support of a State Significant Development Application (SSD-13619238) for the redevelopment of Greenwich Hospital into an integrated hospital and seniors living facility on land identified as 97-115 River Road, Greenwich, NSW (the site).

The subject proposal is for the detail design and construction of the facility following its concept approval under SSD-8699. Specifically, SSD-13619238 seeks approval for the following:

- Demolition of the existing hospital building and associated facilities at the site;
- Construction of a new hospital facility and integrated healthcare campus comprising of hospital, residential aged care, seniors housing, overnight respite, across:
  - A new main hospital building up to RL 80.0;
  - Two new seniors living buildings, Northern building up to RL 56.36, and Southern building up to RL 60.65;
- A new 2-3 storey respite care building up to RL 56.9;
- Construction of associated site facilities and services, including pedestrian and vehicular access and basement parking;
- Site landscaping and infrastructure works; and
- Preservation of Pallister House which will continue to host dementia care and administrative functions.

JKE note that the development plans issued to JKE on 20 April 2022 indicate the new main hospital building is to be constructed above set-down and mezzanine levels. The buildings will be terraced to account for the slope of the site.

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), the Secretary's Environmental Assessment Requirements (SEARs) for SSD-13619238 were issued on 24 February, 2021. This report has been prepared to respond to the following SEARs:

SEAR	Relevant section of report
19. Contamination. Address contaminant conditions imposed under SSD-8699.	This report relates to the additional site investigation (ASI) regarding contamination at the site. The results of the investigation are presented in Section 8, the discussion of impacts is presented in Section 10 and the conclusions of the investigation are presented in Section 11. A remediation action plan (RAP) will be prepared to outline the remediation strategy. The RAP will be issued under a separate cover.

The primary aim of the investigation was to characterise the site contamination conditions based on existing data and data collected from the ASI. The objectives were to:

- Assess the current site conditions and uses via a site walkover inspection;
- Review potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC) identified on-site and in the surrounds;
- Assess the soil and groundwater contamination conditions via implementation of a sampling and analysis program;
- Assess the potential for hazardous ground gas (HGG) to pose a risk to site receptors;
- Update and refine the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);

- Provide a preliminary waste classification for off-site disposal of soil and bedrock;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether remediation is required.

The scope of work included the following:

- Review of previous investigation reports prepared for the site, including the detailed site investigation (DSI) prepared by JKE in 2019;
- Review of site information, including background and site history information from various sources outlined in the report;
- Review and update the CSM;
- Implementation of the sampling, analysis and quality plan (SAQP) prepared for the site;
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment

Based on the review of historical information and the site inspection, the potential contamination sources/AEC and CoPC identified in the CSM included:

- Fill material – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated. The JKE 2019 DSI identified filling across the site to a maximum depth of approximately 5.3m below ground level (BGL) within the west and south-west of the site. The fill was generally less than 1mBGL in other areas of the site;
- Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/structures on-site;
- Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site;
- Fuel storage – At least one underground fuel storage tank (UST) was identified at the site (see Figure 2 attached in the appendices). SafeWork NSW records indicated the UST may have been used to store petrol. An above-ground diesel tank/cube (AST) was also observed on-site; and
- On-site Incinerator and Hospital Waste – The site has been used as a hospital from the 1960s and an incinerator was located on-site. Waste generated from the incinerator could have been disposed on-site during the earlier years of operation.

Soil samples for the ASI were collected from 19 locations as shown on Figure 2. In conjunction with the 30 sampling locations completed for the DSI, a total of 49 locations were sampled. Combined groundwater/HGG monitoring wells were installed in eight of the locations drilled for the ASI, as shown on Figure 2.

A selection of soil and groundwater samples were analysed for a range of CoPC identified in the CSM. The laboratory results were assessed against the SAC presented in Section 7.

With the exception of total recoverable hydrocarbons (TRH), all of the soil results were below the SAC. Elevations above the SAC are shown on Figure 3 attached in the appendices. A concentration of TRH F1 fraction was above the human health SAC in natural soil in one location, and concentrations of TRH F3 fraction were recorded above the ecological SAC in fill in two locations. Additionally, during the DSI, a concentration of TRH F2 above the human health and ecological SAC was recorded in fill in one location, and concentrations of TRH F3 above the ecological SAC were recorded in fill in seven locations. Following consideration of relevant source-pathway-receptor (SPR) linkages, the concentration of TRH F1 in natural soils in one location was considered to pose a potential risk to human health, and the TRH F2 and/or TRH F3 fill soils in four locations were considered to pose potential risk to ecological receptors. The source of TRH F1 detected in the natural soils was likely associated with leaks/spills from the UST in the south of the site. The source of the TRH F2 and F3 were considered likely associated with impacted fill imported to the site and localised surficial spills/releases.

With the exception of heavy metals (cadmium, copper, lead, nickel and zinc), and pH, all groundwater results were below the human health and ecological SAC. Based on the results, JKE were of the opinion that the exceedances were likely a regional issue, rather than an indication of site contamination. The concentrations were also likely partly

attributable to leaking potable water supply in the area. The concentrations were assessed to not pose risk to receptors at the site in the context of the proposed development, however treatment may be required for discharge to stormwater during dewatering activities.

JKE note that TRH F1 and acenaphthene (a PAH compound) were recorded in the groundwater at concentrations below the SAC. The source/s of the TRH F1 and PAH were not confirmed. These concentrations may also require treatment prior to discharge associated with dewatering.

Three rounds of HGG screening were undertaken for the ASI. The screening identified the following:

- Methane (CH_4) was not detected during the screening;
- Hydrogen sulfide (H_2S) was not detected during the screening;
- Carbon monoxide (CO) was detected in two monitoring wells (MW105 and MW109) during one screening event. The concentrations were above the SAC and indicated that gas protections measures may be required;
- Carbon dioxide (CO_2) was detected in most wells during each screening event. The concentrations indicated that gas protection measures may be required; and
- Further investigation is required to better assess potential risks posed by HGG at the site. A continuous monitoring program should be considered. Based on the results of the monitoring, a specialist risk assessment should be completed to assess the need for gas protection measures for the proposed development.

Based on the finding of the investigation, JKE are of the opinion that the site can be made suitable for the proposed development described in Section 1.1. The following is recommended:

- Prepare a remediation action plan (RAP) to address the contamination issues identified at the site. This will include an unexpected finds protocol (UFP). The RAP should address the data gaps outlined in this report. Due to access constraints, this will largely need to occur during the remediation works;
- Complete a continuous monitoring program for HGG and assess the risks posed by HGG to site receptors. Based on the results, prepare a Remediation Work Plan (RWP) for HGG; and
- Undertake a validation assessment documenting the remediation works.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

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Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Additional Site Investigation	**ASI**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Methane	**CH_4**
Contaminated Land Management	**CLM**
Carbon Dioxide	**CO_2**
Carbon Monoxide	**CO**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Characteristic Situation	**CS**
Conceptual Site Model	**CSM**
Contaminant Threshold	**CT**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Fibre Cement Fragment(s)	**FCF**
General Approval of Immobilisation	**GAI**
Gas Screening Value	**GSV**
Hazardous Ground Gases	**HGG**
Health Investigation Level	**HILs**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
Hydrogen Sulfide	**H_2S**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Oxygen	**O_2**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**

Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Per-and Polyfluoroalkyl Substances	**PFAS**
Perfluorooctanoic Acid	**PFOA**
Perfluorooctanesulfonic Acid	**PFOS**
Perfluorohexane Sulfonate	**PFHxS**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Time Weighted Average	**TWA**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Milliequivalents	**meq**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**
Percentage weight for weight	**%w/w**

1 INTRODUCTION

HammondCare ('the client') commissioned JK Environments (JKE) to undertake an Additional Site Investigation (ASI) for the proposed hospital redevelopment at Greenwich Hospital, 97-115 River Road, Greenwich, NSW.

This ASI report is to be submitted to the Department of Planning, Environment (DPE) in support of a State Significant Development Application (SSD-13619238) for the redevelopment of Greenwich Hospital into an integrated hospital and seniors living facility on land identified as 97-115 River Road, Greenwich, NSW (the site). The extent of the site is shown below.

The subject proposal is for the detail design and construction of the facility following its concept approval under SSD-8699. Specifically, SSD-13619238 seeks approval for the following:

- Demolition of the existing hospital building and associated facilities at the site;
- Construction of a new hospital facility and integrated healthcare campus comprising of hospital, residential aged care, seniors housing, overnight respite, across:
  - A new main hospital building up to RL 80.0;
  - Two new seniors living buildings, Northern building up to RL 56.36, and Southern building up to RL 60.65;
  - A new 2-3 storey respite building up to RL 56.9;
- Construction of associated site facilities and services, including pedestrian and vehicular access and basement parking;
- Site landscaping and infrastructure works; and
- Preservation of Pallister House which will continue to host dementia care and administrative functions.

JKE note that the development plans issued to JKE on 20 April 2022 indicate the new main hospital building is to be constructed above set-down and mezzanine levels. The buildings will be terraced to account for the slope of the site.

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), the Secretary's Environmental Assessment Requirements (SEARs) for SSD-13619238 were issued on 24 February, 2021. This report has been prepared to respond to the following SEARs:

SEAR	Relevant section of report
19. Contamination. Address contaminant conditions imposed under SSD-8699.	This report relates to the additional site investigation (ASI) regarding contamination at the site. The results of the investigation are presented in Section 8, the discussion of impacts is presented in Section 10 and the conclusions of the investigation are presented in Section 11. A remediation action plan (RAP) will be prepared to outline the remediation strategy. The RAP will be issued under a separate cover.

1.1 Proposed Development Details

JKE has reviewed the development plans prepared by Bickerton Masters (DD-SW-0200 to 0210, dated 8 April 2022). Based on review of these plans, we understand the proposed development includes:

- The demolition of the existing hospital building and associated facilities (excluding Pallister House);
- Construction of the main hospital building and two serviced seniors living buildings constructed over 1-2 levels of carparking;
- The proposed lowest (basement) car park finished floor reduced level (RL) will be formed at between RL37.95m Australian Height Datum (AHD) and RL38.6mAHD;
- Construction of a new 2-3 storey respite care building to the east of the main building; and
- Reconfiguration of the surrounds including new access roads, external parking areas, walkways and landscaped areas.

The proposed development includes major earthworks (cut/fill) over the majority of the site to achieve the development levels. The maximum cut is anticipated to be approximately 14m below ground level (BGL).

Selected development plans issued to JKE are attached in the appendices.

1.2 Aims and Objectives

The primary aim of the ASI was to characterise the site contamination conditions based on existing data and data collected from the ASI. The objectives were to:

- Assess the current site conditions and uses via a site walkover inspection;
- Review potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC) identified on-site and in the surrounds;

- Assess the soil and groundwater contamination conditions via implementation of a sampling and analysis program;
- Assess the potential for hazardous ground gas (HGG) to pose a risk to site receptors;
- Update and refine the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Provide a preliminary waste classification for off-site disposal of soil and bedrock;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether remediation is required.

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP53931BR) of 14 April 2021 and written acceptance in the form of a purchase order (PO No: 28737) issued by the client on 29 September 2021. The scope of work included the following:

- Review of previous investigation reports prepared for the site (reports by EIS, DP, JKE and JKG);
- Review of site information, including background and site history information from various sources outlined in the report;
- Review and update the CSM;
- Implementation of the sampling, analysis and quality plan (SAQP)[1] prepared for the site;
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[2], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[3] and State Environment Planning Policy Resilience and Hazards 2021[4] (formerly SEPP55). A list of reference documents/guidelines is included in the appendices.

[1] JKE, (2021a). *Report to TSA Management on Sampling, Analysis and Quality Plan (SAQP) for Additional Site Investigation at 97-115 River Road, Greenwich NSW*. (Ref: E32057BRrpt2-SAQP) (referred to as JKE SAQP)

[2] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[3] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

[4] State Environment Planning Policy Resilience and Hazards 2021 (NSW) (referred to as Resilience and Hazards SEPP)

2 SITE INFORMATION

2.1 Background

2.1.1 Waste Classification Assessment

Environmental Investigation Services (EIS, now JKE) undertook soil sampling for waste classification purposes in 2014[5]. The investigation was limited to the south-west corner of the wider hospital site and was undertaken for the proposed development of a multi-level carpark. Soil samples were obtained from six boreholes. Three boreholes were drilled in the asphaltic concrete (AC) car park and three were drilled into the side of the steep batter slope.

The subsurface profile encountered in the carpark area generally consisted of fill to a depth of approximately 2.3m to 5.3mBGL underlain by sandstone bedrock. The fill material was varied and included silty sand and silty clay with various amounts of gravel. Silty clay fill material was also encountered in the batter slope to depths of approximately 0.5m to 0.6m (hand auger refusal). Foreign materials including bricks, metal fragments and plastic were observed within the batter slope fill profile.

The fill soil was provided a preliminary classification as General Solid Waste (non-putrescible). The natural soils and bedrock were considered to meet the definition of Virgin Excavated Natural Material (VENM).

2.1.2 Preliminary Site Investigation (PSI)

A Preliminary Site Investigation (PSI) was undertaken for the wider hospital property by Douglas Partners (DP) in 2018[6]. The scope of the PSI included a review of various historical documents comprising aerial photographs, historical titles deeds, the Section 10.7 planning certificates, SafeWork NSW licence information, NSW EPA contaminated land register, groundwater bore licence details, and a site walkover inspection.

The site history review and site inspection identified the following:

- Historical title deeds indicated that between the 1920s and 2008 the wider hospital site was owned by individuals, the Church of England Property Trust Diocese of Sydney, and Home of Peace Hospitals Limited. HammondCare took over ownership of the site in 2008. The PSI report indicated that the Church of England operated Pallister House as a home for girls in the mid-20th Century, prior to the property becoming a treating hospital in the mid-1960s;
- Aerial photographs indicated that the site was vacant in the 1930s with Pallister House present on the wider hospital property in the south-east. From 1942 onwards new buildings and structures (the existing hospital buildings and structures) were observed to be present on the site;
- The Section 10.7 Certificate for the site indicated that: the land is not significantly contaminated, is not the subject of a management order, is not the subject of an approved voluntary management proposal, is not the subject of an ongoing maintenance order, and is not the subject of a site audit statement;

[5] Environmental Investigation Services, (2014). *Waste Classification Assessment, Proposed Development, Greenwich Hospital, 97-115 River Road, Greenwich.* (Ref: E23789Kletr, dated 2 July 2014). (Referred to as EIS 2014 report)

[6] Douglas Partners, (2018). *Report on Preliminary Site Investigation (Contamination), Greenwich Hospital, 97-115 River Road, Greenwich. Prepared for HammondCare.* (Ref: 86495.00, dated 22 August 2018). Referred to as DP PSI)

- The SafeWork NSW licence information reviewed indicated that an underground storage tank (UST) of approximately 5000L capacity was located at the site. The information indicated that the UST was located to the west of the boilers and was used to store petrol. The documentation indicated that the UST was installed in 1968 and was still in use in the mid-1990s;
- A review of the EPA contaminated Land Register did not identify the wider hospital property as being significantly contaminated under the Contaminated Land Management Act 1997 as at 21 August 2018. The wider hospital site was not listed on the 2 August 2018 version of the 'List of NSW Contaminated Sites Notified to EPA';
- No licenced wells within or near the wider hospital site were identified during a search of licenced groundwater bores, indicating that the regional groundwater table is at significant depth and is not likely to be a beneficial resource for nearby sites;
- The site inspection undertaken as part of the PSI identified the UST gatic cover (which was not opened), in the south-west section of the site; and
- The Conceptual Site Model (CSM) identified the following potentially contaminating activities may have occurred on the wider hospital site:
    - Placement of filling on the site;
    - The use of hazardous materials in previous and existing structures;
    - Contaminants associated with building maintenance (e.g. pesticides);
    - The UST and related infrastructure;
    - Spillage of hospital wastes;
    - Placement of wastes and/or incinerator ash; and
    - Naturally occurring elements in the soils and rock underlying the site (e.g. heavy metals).

The report concluded that if characterisation of the site is required, a full detailed site investigation (DSI) should be undertaken. Further to this, recommendations were made for a hazardous building materials survey of the existing structures and waste classification for any material to be removed from the site as part of redevelopment.

2.1.3 Detailed Site Investigation (DSI)

A DSI was undertaken for the site by JKE in 2019[7]. The DSI included a review of historical information presented in the DP PSI, a walkover site inspection, soil sampling from 30 boreholes and groundwater sampling from three groundwater monitoring wells installed at the site.

The site inspection identified an abandoned UST to the south of the main hospital building (refer to Figure 2). A small self-bunded diesel cube (500L) was observed on the eastern side of the main hospital building positioned next to an external (transportable) generator and a small capacity incinerator was observed on the eastern side of the main hospital building. Review of the DP PSI indicated several potentially contaminating activities may have occurred on the site and wider hospital property including: placement of fill; use of hazardous materials in previous and existing structures; contaminants associated with building maintenance (e.g. pesticides); the UST and related infrastructure; spillage of hospital wastes; placement of

[7] JKE, (2019). *Report to HammondCare on Detailed Site Investigation (DSI) for Proposed Hospital Redevelopment at Greenwich Hospital, 97-115 River Road, Greenwich, NSw.* (Ref: E32507BTrptRev1, dated 9 September 2019). (referred to as JKE DSI).

wastes and/or incinerator ash; and naturally occurring elements in the soils and rock underlying the site (e.g. heavy metals).

Soil sampling for the DSI was undertaken from 30 borehole locations and groundwater sampling from three monitoring wells installed in three of the soil boreholes. One soil sample reported an elevated total recoverable hydrocarbons (TRH) F2 Fraction hydrocarbons concentration above the human health and ecological site assessment criteria (SAC), seven soil samples reported elevated TRH F3 concentrations above the ecological SAC and one groundwater sample reported an elevated copper concentration above the ecological SAC for freshwater.

The DSI concluded that the site could be made suitable for the proposed development provided that the following recommendations were implemented to address the data gaps and to better characterise the risks:

- When the site becomes fully accessible (i.e. after demolition), undertake an inspection and additional soil sampling in the footprints of buildings/structures and in the vicinity of the UST;
- Prepare a RAP to address the contamination issues identified at the site; and
- Undertake a validation assessment documenting the remediation works.

2.1.4 Hazardous Building Material Survey (Hazmat) and Other JKE Reports

JKE were engaged by the client to complete the following reports for the SSD in conjunction with the ASI:

- An acid sulfate soil (ASS) assessment[8];
- A salinity investigation[9]; and
- A HAZMAT survey[10].

The ASS assessment included a desktop review of geological and ASS risk mapping, site walkover inspection and soil sampling from eight boreholes drilled for the ASI. The ASS information reviewed identified that the site was not located in an ASS risk area and was classed as having extremely low probability of ASS occurrence. The results of field tests and laboratory analysis were not indicative of ASS conditions. Based on the findings of the assessment, the JKE ASS report concluded that ASS or potential ASS was unlikely to be encountered and that an ASS management plan (ASSMP) was not considered necessary for the proposed development.

The salinity investigation included a desktop review of salinity information and mapping, site walkover inspection, soil sampling from eight boreholes drilled for the ASI and groundwater sampling from eight monitoring wells installed for the ASI. The salinity information indicated that the site was not located within a mapped dryland salinity risk area. No visual indications of saline conditions were observed during the inspection. The results of the soil and groundwater analysis identified the following:

- The soils were classed as very strongly acidic to very strongly alkaline;

[8] JKE, (2022a). *Report to HammondCare on Acid Sulfate Soil Assessment for Proposed Hospital Redevelopment at Greenwich Hospital, 97-115 River Road, Greenwich, NSW.* (Ref: E32507BRrpt3Rev1, dated 8 April 2022). (referred to as JKE ASS Report).

[9] JKE, (2022b). *Report to HammondCare on Salinity Investigation for Proposed Hospital Redevelopment at Greenwich Hospital, 97-115 River Road, Greenwich, NSW*. (Ref: E32507BRrpt4Rev1, dated 8 April 2022. (referred to as JKE Salinity Report).

[10] JKE, (2022c). *Report to HammondCare on Hazardous Building Materials Survey for Proposed Demolition Works at Greenwich Hospital, 97-115 River Road, Greenwich, NSW.* (Ref: E32507BLrptRev1-HAZ, dated 11 April 2022). (referred to as JKE HAZMAT).

- The soils were classed as non-saline with localised occurrences of slightly to moderately saline conditions;
- The soils were generally non-sodic;
- The soils were mildly aggressive toward buried concrete and steel;
- The groundwater was moderately aggressive towards buried concrete; and
- The groundwater was non-aggressive towards buried steel.

The salinity investigation recommended preparing a salinity management plan (SMP) for the proposed development.

The HAZMAT survey included an inspection and sampling of representative materials for: asbestos fibre containing materials; lead containing materials; polychlorinated biphenyls (PCBs) containing electrical equipment; and synthetic mineral fibre (SMF) containing materials. The inspection identified asbestos, in the form of bonded/non-friable asbestos containing material (ACM) and friable asbestos and lead in paint systems within the interior and exterior of buildings and structures at the site, and SMF within the interior of building and structures at the site. Light fittings potentially housing PCBs were visually identified within the site. Reference should be made to the JKE HAZMAT report for further details.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner:	HammondCare
Site Address:	97-115 River Road, Greenwich, NSW
Lot & Deposited Plan:	Lot 3 and Lot 4 in DP 584287
Current Land Use:	Hospital
Proposed Land Use:	Hospital and Seniors Living
Local Government Authority:	Lane Cove Municipal Council
Current Zoning:	SP2: Infrastructure (Health Services)
Site Area (m^2) (approx.):	23,700 (Redevelopment Area)
RL (AHD in m) (approx.):	36 - 51
Geographical Location (decimal degrees) (approx.):	Latitude: -33.827404 Longitude: 151.183875
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location and Regional Setting

The site is located in a predominantly residential area of Greenwich. The site is bounded by River Road to the north and St Vincents Road to the east as shown on Figure 1 attached in the appendices. The site is located approximately 75m to the north-east of the Gore Creek and 275m to the north-east of the Lane Cove River.

2.4 Topography

The site is located within undulating regional topography and sits on the southern edge of a topographic spur that falls steeply to the east, south and west. A significant fill batter slope exists along the western boundary. Parts of the site appear to have been levelled to account for the slope and accommodate the existing development.

2.5 Site Inspection

A walkover inspection of the site was undertaken by JKE on 20 September 2021. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken for the ASI. Selected site photographs obtained during the inspection are attached in the appendices. Reference should be made to the JKE Hazmat report for information on existing site buildings.

At the time of the inspection, the main hospital buildings were located in the central to west portion of the site and include wards, theatres, two gas-fired boiler units, two emergency generators, clinical and general waste facilities, oxygen storage and maintenance equipment. A building to the east of the main hospital building contained non-clinical facilities. The main hospital buildings were a mix of brick, fibre cement, and concrete construction typically on concrete slab and between one and four storeys.

During the site inspection, a gatic cover assumed to be associated with the abandoned UST was observed to the south of the main hospital building. A small self-bunded diesel cube (500L) was observed on the eastern side of the main hospital building positioned next to an external (transportable) generator. A small capacity incinerator was observed on the eastern side of the main hospital building. There were no other visible or olfactory indicators of contamination observed during the site inspection.

Fill materials were identified in numerous areas around the site where exposed soil was present at the site surface. This included garden and landscaped areas, and unpaved or boundaries of carpark areas generally in the east of the site. Gas cylinders and flammable materials were observed to be stored appropriately in locked cages in paved storage areas and generally in the vicinity of the maintenance office. A fill stockpile/mound (approximately 50m x 9m x 2m) was observed in the north of the site. No inspection or sampling of this stockpile was undertaken. The has been identified as a data gap and is discussed further in Section 10.4.

A majority of the eastern portion of the site was grass covered with interspersed medium to large mature trees and small to medium shrubs. Medium to large trees were observed along the north, west and south boundaries of the site and small to medium shrubs were located in garden beds and around buildings across the site. The steep batter slope in the south-west corner of the site was densely vegetated with native and exotic shrubs and a small grass covered area was observed along the southern boundary (adjacent to the empty pool). The vegetation across the site appeared to be in reasonable condition based on a cursory

inspection, with no obvious or extensive dieback observed. Grass coverage was generally good, with the exception of some areas beneath large trees and isolated areas adjacent to carparks and footpaths.

Gore Creek Reserve, an area zoned as E2 - Environmental Conservation, and Gore Creek extends along the south-west boundary of the site. These features are situated down-gradient of the site and are considered to be sensitive environments.

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Greenwich Public School and residential properties;
- South – Residential properties and Gore Creek Reserve;
- East – Garden and landscaped areas of the hospital, St Vincents Road and residential properties beyond; and
- West – Residential properties.

JKE did not observe any land uses in the immediate surrounds that were identified as potential off-site contamination sources for the site.

2.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration.

A sewer main was located in the north-west section of the site which entered the site from the north and ran further to the south-west. The backfill around this service could act as preferential pathway for contamination migration.

2.7 Local Meteorology

Key meteorological data for Sydney Botanic Gardens weather station available on the Bureau of Meteorology (BOM)[11] website was reviewed and JKE note the following:

- The highest mean rainfall occurs in March, with a total of 138.1mm;
- The lowest mean rainfall occurs in September, with a total of 67.9mm;
- In the week lead up to the JKE soil sampling event, a total of 15mm of rainfall was recorded; and
- In the week lead up to the JKE groundwater sampling event, a total of 15.2mm of rainfall was recorded. JKE note a total of 24mm of rainfall was recorded across the days of groundwater sampling.

2.8 GPR Survey

A ground-penetrating radar (GPR) survey was undertaken by Geotrace Australia Pty Ltd (Geotrace) to assess whether the known UST remained at the site. The GPR survey was limited to the approximate location of the known UST. The survey identified a sub-surface anomaly which was consistent with the approximate

[11] http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=&p_c=&p_stn_num=066006 visited on 14 December 2021

dimensions of a 5,000L tank. The extent of the tank was marked on-site and is shown on the utility scan report attached in the appendices. A copy of the scan was not provided.

JKE note that the SafeWork NSW records presented in the DP PSI indicated that a 5,000L UST was present at the site. JKE are of the opinion that the GPR survey confirmed the location of this UST.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information reviewed for the JKE DSI indicated that the site is underlain by Hawkesbury Sandstone, which typically consists of medium to coarse grained quartz sandstone with minor shale and laminite lenses.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS risk maps reviewed for the JKE DSI indicated that the site is not located in an ASS risk area.

An ASS assessment was undertaken in conjunction with the ASI and is summarised in a separate report (Ref: E32507BRrpt3). The ASS assessment concluded that ASS and/or potential ASS (PASS) conditions were not encountered and that an ASS management plan (ASSMP) was not considered necessary for the proposed development. Reference should be made to the ASS report for further details.

3.3 Hydrogeology

Hydrogeological information reviewed for the JKE DSI indicated that there were no licensed groundwater bores within or near the wider hospital site. Previous investigations undertaken at the site indicated that the subsurface conditions consisted of relatively low permeability (residual) soils overlying shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is reticulated water supply in the area and consumption of groundwater is not expected to occur. Use of groundwater is not proposed as part of the development.

Considering the local topography and surrounding land features, JKE would generally expect groundwater to flow towards the west to south-west.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Gore Creek located approximately 75m to the south-west of the site, which in turn flows into the Lane Cove River which is located approximately 275m south of the site. These water bodies are down-gradient of the site and are considered to be potential receptors.

4 SITE HISTORY INFORMATION

4.1 Summary of Historical Title Records

Historical title records were presented in the DP PSI and reviewed for the JKE DSI and ASI. The review indicated the following:

- Between the 1920s and 2008, the wider hospital site was owned by individuals, the Church of England Property Trust Diocese of Sydney, and Home of Peace Hospitals Limited;
- In the mid-20th Century, the Church of England operated Pallister House as a home for girls;
- In the 1960s, the property became a treating hospital; and
- HammondCare acquired the site in 2008.

4.2 NSW EPA and Department of Defence Records

A review of the NSW EPA and Department of Defence databases was undertaken for the ASI. Information from the following databases were sourced from the Lotsearch report attached in the appendices:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of sites notified in accordance with the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[12];
- Licensed activities under the Protection of the Environment Operations Act (1997)[13];
- Sites being investigated under the NSW EPA per-and polyfluoroalkyl substances (PFAS) investigation program;
- Sites being investigated by the Department of Defence for PFAS contamination; and
- Sites being managed by the Department of Defence for PFAS contamination.

The search included the site and surrounding areas in the report buffer. A summary of the information is provided below:

Table 4-1: NSW EPA and Department of Defence Records

Records	On-site	Off-site
Records under Section 58 of the CLM Act 1997	None	None
Records under the Duty to Report Contamination under Section 60 of the CLM Act 1997	None	There were three properties listed in the report buffer. These included a drainage line associated with Gore Creek approximately 30m to the south-west and down-gradient of the site, a service station approximately 965m to the west and down/cross-gradient of the site, and a data centre located approximately 970m to the north-east and up-gradient of the site. Due to the distance and/or down-gradient locations, these properties were not considered to represent off-site sources of contamination.

[12] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997.* (referred to as Duty to Report Contamination)

[13] Protection of the Environment Operations Act 1997 (NSW) (referred to as POEO Act 1997)

Records	On-site	Off-site
Licences under the POEO Act 1997	The records indicate a former license (6997) for the site which was issued in 2000. The license was issued to Hope Healthcare Limited for the storage of hazardous, industrial or Group A Waste Generation. The status of the license indicate that it was surrendered.	Current and historical licenses were identified for several properties within the report buffer, including: railway systems; waste recovery, generation and storage; concrete works; and the application of herbicides along waterways. Based on the nature of the activities and/or their respective distances and direction from the site, these activities are considered unlikely to pose a contamination risk to the site or represent an off-site source of contamination.
Records relating to the NSW EPA PFAS Investigation Program	None	None
Records relating to the Department of Defence PFAS management and investigation programs	None	None

4.3 Historical Business Directory and Additional Lotsearch Information

Historical business records and other relevant information were reviewed for the ASI. The information was sourced from the Lotsearch report and summarised in the following table:

Table 4-2: Historical Business Directory and other Records

Records	On-site	Off-site
Historical dry cleaners, motor garages and service stations	None	There were four motor garages/service stations listed in the report buffer between 1948-1990. The properties were approximately 320m to 485m to the north-east and up-gradient of the site. Due to the distance from the site, the motor garages/service stations were not considered to represent off-site sources of contamination. There was one dry cleaner business listed in the report buffer during the 1970s. The exact location of the business was not available (the listing was road-matched). JKE note that the road address was approximately 380m to the north-west of the site. Due to the approximate distance from the site, the dry cleaner business was not considered to represent an off-site source of contamination.
Other historical businesses that could represent potential sources of contamination	None	None

Records	On-site	Off-site
National waste management site database	None	There was one waste management site identified in the report buffer. The waste management site was a waste transfer station located approximately 800m to the north and up-gradient of the site. Based on the distance from the site, this facility was not considered to represent an off-site source of contamination.
National liquid fuel facilities	None	There were five facilities listed within the report buffer. One facility was a fuel terminal approximately 760m to the south and cross-gradient of the site. The remaining facilities were service stations located approximately 940m to 960m the west and down/cross-gradient of the site. Due to the distances and down/cross-gradient locations from the site, these facilities were not considered to represent off-site sources of contamination.
Mapped heritage items	Pallister House and its immediate surrounds which includes a sandstone swimming pool are listed in the State Heritage Register and Environmental Planning Instrument. The heritage areas are located on the east and south-east sections of the site.	Various heritage items were mapped in the report buffer.
Mapped ecological constraints	Various ecological items were mapped on-site. These are not considered to have any relevance in the context of the ASI objectives.	Various ecological items were mapped in the report buffer. These are not considered to have any relevance in the context of the ASI objectives.
Mapped naturally occurring asbestos	None	None

4.4 Summary of Site History Information

A timeline summary of the historical land uses and activities is presented in the following table. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE.

Table 4-3: Summary of Historical Land Uses / Activities

Year(s)	Potential Land Use / Activities
Pre-1930 to late 1930s	Aerial photographs reviewed for the DP PSI indicated that Pallister House was present on the wider hospital site prior to 1930. Aerial photographs and land titles suggest that the site may have been utilised for residential purposes.
1940s to mid-1960s	Aerial photographs and land title records indicate that the site and wider hospital site were owned by the Church of England and operated Pallister House as a home for girls during this period.

Year(s)	Potential Land Use / Activities
Circa 1960s - onwards	Land title records indicated that the site became a treating hospital in the mid-1960s. Aerial photographs indicated development of former and existing hospital buildings and structures from this time. The site may have been filled during this time to generate existing site levels.
1968 – mid-1990s	SafeWork NSW records indicated that the UST located to the south-west of the boilers was installed at the site and used to store petrol (refer to Figure 2). The UST was in use until around the mid-1990s. During the JKE DSI, facilities maintenance personnel indicated that the tank was no longer in use.

4.5 Integrity of Site History Information

The majority of the site history information was obtained from government organisations as outlined in the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. JKE have relied upon the Lotsearch report and have not independently verified any information contained within. However, it is noted that the Lotsearch report is generated based on databases maintained by various government agencies and is expected to be reliable.

5 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 10.

5.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 5-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources including onsite incinerator waste / spillage of hospital waste and could be contaminated. Previous investigations at the site by JKE/EIS indicated deep filling within the south-west and west of the site to a maximum depth of 5.3mBGL. The depth of fill was generally less than 1mBGL in other areas of the site. The previous investigations indicate that the filling has been uncontrolled and could contain inclusions of timber and green waste, and organic soils. Decomposition of fill containing organic contents have the potential to generate hazardous ground gases (HGG), which may migrate to the surface via preferential pathways.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs), and asbestos. HGG, including methane (CH_4), carbon monoxide (CO), carbon dioxide (CO_2) and hydrogen sulphide (H_2S). The JKE DSI encountered elevated TRH and individual metals above the SAC. The source of these elevations was considered to be associated with inclusion in fill.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. The JKE Hazmat assessment identified hazardous materials to be present in the existing buildings / structures on site.	Asbestos, lead and PCBs
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs
Fuel storage – At least one UST was identified at the site. SafeWork NSW records presented in the DP PSI indicated that the UST may have been used to store petrol. An above-ground diesel cube was also observed on the site.	Lead, TRH, BTEX, PAHs and Per-and Polyfluoroalkyl Substances (PFAS)

Source / AEC	CoPC
On-site Incinerator and Hospital Waste – The site has been used as a hospital from mid-1960s. An incinerator is located at the hospital. Waste generated from the incinerator could have been disposed on-site during the earlier years of operations. Disposal of human waste is unlikely to have occurred at the site.	Heavy metals, PAHs, heavy fraction TRH and PFAS

5.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 5-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material and use of site generated waste as fill (such as incinerator waste), 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); • On-site fuel storage – 'top-down' impacts and spills (during normal use, refilling), or sub-surface release (leaks from UST infrastructure); • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas); and • On-site Incinerator and Hospital Waste – 'top-down' associated with dumping of incinerator and hospital waste.
Affected media	For the ASI, soil, HGG and groundwater have been identified as potentially affected media.
Receptor identification	Human receptors include site occupants/users (predominantly adults and aged, though may include child visitors), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, groundwater users and recreational water users within Lane Cover River. Ecological receptors include terrestrial organisms and plants within unpaved areas (including on-site landscaped areas), and freshwater ecology in Gore Creek and Lane Cove River.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene, BTEX and HGG). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of HGG and vapours within enclosed spaces such as buildings and basements.

	Exposure to groundwater may occur in Gore Creek or Lane Cove River through direct migration. Groundwater has the potential to enter the creek via the stormwater system (which is expected to discharge into the creek) in a situation where groundwater seepage is captured and discharged to stormwater, eg. subsoil drainage. Exposure to groundwater may occur in Gore Creek or the Lane Cove River through direct migration. Groundwater may also enter the creek via the stormwater system (which is expected to discharge into the creek) in a drained basement scenario.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed building (from soil contamination, volatilisation of contaminants from groundwater and HGG migration); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation.
Presence of preferential pathways for contaminant movement	A sewer main was located in the north-west section of the site which entered the site from the north and ran further to the south-west. The sewer and the associated sewer trench/trench backfill may act as a preferential pathway for contaminant migration. This could occur via groundwater/seepage if present, or via soil/vapour migration through the sewer and/or trench backfill.

6 SAMPLING, ANALYSIS AND QUALITY PLAN

A summary of the SAQP prepared for the ASI by JKE is provided in the following sub-sections. Reference should also be made to the JKE SAQP.

6.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013). The seven-step DQO approach for this project is outlined in the following sub-sections.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 8.1 and the detailed evaluation is provided in the appendices.

6.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. The EIS 2014 report and the JKE DSI identified deep fill up to approximately 5.3mBGL within the west and south-west of the site. Low concentrations of the CoPC were generally detected, though elevated concentrations of TRH were recorded in shallow fill within the south-west of the site.

Investigation data is required to better characterise the site, assess the potential risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required. This information will be considered by the project team in the design and delivery of the project as well as by the consent authority in exercising its planning functions in relation to the approval of the development consent and issue of construction/occupancy certificates.

A waste classification is required prior to off-site disposal of excavated soil/bedrock. An assessment of the potential for ASS and saline conditions to be encountered is required to determine whether management of ASS and/or salinity is required for the proposed development.

JKE note that the findings of the ASS assessment and salinity investigation have been reported in separate reports as outlined in Section 2.1.

6.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the investigation are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site characterisation sufficient to provide adequate confidence that remediation is/is not required?

- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

6.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Existing site information from the JKE DSI, including the DSI site observations and site history documentation;
- Sampling of potentially affected media, including soil, groundwater and fibre cement fragments (FCF);
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, HGG concentrations, odours and staining, and groundwater physiochemical parameters;
- Laboratory analysis of soils, FCF and groundwater for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

6.1.4 Step 4 - Define the Study Boundary

The sampling was confined to the site boundaries as shown in Figure 2 and was limited vertically to a depth of approximately 15mBGL (spatial boundary). JKE note that the intrusive investigation was confined to the redevelopment area (i.e. excluded Pallister House and associated areas). The sampling was completed between 27 September 2021 and 20 October 2021 (temporal boundary).

Sampling was not undertaken within the existing building footprint due to access constraints. This has been identified as a data gap in Section 10.4.

6.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

6.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 7. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

Where appropriate, data are assessed against valid statistical parameters to characterise the data population. This may include calculation and application of mean values and/or 95% upper confidence limit (UCL) values for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997. UCLs are considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC.

For this investigation, the following decision rules will apply:

- If all CoPC (with the exception of asbestos) concentrations are below the SAC, then the data will be compared directly to the SAC without statistical analysis;

- For soil data, if any individual CoPC (with the exception of asbestos) concentration is above the SAC, then statistical analysis will be undertaken, as appropriate. This will include calculation of the 95% upper confidence limit (UCL) value for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997. The UCL will be considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC;
- If asbestos concentrations are encountered above the SAC or in the top 100mm of soil, then asbestos will be deemed a contaminant of concern for remediation purposes; and
- Groundwater data will be compared directly to the SAC and evaluated with regards to valid/complete SPR-linkages.

6.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of inter-laboratory duplicates, intra-laboratory duplicates, trip spike, trip blank and rinsate samples. Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, is provided in the Data Quality (QA/QC) Evaluation in the appendices.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the attached laboratory reports. These criteria were developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, JKE typically adopt the most conservative concentration reported (or in some cases, consider the data from the affected sample as an estimate).

6.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

6.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this investigation, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this investigation.

Quantitative limits on decision errors were not established as the sample plan was not probabilistic.

6.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the investigation objectives. Adjustment of the investigation design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data were collected.

The sampling plan and methodology are outlined in the following sub-sections.

6.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this investigation is outlined in the table below:

Table 6-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples for the ASI were collected from 19 boreholes as shown on Figure 2 attached in the appendices. In conjunction with the 30 locations sampled for the JKE DSI, a total of 49 locations were sampled. This number of locations is greater than the minimum sampling density for hotspot identification as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)[14]. The number of locations corresponds to a sampling density of approximately one sample per 485m^2.
Sampling Plan	The locations were generally placed on a grid-based sampling plan. However, some locations were targeted to specific areas of concern. On this basis, the sampling plan was not designed for the identification of hotspots as outlined in the EPA Sampling Design Guidelines 1995. JKE consider the locations were suitably spaced to provide spatial coverage of the site and to identify any widespread contamination issues associated with the AEC. The boreholes were generally limited to depths of approximately 1-3mBGL. Eight boreholes were extended to depths of up to approximately 15mBGL for the installation of groundwater/HGG monitoring wells.
Set-out and Sampling Equipment	Sampling locations were set out using tape measurements from existing site features. In-situ sampling locations were checked for underground services by an external contractor (Geotrace) prior to sampling. Samples were collected from boreholes using a drill rig equipped with spiral flight augers (150mm diameter), a push tube drill rig and 150mm diameter auger, and a hand auger. Soil samples were obtained from a Standard Penetration Test (SPT) split-spoon sampler, and/or directly from the auger.

[14] NSW EPA, (1995). *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
	Where the push tube drill rig was utilised, soil samples were obtained from disposable polyethylene push tube samplers and directly from the auger. Each borehole was initially advanced using push tubes for standard contamination sampling, then subsequently using a 150mm diameter auger to facilitate the asbestos quantification sampling.
Sample Collection and Field QA/QC	Soil samples were obtained between 27 September 2021 and 6 October 2021 in accordance with the JKE SAQP. Soil samples were collected from the fill and natural profiles based on field observations. The sample depths are shown on the logs attached in the appendices. Contamination samples (except for PFAS analysis) were placed in glass jars with plastic caps and Teflon seals with minimal headspace. Samples for PFAS analysis were placed in laboratory provided plastic jars with plastic caps (no Teflon). Samples for asbestos analysis were placed in zip-lock plastic bags. During sampling, soil at selected depths were split into primary and duplicate samples for field QA/QC analysis. The splitting procedure includes alternate filling of the jars with soil. Homogenisation of duplicate samples did not occur to minimise the potential for the release of volatile organic compounds.
Field Screening	A PID fitted with a 10.6mV lamp was used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records are maintained on file by JKE. The field screening for asbestos quantification included the following: • A representative bulk sample was collected from fill at 1m intervals, or from each distinct fill profile. The quantity of material for each sample varied based on whatever return could be achieved using the auger. The bulk sample intervals are shown on the attached borehole logs; • Each sample was weighed using an electronic scale; • Each bulk sample was passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement. Any soil clumps/nodules were disaggregated; • The condition of fibre cement or any other suspected asbestos materials was noted on the field records; and • If observed, any fragments of fibre cement in the bulk sample were collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content were undertaken based on the requirements outlined in Schedule B1 of NEPM (2013), as summarised in Section 7.1. The scale used to weigh the bulk samples was not calibrated, however this is not considered significant as this method of providing a weight for the bulk sample is considered to be considerably more accurate than applying a nominal soil density conversion.
Decontami-nation and Sample Preservation	Sampling personnel used disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using potable water (with rags and scrubbing brush), followed by a rinse with potable water. Detergents (such as Decon90) were not be utilised during the decontamination process as they may result in interference during PFAS analysis.

Aspect	Input
	Soil samples were preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples were stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

6.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 6-2: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Eight combined groundwater/HGG wells were installed in BH101 (MW101), BH102 (MW102), BH104 (MW104), BH105 (MW105), BH106, (MW106), BH107 (MW107), BH109 (MW109) and BH119 (MW119), as shown on Figure 2 attached in the appendices. The wells were positioned to establish baseline conditions of groundwater and HGG. Considering the topography and the location of the nearest down-gradient water body, MW101 and MW107 were considered to be in the up-gradient of the site and are expected to provide an indication of groundwater flowing onto (beneath) the site. MW102 and MW106 were considered to be in the intermediate area of the site and are considered to be representative of groundwater flowing across (beneath) the site. MW109 and MW119 were considered to be in the down-gradient of the site and are expected to provide an indication of groundwater flowing off-site. MW104 and MW105 were targeted to down-gradient locations of identified potential contamination sources, being an abandoned UST, incinerator and above-ground fuel storage.
Monitoring Well Installation Procedure	The monitoring well construction details are documented on the appropriate borehole logs attached in the appendices. The monitoring wells were installed to depths of approximately 5.75mBGL to 15mBGL. The wells were generally constructed as follows: • 50mm diameter Class 18 PVC (machine slotted screen) was installed in the lower section of the well to intersect groundwater; • 50mm diameter Class 18 PVC casing was installed in the upper section of the well (screw fixed), with the rubber o-ring removed to limit interference for PFAS sampling; • A 2mm sand filter pack was used around the screen section for groundwater infiltration; • A hydrated bentonite seal/plug was used on top of the sand pack to seal the well; and • A gatic cover was installed at the surface with a concrete plug to limit the inflow of surface water. The monitoring well installation, including the screen lengths, were considered suitable for assessment of general groundwater quality with regards to Table 5 in Schedule B2 of NEPM 2013.
Monitoring Well Development	The monitoring wells were developed between 5 and 7 October 2021 using a submersible electrical pump. Due to the hydrogeological conditions, groundwater inflow into the wells was relatively low, therefore the wells were pumped until they were effectively dry. The field monitoring records and calibration data are attached in the appendices.
Groundwater Sampling	The monitoring wells were allowed to recharge for approximately seven to nine days after development. Groundwater samples were obtained between 13 and 14 October 2021.

Aspect	Input
	Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPL) using an inter-phase probe electronic dip meter. The monitoring well head space was checked for VOCs using a calibrated PID unit. The samples were obtained using a peristaltic pump. During sampling, the following parameters were monitored using calibrated field instruments: • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. Steady state conditions were considered to have been achieved when the difference in the pH measurements was less than 0.2 units, the difference in conductivity was less than 10%, and when the SWL was not in drawdown. Due to the hydrogeological conditions, groundwater samples were collected whilst the SWL was in drawdown. The other parameters achieved steady state conditions. Groundwater samples were obtained directly from the single use PVC tubing and placed in the sample containers. Duplicate samples were obtained by alternate filling of sample containers. This technique was adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling was transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste-water contractor for off-site disposal. The field monitoring record and calibration data are attached in the appendices.
Decontaminant and Sample Preservation	During development, the pump was flushed between monitoring wells with potable water (single-use tubing was used for each well). The pump tubing was discarded after each sampling event and replaced therefore no decontamination procedure was considered necessary. The samples were preserved with reference to the analytical requirements and placed in an insulated container with ice or ice bricks. On completion of the fieldwork, the samples were temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

6.4 Hazardous Ground Gas Screening Plan and Methodology

The HGG screening plan and methodology is outlined in the table below:

Table 6-3: Hazardous Ground Gas Screening Plan and Methodology

Aspect	Input
Screening Density	Screening was undertaken from eight combined groundwater/HGG wells installed for the ASI, as shown on Figure 2 attached in the appendices. The monitoring wells were installed with landfill gas caps for screening purposes. This density was considered appropriate for screening purposes, as the source of HGG is considered limited to deep fill within the west and south-west of the site.

Aspect	Input
Screening Plan	The combined groundwater/HGG wells were placed to provide information regarding likely up-gradient and down-gradient groundwater conditions, and to provide spatial coverage of the site. The locations are considered appropriate for HGG screening purposes. Three HGG screening events were undertaken between 5 and 7 October 2021 (Round 1), 13 and 14 October 2021 (Round 2) and on 20 October 2021 (Round 3). The screening events were conducted at approximately one-week intervals.
Screening Set-out and Field Screening	Screening locations were set out using taped measurements from existing site features. Readings were taken from eight combined groundwater/HGG wells. A calibrated portable landfill gas analyser was used to screen the wells and nominated monitoring points. The wells were screened for concentrations of CH_4, CO_2, O_2, H_2S, CO and hexane. During the screening measurements for flow and differential pressure (DP) were also noted. The readings were recorded on field logs attached in the appendices. During screening, flow rates, differential pressure and atmospheric pressure were also recorded on field logs attached in the appendices.

6.5 Analytical Schedule

The analytical schedule was generally in accordance with the SAQP, with minor deviations to the SAQP recorded due to the encountered site conditions. The variations related to an increased analytical frequency for heavy metals, TRH/BTEX, PAHs and asbestos in soil due to varying fill profiles, and a decreased analytical frequency for groundwater samples due to low recharge rates within the monitoring wells. The deviations to the SAQP were minor and were considered to not adversely impact the outcome of the investigation. A summary of the analytical schedule is outlined in the table below:

Table 6-4: Analytical Schedule

Analyte	Fill Soil	Natural Soil	Fibre Cement	Groundwater
Heavy Metals	36	13	-	6
BTEX	36	13	-	6
TRH	36	13	-	6
TRH (Silica Gel)	2	-	-	-
PAH	36	13	-	6
OCP/OPP	19	-	-	-
PCBs	19	-	-	-
VOCs	-	-	-	6
PFAS	3	0	-	1

Analyte	Fill Soil	Natural Soil	Fibre Cement	Groundwater
Asbestos	23	0	1	-
pH/EC	-	-	-	6

6.5.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 6-5: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	279440, 279440-A 279440-D, 79440-E, 280027, 280027-A, 280023, 280509,
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	28076 and 28210

7 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

7.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

7.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with minimal opportunities for soil access' exposure scenario (HIL-B);
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HIL-B criteria were adopted for PFAS assessment based on Table 2 in The PFAS National Environmental Management Plan (NEMP) Version 2.0 2020[15];
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[16]; and
- Asbestos was assessed against the HSL-B criteria. A summary of the asbestos criteria is provided in the table below:

Table 7-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-B criteria were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)[17]. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.04% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): $$\textbf{\% w/w asbestos in soil} = \frac{\textbf{\% asbestos content x bonded ACM (kg)}}{\text{Soil volume (L) x soil density (kg/L)}}$$

[15] Heads of EPAs Australia and New Zealand (HEPA). PFAS National Environmental Management Plan Version 2.0 - January 2020 (referred to as NEMP 2020)

[16] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

[17] Western Australian (WA) Department of Health (DoH), (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2021)

Guideline	Applicability
	However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams): **% w/w asbestos in soil = $\frac{\text{\% asbestos content x bonded ACM (g)}}{\text{Soil weight (g)}}$**

7.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. These have only been applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[18];
- ESLs were adopted based on the soil type;
- The ecological (direct exposure) guidelines for soil were adopted for PFAS assessment based on Table 3 in NEMP 2020; and
- EILs for selected metals were calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) and published ambient background concentration (ABC) values presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[19] as a preliminary screening. The exceedances were noted and representative soil samples for various soil profiles were analysed for pH and/or cation exchange capacity (CEC). The lowest pH and CEC for each soil profile (or the reported values where analysed) were used to select the appropriate ACL values and the published ABC values to calculate soil-specific EILs. This method is considered to be adequate for the Tier 1 screening.

7.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered (if required).

7.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[20] as outlined in the following table:

[18] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[19] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

[20] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

Table 7-2: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC > CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP > TCLP2 and/or SCC > SCC2 then treat as hazardous waste.
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and • Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.

The PFAS data were assessed against the NSW EPA Addendum to the Waste Classification Guidelines (2014) – Part 1: classifying waste[21].

7.2 Groundwater

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)[22]. Environmental values for this investigation include aquatic ecosystems and human-health risks in non-use scenarios.

7.2.1 Human Health

- HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B). HSLs were calculated based on the soil type and the observed depth to groundwater in comparison to the proposed design levels;
- The NEPM (2013) HSLs were not applicable for some locations as the proposed basement will intersect groundwater. On this basis, JKE have undertaken a site-specific assessment (SSA) for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater. The assessment included selection of alternative Tier 1 criteria that were considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria were based on the following (as shown in the attached report tables):
    - Australian Drinking Water Guidelines 2011 (updated 2021)[23] for BTEX compounds and selected VOCs;

[21] NSW EPA, (2016). *Addendum to the Waste Classification Guidelines (2014) – Part 1: classifying waste*

[22] NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination.*

[23] National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

- World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)[24] for petroleum hydrocarbons;
- USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
- The use of the laboratory PQLs for other contaminants where there were no Australian guidelines.

- The ADWG 2011 were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies, or with seepage water in the basement). These have been deemed as 'recreational' SAC; and
- The recreational water quality guideline value was adopted for PFAS assessment based on Table 1 in NEMP 2020.

7.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species were adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)[25]. The 99% trigger values were adopted where required to account for bioaccumulation. Low and moderate reliability trigger values were also adopted for some contaminants where high-reliability trigger values don't exist.

The ecological (freshwater) water quality guidelines were adopted for PFAS assessment based on NEMP 2020, based on 95% protection (slightly to moderately disturbed systems).

7.3 Hazardous Ground Gases

HGG data were compared to the Level 2 assessment criteria outlined in the NSW EPA Assessment and Management of Hazardous Ground Gases, Contaminated Land Guidelines (2020)[26]. The Level 2 risk-based approach includes the calculation of Gas Screening Value (GSV) for each monitoring well and each monitoring round for methane and carbon dioxide, as well as an overall GSV based on all of the obtained screening data. The GSV is calculated by multiplying the maximum borehole flow rate (L/hr) and the maximum methane gas concentration (%v/v). The calculated GSV were assessed against the Modified Wilson and Card Classification presented in Table 7 in the HGG Guidelines 2020, and a Characteristic Gas Situation (CS) value obtained using the "medium-to-high density residential" SAC.

The "medium- and high-density residential" land-use setting was selected as the proposed development includes a hospital and seniors living accommodation. The seniors living accommodation includes units similar to high-density residential. JKE note that the required gas protection measures for "medium- and high-density residential" and "public buildings, schools, hospitals and shopping centres" scenarios are equal up to and including CS3 ratings.

[24] World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

[25] Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

[26] NSW EPA, (2020). *Assessment and Management of Hazardous Ground Gases. Contaminated Land Guidelines* (referred to as HGG Guidelines 2020)

The HGG Guidelines 2020 do not provide assessment criteria for carbon monoxide and hydrogen sulphide. Carbon monoxide and hydrogen sulphide data will be compared to the Time Weighted Average (TWA) workplace exposure standards presented in Safe Work Australia Workplace Exposure Standards for Airborne Contaminants (2019)[27].

[27] Safe Work Australia, (2019). *Workplace Exposure Standards for Airborne Contaminants*.

8 RESULTS

8.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

8.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Asphaltic concrete (AC) pavement was encountered at the surface in BH101 to BH106, BH109, BH114, BH116 and BH119 and ranged in thickness from approximately 20mm to 100mm. Concrete pavement was encountered at the surface in BH112 and was approximately 220mm thick.
Fill	Fill was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.1mBGL (BH116) to 4.1mBGL (BH104). BH111 and BH117 were terminated in the fill at approximate depths of 0.8mBGL and 1.5mBGL. The fill typically comprised silty gravelly sand, sandy clay and silty clay, with occasional silty sand, clayey sand and sandy gravel, with inclusions of igneous, ironstone, sandstone and siltstone gravel, ash, slag, root fibres and building rubble (asphalt, brick, tile, ceramic, glass, metal and plastic fragments). Organic odours were not encountered in the fill during the investigation.
Natural Soil	Residual sandy clay, silty clay and silty sand was encountered beneath the fill in BH103, BH105, to BH107, BH109, BH110A, BH113 to BH116 and BH118 at depths of approximately 0.2mBGL (BH114) to 1.6mBGL (BH118). A hydrocarbon odour was encountered in the natural soils in BH103 at a depth of approximately 1.4mBGL. BH103 is located in close proximity of the UST as shown on Figure 2. No stained soils were encountered during the investigation.
Bedrock	Sandstone bedrock was encountered beneath the fill in BH101, BH102, BH104, BH108, BH112 and BH119, and beneath the residual soils in BH105 to BH107, BH109 and BH116 at depths of approximately 0.3mBGL (BH119) to 4.1mBGL (BH104). A layer of siltstone approximately 500mm thick was encountered within the sandstone bedrock at a depth of approximately 11mBGL in BH109. The siltstone was assessed to be of low strength.
Groundwater	All boreholes were dry during and on completion of auger drilling. Potable water is introduced during core drilling activities, which inhibits meaningful groundwater seepage measurements during drilling.

8.3 Field Screening

A summary of the field screening results are presented in the following table:

Table 8-2: Summary of Field Screening

Aspect	Details
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0ppm to 579ppm equivalent isobutylene. The majority of the results were below 5ppm indicating very low PID readings. Two soil samples obtained from BH103 encountered PID values in the 500ppm range indicating PID detectable VOCs. Samples with elevated PID readings were analysed for TRH and BTEX.
Bulk Screening for Asbestos	The bulk field screening results are summarised in the attached report tables. All results were below the SAC. No visible asbestos was identified during the bulk field screening.
Groundwater Depth & Flow	SWL measured in the monitoring wells installed at the site ranged from approximately 3.58mBGL to 9.9mBGL. The surface RLs of the monitoring wells were interpolated from spot height measurements on the provided survey and are approximate. Groundwater RLs calculated on these measurements ranged from approximately 34mAHD to 42mAHD. The groundwater RLs indicate that excavation for the proposed basement may intercept groundwater. A contour plot was prepared for the groundwater levels as shown on Figure 4. Groundwater flow generally occurs in a down gradient direction perpendicular to the groundwater elevation contours. The contour plot indicates that groundwater generally flows towards the west and south-west.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from pH 4.07 to pH 6.46; - EC ranged from 71.7µS/cm to 660µS/cm; - Eh ranged from -16.2mV to -53.2mV; and - DO ranged from 1.1ppm to 6.5ppm.
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.
HGG Screening	The combined GW/HGG monitoring wells were screened over three events (5 to 7 October 2021, 13 to 14 October 2021 and 20 October 2021). The results of the screening are discussed in Section 0.

8.4 Soil Laboratory Results

The soil laboratory results from the ASI were assessed against the SAC presented in Section 7.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the ASI results is presented in the table below. The JKE DSI results are also attached in the appendices. The results are summarised in the JKE DSI report and in Section 2.1.

8.4.1 Human Health and Environmental (Ecological) Assessment

Table 8-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	49	17	0	0	-
Cadmium	49	<PQL	0	NSL	-
Chromium (total)	49	93	0	0	-
Copper	49	74	0	0	-
Lead	49	390	0	0	-
Mercury	49	0.2	0	NSL	-
Nickel	49	110	0	0	-
Zinc	49	120	0	0	-
Total PAHs	49	11	0	NSL	-
Benzo(a)pyrene	49	1.5	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	49	2.1	0	NSL	-
Naphthalene	49	<PQL	0	NSL	-
DDT+DDE+DDD	19	<PQL	0	NSL	-
DDT	19	<PQL	NSL	0	-
Aldrin and dieldrin	19	<PQL	0	NSL	-
Chlordane	19	<PQL	0	NSL	-
Heptachlor	19	<PQL	0	NSL	-
Chlorpyrifos	19	<PQL	0	NSL	-
PCBs	19	<PQL	0	NSL	-
TRH F1	49	68	1	0	The TRH F1 concentration exceeded the human health SAC in one natural soil sample collected from BH103 (1.4-1.5m). The maximum concentration was 68mg/kg.
TRH F2	49	93	0	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F3	49	450	0	3	TRH F3 concentrations exceeded the ecological SAC in three fill soil samples collected from BH104 (0.04-0.3m duplicate sample, and 0.5-0.95m), and BH108 (0-0.1m duplicate sample). The maximum concentration was 450mg/kg. Silica gel clean-up analysis was undertaken on two fill soil samples collected from BH104 (0.5-0.95m) and BH108 (0.5-0.95m) to assess for the potential for interference from organic material other than petroleum hydrocarbons. The TRH F3 concentrations after silica gel clean-up exceeded the ecological SAC in one fill soil sample collected from BH104 (0.5-0.95m). The maximum concentration was 340mg/kg.
TRH F4	49	370	0	0	-
Benzene	49	<PQL	0	0	-
Toluene	49	<PQL	0	0	-
Ethylbenzene	49	<PQL	0	0	-
Xylenes	49	<PQL	0	0	-
PFOS	3	<PQL	NSL	0	-
PFOS + PFHxS	3	<PQL	0	NSL	-
PFOA	3	<PQL	0	0	-
Asbestos (in soil)	23	<PQL	0	NA	Asbestos was not detected within the analysed samples.
Asbestos in fibre cement	1	-	0	NSL	The FCF collected from BH117 (0.5-1.5m) did not contain asbestos.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

PQL: Laboratory detection limit

8.4.2 Waste Classification Assessment

The ASI laboratory results were assessed against the criteria presented in Section 7.1.4. The results are presented in the report tables attached in the appendices. A summary of the results is presented in the following table:

Table 8-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	49	0	0	-
Cadmium	49	0	0	All results were below the laboratory PQL.
Chromium	49	0	0	-
Copper	49	NSL	NSL	-
Lead	49	2	0	Lead concentrations exceeded the CT1 criterion in two fill samples collected from BH102 (0.5-0.95m) and BH118 (0-0.1m and laboratory duplicate). The maximum lead concentration was 390mg/kg.
Mercury	49	0	0	-
Nickel	49	11	0	Nickel concentrations exceeded the CT1 criterion in nine fill samples collected from BH101 (0.02-0.4m and field and laboratory duplicates), BH102 (0.05-0.1m), BH104 (0.04-0.3 and field and laboratory duplicates, and 0.5-0.95m), BH105 (0.25-0.4m and laboratory duplicate), BH106 (0.03-0.3m), BH109 (0.01-0.4m), BH110A (0-0.1m and 0.1-0.2m), BH114 (0.05-0.2m and laboratory duplicate), BH115 (0-0.1m) and BH116 (0-0.1m). The maximum nickel concentration was 110mg/kg.
Zinc	49	NSL	NSL	-
TRH (C_6-C_9)	49	0	0	-
TRH (C_{10}-C_{36})	49	0	0	-
BTEX	49	0	0	All BTEX results were below the laboratory PQLs.
Total PAHs	49	0	0	-
Benzo(a)pyrene	49	3	1	Benzo(a)pyrene concentrations exceeded the CT1 criterion in three fill samples collected from BH102 (0.5-0.95m), BH103 (0.03-0.4m) and BH118 (1.4-1.5m). The maximum concentration was 1.5mg/kg.
OCPs & OPPs	19	0	0	All results were below the laboratory PQL.
PCBs	19	0	0	All results were below the laboratory PQL.

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
PFOS + PFHxS	3	NSL	0	All results were below the laboratory PQL.
PFOA	3	NSL	0	All results were below the laboratory PQL.
Asbestos	26	-	-	Asbestos was not detected in the samples analysed.

N: Total number (primary samples)

NSL: No set limit

Table 8-5: Summary of Soil Laboratory Results Compared to TCLP Criteria

Analyte	N	N > TCLP Criteria	Comments
Lead	2	0	The two fill samples with lead concentrations above the CT1 criterion were analysed for TCLP lead. The maximum TCLP lead concentration was 0.72mg/L below the TCLP1 criterion.
Nickel	9	0	The nine fill samples with nickel concentrations above the CT1 criterion were analysed for TCLP nickel. The maximum TCLP nickel concentration was 0.1mg/L below the TCLP1 criterion.
Benzo(a)pyrene	3	0	The three fill samples with benzo(a)pyrene concentrations above the CT1 criterion were analysed for TCLP benzo(a)pyrene. The TCLP benzo(a)pyrene concentrations were below the laboratory PQL and TCLP1 criterion.

N: Total number (primary samples)

8.4.3 Statistical Analysis

Statistical calculations were not undertaken for the ASI as the majority of the exceedances related to potential risks to ecological receptors. Further, in considering the DSI and DGI data, the TRH impacts appear to generally relate to point sources of contamination associated with the UST. On this basis, statistical analysis of the results was not considered necessary.

8.5 Groundwater Laboratory Results

The ASI groundwater laboratory results were assessed against the SAC presented in Section 7.2. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

Table 8-6: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	6	3	0	0	-
Cadmium	6	0.3	0	1	Cadmium concentration exceeded the ecological SAC in one groundwater sample collected from MW106 (duplicate sample). The maximum cadmium concentration was 0.3µg/L.

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Chromium (total)	6	1	0	0	-
Copper	6	9	0	5	Copper concentrations exceeded the ecological SAC in five groundwater samples collected from MW102, MW105, MW106 (and duplicate sample), MW107 (and duplicate sample) and MW109.The maximum copper concentration was 9µg/L (duplicate of MW106).
Lead	6	19	0	1	Lead concentrations exceeded the ecological SAC in one groundwater sample collected from MW106 (and duplicate sample). The maximum lead concentration was 19µg/L.
Mercury	6	<PQL	0	0	-
Nickel	6	18	0	1	Nickel concentration exceeded the ecological SAC in one groundwater sample collected from MW105. The maximum nickel concentration was 18µg/L.
Zinc	6	81	0	5	Zinc concentrations exceeded the ecological SAC in five groundwater samples collected from MW101 (and laboratory duplicate), MW105, MW106 (and duplicate sample), MW107 (and duplicate sample) and MW109.The maximum copper concentration was 81µg/L.
Total PAHs	6	5.1	NSL	NSL	Total PAH concentrations were recorded in two groundwater samples collected from MW107 and MW109. The detected concentrations were attributed to acenaphthene concentrations within the groundwater.
Benzo(a)pyrene	6	<PQL	0	0	-
Naphthalene	6	<PQL	NSL	0	-
TRH F1	6	45	0	NSL	-
TRH F2	6	<PQL	0	NSL	-
TRH F3	6	<PQL	NSL	NSL	All TRH F3 results were below the laboratory PQL.

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F4	6	<PQL	NSL	NSL	All TRH F4 results were below the laboratory PQL.
Benzene	6	<PQL	0	0	-
Toluene	6	<PQL	0	0	-
Ethylbenzene	6	<PQL	0	0	-
m+p-Xylene	6	<PQL	0	0	-
o-Xylene	6	<PQL	0	0	-
Total Xylenes	6	<PQL	0	0	-
Trihalomethanes[a]	6	50	0	0	-
Other VOCs	6	<PQL	0	0	-
PFOS	1	<PQL	NSL	0	-
PFOS + PFHxS	1	<PQL	0	NSL	-
PFOA	1	<PQL	0	0	-
pH	6	Min. pH 4.5 Max. pH 7	NSL	5	The pH results were below the lower threshold of the ecological SAC in five groundwater samples collected from MW101 (and laboratory duplicate), MW105, MW106 (and duplicate sample), MW107 (and duplicate sample) and MW109. The lowest result was pH 4.5.
EC	6	590µS/cm	NSL	NSL	The EC results ranged from 69µS/cm (MW102) to 590µS/cm (MW105).

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

a: Sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform.

8.6 Hazardous Ground Gases Screening Results

The HGG screening results were assessed against the SAC presented in Section 7.3. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

Table 8-7: Summary of HGG Screening data

HGG/Flow/Pressure	HGG Monitoring Well Concentrations/Measurements
Methane (CH_4)	CH_4 was not detected within the monitoring wells during any of the screening events.
Carbon dioxide (CO_2)	The maximum CO_2 concentrations recorded at the monitoring wells using the landfill gas meter ranged from 0 %v/v (several locations and screening events) to 13.7 %v/v (MW109, 14 October 2021).
Oxygen (O_2)	The minimum O_2 concentrations detected ranged from 2.7 %v/v (MW109, 14 October 2021) to 21.4 %v/v (MW104, 20 October 2021).
Hydrogen sulphide (H_2S)	H_2S was not detected within the monitoring wells during any of the screening events.
Carbon Monoxide (CO)	The maximum CO concentrations detected ranged from 0ppm (MW101, MW102, MW104, MW105, MW107, MW109 and MW119, 20 October 2021) to 61ppm (MW109, 5 October 2021).
Atmospheric Pressure (hPa)	The atmospheric pressure during the monitoring well screening on 5 to 7 October 2021 ranged from 998 hPa to 1004 hPa. The atmospheric pressure was decreasing slightly. Between 9am and 3pm the previous day (4 October 2021), though rose overnight prior to the screening event. The atmospheric pressure during the monitoring well screening on 13 to 14 October 2021 ranged from 1001 hPa to 1008 hPa. The atmospheric pressure was relatively steady in the 24 hours prior to screening. JKE note the pressure decreased slightly during the course of the screening event. The atmospheric pressure during the monitoring well screening on 20 October 2021 ranged from 1013 hPa to 1018 hPa. The atmospheric pressure was rising slightly (3hPa) in the 24 hours prior to screening. JKE note that the atmospheric pressure decreased slightly overnight prior and appeared to cycle (increase/decrease) during the course of the screening event.
Flow Rates (L/hr)	The maximum flow rates recorded at the monitoring wells ranged from -1.6L/hr (MW107, 20 October 2021) to 0.7L/hr (MW106, 5 October 2021). As shown in Table HGG1, negative flow rates were replaced as positive values to account for barometric pressure fluctuations (barometric pumping) and the relationship between pressure gradients of the sub-surface and the surface at the site.

9 WASTE CLASSIFICATION ASSESSMENT

9.1 Preliminary Classification of Fill

Based on the results of the ASI, and at the time of reporting, the fill material is assigned a preliminary classification as **General Solid Waste (non-putrescible)**. This preliminary classification considers the existing data within the JKE DSI, the data from this investigation, and the results of limited TCLP analysis.

Further assessment is required to confirm this classification prior to off-site disposal of the waste. Sections of the site were occupied by buildings and sampling of the fill within building footprints was outside the scope of the ASI. These areas should be targeted during the next round of testing. The anticipated waste volumes should also be confirmed at that time and documented in the report.

9.2 Classification of Natural Soil and Bedrock

Based on the scope of work undertaken for this investigation, and at the time of reporting, JKE are of the opinion that the natural silty and sandy clay in the vicinity of UST, BH103, the extremely weathered sandstone in the vicinity of BH112, the sandy clay in the vicinity of BH113 and the sandstone bedrock in the vicinity of BH2 do not meet the definition of **VENM** for off-site disposal or re-use purposes and is assigned a preliminary classification of **General Solid Waste (non-putrescible)**.

Further assessment is required to confirm the classification and delineate the vertical and lateral extents of TRH and/or PAH impacted natural soils and rock.

10 DISCUSSION

10.1 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

10.1.1 Soil

10.1.1.1 Asbestos

All asbestos results were below the SAC. Asbestos materials were not visually observed at the surface and asbestos was not detected in the samples analysed.

It is acknowledged that fill soils were encountered to depths ranging from 0.1mBGL to 4.1mBGL for the ASI and deeper for the DSI. The fill contained varying quantities of building/demolition waste inclusions. As the asbestos bulk field screening was completed using augers, this limited the volume of soil that could be screened from each profile. On this basis, there is potential for unidentified asbestos to be present in fill. However, based on the site observations and soil results of this investigation and the DSI, the risks associated with potential occurrence of asbestos in fill are considered to be low and can be addressed via the implementation of an unexpected finds protocol (UFP). This is discussed further in Section 11.

10.1.1.2 Hydrocarbons

A concentration of TRH F1 above the human health SAC was recorded in natural sandy clay in one location (BH103). Concentrations of TRH F3 above the ecological SAC were recorded in fill in two locations (BH104 and BH108). BH103 and BH104 were located in the south-west of the site and were sealed by AC pavement as shown on Figure 3. BH108 was located in the north-east of the site and was unsealed.

The data indicated that the TRH F1 concentration in the natural soils in BH103 were likely associated with leaks/spills from the UST, as the concentrations were recorded at depth and BH103 is located down-gradient of the UST. In terms of the proposed development, BH103 is located within the proposed basement footprint, and the TRH impacts were detected beneath the proposed bulk excavation level. There is potential for the TRH F1 to volatilise and migrate into the building. On this basis, a complete SPR linkage may exist.

Silica gel clean-up analysis was undertaken on selected samples to isolate interference from non-petroleum sources (i.e. organic matter). After consideration of the TRH silica-gel clean-up results, the TRH F3 concentration in fill in BH108 were assessed to not pose risk to ecological receptors. The data indicated the TRH F3 concentrations in fill in BH104 were likely associated with surficial impacts from imported fill and/or surficial leaks/spills permeating the site surface through cracks/gaps in the pavement. JKE note that BH104 is currently sealed by AC pavement, and that the area will remain sealed under the proposed configuration. On this basis, the TRH F3 in fill in BH104 is not considered to pose an unacceptable risk to ecological receptors.

The DSI identified a concentration of TRH F2 above the human health and ecological SAC in fill in one location (BH23). Concentrations of TRH F3 above the ecological SAC were also recorded in fill in seven locations (BH5, BH13, BH14, BH17, BH19, BH21 and BH23). With the exception of BH19, the locations were located in the south-west of the site. BH19 was located in the north of the site. BH13, BH14, BH19 and BH23 were located within landscaped/unsealed portions of the site. BH5, BH17 and BH21 were sealed by AC pavement and the TRH F3 concentrations in fill in these locations were not considered to pose risk to ecological receptors.

The DSI identified the source of the TRH was likely to be surficial impacts associated with imported fill. There was also potential that the TRH may have been attributable to localised spills/releases.

Based on the location of BH23, the surficial nature of the impact and the distance to the proposed building footprints (at the time of DSI reporting), the DSI concluded that the data did not conclusively demonstrate a potentially complete SPR linkage for TRH F2 (via vapour intrusion pathway) existed. JKE has considered these findings in the context of the development plans provided to JKE on 2 February 2022 and consider that a complete SPR linkage is unlikely to exist for human receptors however, a potentially complete SPR linkage exists for current and future ecological receptors. Potentially complete SPR linkages for ecological receptors also exist in relation to the TRH F3 detected in fill in BH13, BH14 and BH23.

10.1.2 Groundwater

10.1.2.1 Heavy metals

A concentration of cadmium marginally above the ecological SAC was recorded in the groundwater sample collected from MW106 (duplicate sample). All other cadmium results were equal to or below the ecological SAC. JKE were of the opinion that the marginal exceedance was unlikely to pose an unacceptable risk to ecological receptors in the context of the proposed development and the immediate surrounds.

Copper concentrations above the ecological SAC were recorded in the majority of the groundwater samples. Elevated concentrations of copper were not recorded within the soils. Based on the concentrations of trihalomethanes detected (discussed further in Section 10.1.2.3), JKE are of the opinion that the copper concentrations are likely, in part at least, to be indicative of leaking potable water supply.

Concentrations of lead above the ecological SAC were recorded in the groundwater samples collected from MW106 (and the field duplicate). JKE note that the elevated lead concentrations were not recorded in the down-gradient monitoring wells. On this basis, JKE considered unlikely that the elevated lead concentrations are migrating off-site. The lead concentrations are not considered to pose a risk to ecological receptors in the context of the proposed development.

A concentration of nickel above the ecological SAC was recorded in the groundwater sample collected from MW105. JKE note that the elevated nickel concentration was not repeated in the down-gradient monitoring well (MW102). On this basis, JKE considered unlikely that the elevated nickel concentrations are migrating off-site. The nickel concentration is not considered to pose a risk to ecological receptors in the context of the proposed development.

Concentrations of zinc above the ecological SAC were recorded in the majority of the groundwater samples. As the concentrations were relatively consistent between the samples, the zinc concentrations are considered likely to be a regional issue. The zinc concentrations do not pose a risk to the on-site receptors in the context of the proposed development.

Though the concentrations of heavy metals are considered to not pose risk to the on-site receptors in the context of the proposed land use, some treatment may be required for off-site disposal of groundwater to stormwater during dewatering activities. Discharge requirements should be confirmed with the appropriate regulatory authority.

10.1.2.2 Hydrocarbons

All results were below the ecological and human health SAC.

Concentrations of TRH F1 were detected in groundwater samples collected from MW101 and MW105, and acenaphthene (a PAH compound) were detected in groundwater samples collected from MW107 and MW109. The source of the TRH F1 is considered to be associated with the presence of Trihalomethanes as discussed below.

Though the concentrations of TRH F1 and PAHs do not pose risk to the on-site receptors in the context of the proposed land use, some treatment may be required for off-site disposal of groundwater to stormwater during dewatering activities. Discharge requirements should be confirmed with the appropriate regulatory authority.

10.1.2.3 VOCs

All results were below the ecological and human health SAC. Concentrations of trihalomethanes were detected in groundwater samples collected from MW101 and MW105. Trihalomethanes are common by-products associated with the disinfection process of potable water supply. Review of the Sydney Water Quarterly Drinking Water Quality Report[28] indicates that the average concentration of total trihalomethanes within the drinking water supply can range up to 40µg/L. On this basis, JKE consider the concentrations of TRH F1 and trihalomethanes were likely representative of potable water supply (from leaking infrastructure and/or spills in the area) entering the groundwater.

No other sources of trihalomethanes were observed within the vicinity of the site. On this basis, it is considered that the trihalomethane concentrations are representative of drinking water leaking from supply infrastructure and entering the underlying aquifer.

10.1.2.4 Physical Parameters

With the exception of the pH reading for the groundwater sample collected from MW102, all of the pH readings were outside (i.e. below the lower threshold) the SAC for ecological receptors. JKE were of the opinion that the pH of the groundwater was likely a regional issue and require treatment for dewatering.

[28] Sydney Water, (2020). *Quarterly Drinking Water Quality Report, Ryde Delivery System, 1 April 2020 to 30 June 2020*. (Dated 28 July 2020)

10.2 Preliminary HGG Screening Discussion

During drilling for the soil investigation and combined HGG/groundwater monitoring well installation, HGG screening was conducted for WHS purposes, and to provide an indication of potential HGG source zones.

During drilling, no concentrations of CH_4 and H_2S were recorded, whilst low concentrations of CO_2 and CO were recorded. The maximum CO_2 concentration recorded was 5.8%v/v (BH118, 2.5mBGL). The borehole log indicated that this concentration was encountered with the natural sandy clay at this depth. The maximum CO concentration recorded was 39ppm (BH104, 1.5mBGL). The borehole log indicated that this concentration was likely associated with the fill soil profile (silty gravelly sand with various inclusions) at this depth. The composition of the fill was indicative of historic uncontrolled filling.

The monitoring wells were screened on three events in October 2021. During the screening events, no concentrations of CH_4 and H_2S were recorded. CO was recorded in all monitoring wells during the first and second screening events, and in MW106 during the third screening event. Two CO readings of 31ppm (MW105, first screening event) and 61ppm (MW109, first screening event) were recorded above the TWA threshold of 30ppm. These CO readings indicated gas protection measures may be required.

CO_2 readings were recorded in the majority of the monitoring wells during each screening round. The CO_2 readings within the wells ranged from 0%v/v (MW101, MW102 and MW107 during the first round, and MW104, MW105, MW107 and MW119 during the third round) to 13.7%v/v (MW109 during the second round). The CO_2 readings within the wells indicated gas protection measures equating to a gas protection value of 3 may be necessary. Protection measures may include (but not limited to) a combination of the following:

- Sub-floor ventilation (passive or active);
- Appropriately designed concrete floor slabs (i.e. cast in-situ or post-tensioned suspended slabs, minimal service penetrations);
- Gas-resistant membrane; and
- Monitoring and detection systems.

JKE note that the HGG screening was undertaken at regular intervals and climatic variations may result in differing concentrations. Therefore, future investigations should consider utilizing a continuous HGG monitoring program recommended in the HGG guidelines. The data generated by the continuous HGG monitoring program should be interpreted to confirm the required level of gas protection. The interpretation of the data may also include a site-specific human-health risk assessment (HHRA) to better assess the risks in the context of the proposed development.

10.3 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

Yes, as discussed in Section 8.

Do potential risks associated with contamination exist, and if so, what are they?

Yes, as discussed in Section 10.

Is remediation required?

Yes. Remediation is required for the TRH impacted fill and natural soils, and for the removal of the UST. Further assessment of the potential risks posed by HGG is required.

Is the site characterisation sufficient to provide adequate confidence in the above decisions?

Yes.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

The site can be made suitable subject to the implementation of a RAP and recommendations outlined in Section 11.

10.4 Data Gaps

An assessment of data gaps is provided in the following table:

Table 10-1: Data Gap Assessment

Data Gap	Assessment
HGG screening undertaken in spot monitoring events.	The HGG screening was undertaken by spot monitoring events conducted at regular (i.e. weekly) intervals. There is potential that atmospheric conditions may influence the results of the screening, and that the 'worst-case' may not have been encountered. Continuous monitoring should be undertaken at two locations for a period of at least 6-8 weeks to account for atmospheric variability. Recommendations are included in this report to address this data gap.
Fill soil mound not assessed.	A fill soil mound was identified adjacent to the northern boundary during the site inspection. No soil samples were collected or analysed from the fill soil mound. There is potential for the fill soil mound to include contaminated soils. Given the extensive nature of earthworks which will be required for the proposed development, the presence of the fill mound is considered unlikely to alter the findings of this investigation. JKE are of the opinion that the risks associated with the fill soil mound can be managed via the RAP and offsite disposal of the fill soils. Recommendations for additional soil sampling of the fill soil mound are included in the report to address this data gap.
Building footprints not assessed.	Due to access constraints, the building footprints were not investigated. The fill and soil conditions beneath the building footprints are currently unknown. Following demolition, further investigation is recommended beneath the existing building footprints. The further investigation is largely required to inform the waste classification for off-site disposal of excavated material. Recommendations for additional soil sampling of the building footprints are included in this report to address this data gap.

Data Gap	Assessment
Asbestos quantification undertaken using boreholes.	Asbestos quantification was undertaken from boreholes (100mm-150mm nominal diameter). The WA DOH (2021) guidance recommends the use of a 150mm nominal diameter auger, though preferably test pits. Though the diameter of the auger was smaller than the recommended size (for some sampling intervals), JKE note that no ACM or AF/FA was visibly identified during bulk field screening or during laboratory analysis. On this basis, JKE consider the use of boreholes provided sufficient confidence to confirm the presence of asbestos in soil.

11 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of historical information and the existing DSI data, soil sampling from 19 boreholes and groundwater sampling and HGG screening from eight combined groundwater/HGG wells. The site has historically been used as a hospital since at least the 1960s. Prior to the 1960s, the site was used as a church-run home for girls, and residential land use.

Based on the finding of the investigation, JKE are of the opinion that the site can be made suitable for the proposed development described in Section 1.1. The following is recommended:

- Prepare a RAP to address the contamination issues identified at the site. This will include an UFP. The RAP should address the data gaps outlined in Section 10.4. Due to access constraints, this will largely need to occur during the remediation works;
- Complete a continuous monitoring program for HGG and assess the risks posed by HGG to site receptors. Based on the results, prepare a Remediation Work Plan (RWP) for HGG; and
- Undertake a validation assessment documenting the remediation works.

At this stage, JKE consider that there is no requirement to notify the NSW EPA under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[29] provided the above recommendations are implemented.

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

[29] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997* (referred to as Duty to Report Contamination)

12 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or land-use. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations
Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures

ASI Figures

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

Location: 95-115 RIVER ROAD, GREENWICH, NSW

Project No: E32507BR

Figure No: 1

JKEnvironments

PLOT DATE: 16/09/2021 10:48:31 AM DWG FILE: Z:\S EIS\SC EIS JOBS\32000'S\SE32507BT GREENWICH\CAD\BRIE32507BR.DWG

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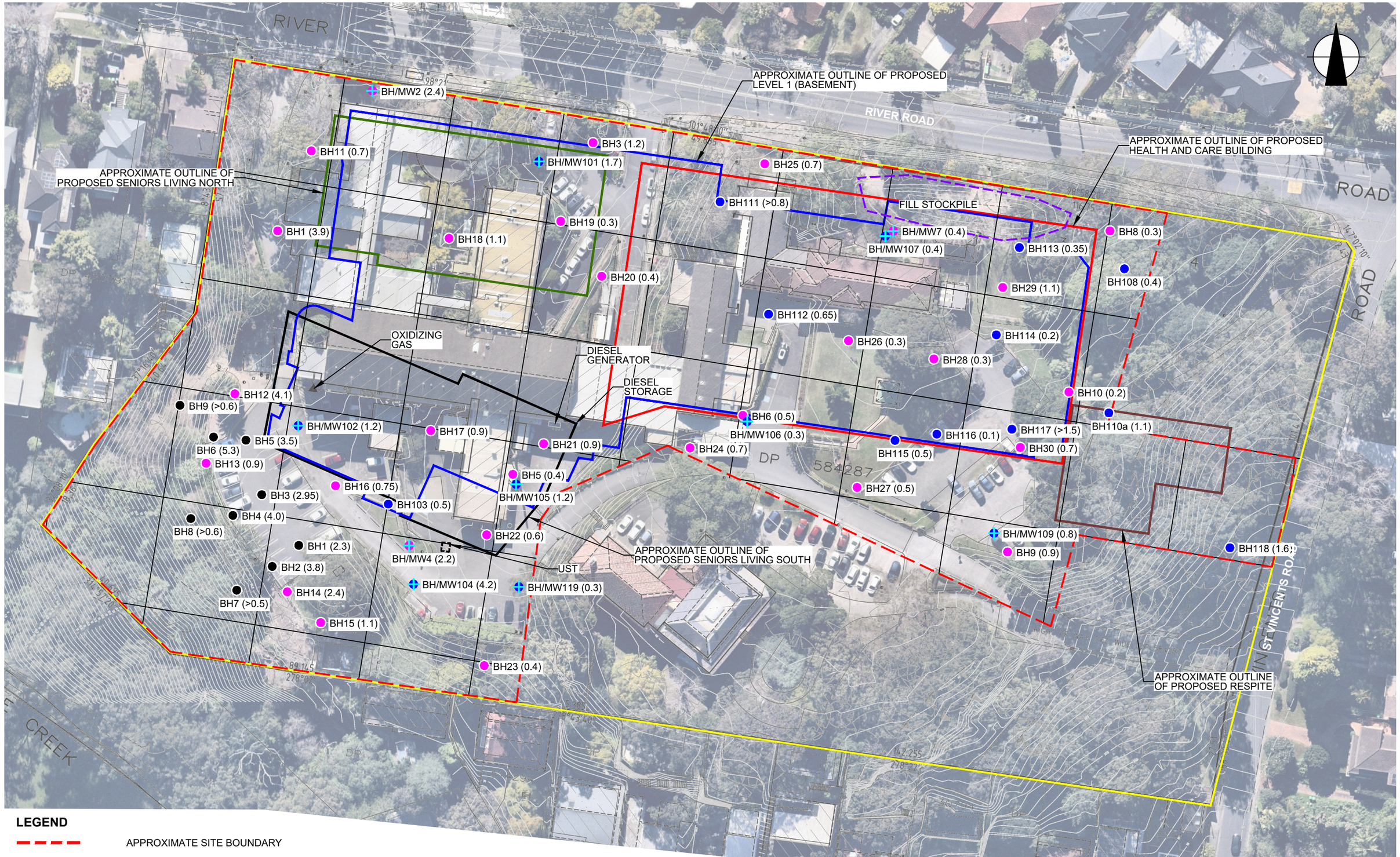

LEGEND

	APPROXIMATE SITE BOUNDARY
	APPROXIMATE WIDER PROPERTY BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2019)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2019)
BH/MW(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (EIS, 2014)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 8 16 24 32 40

SCALE 1:800 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: 95-115 RIVER ROAD, GREENWICH, NSW

Project No: E32507BR

Figure No: 2

JKEnvironments

PLOT DATE: 9/02/2022 9:40:08 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\SIE32507BT GREENWICH\CAD\BRIE32507BR.DWG

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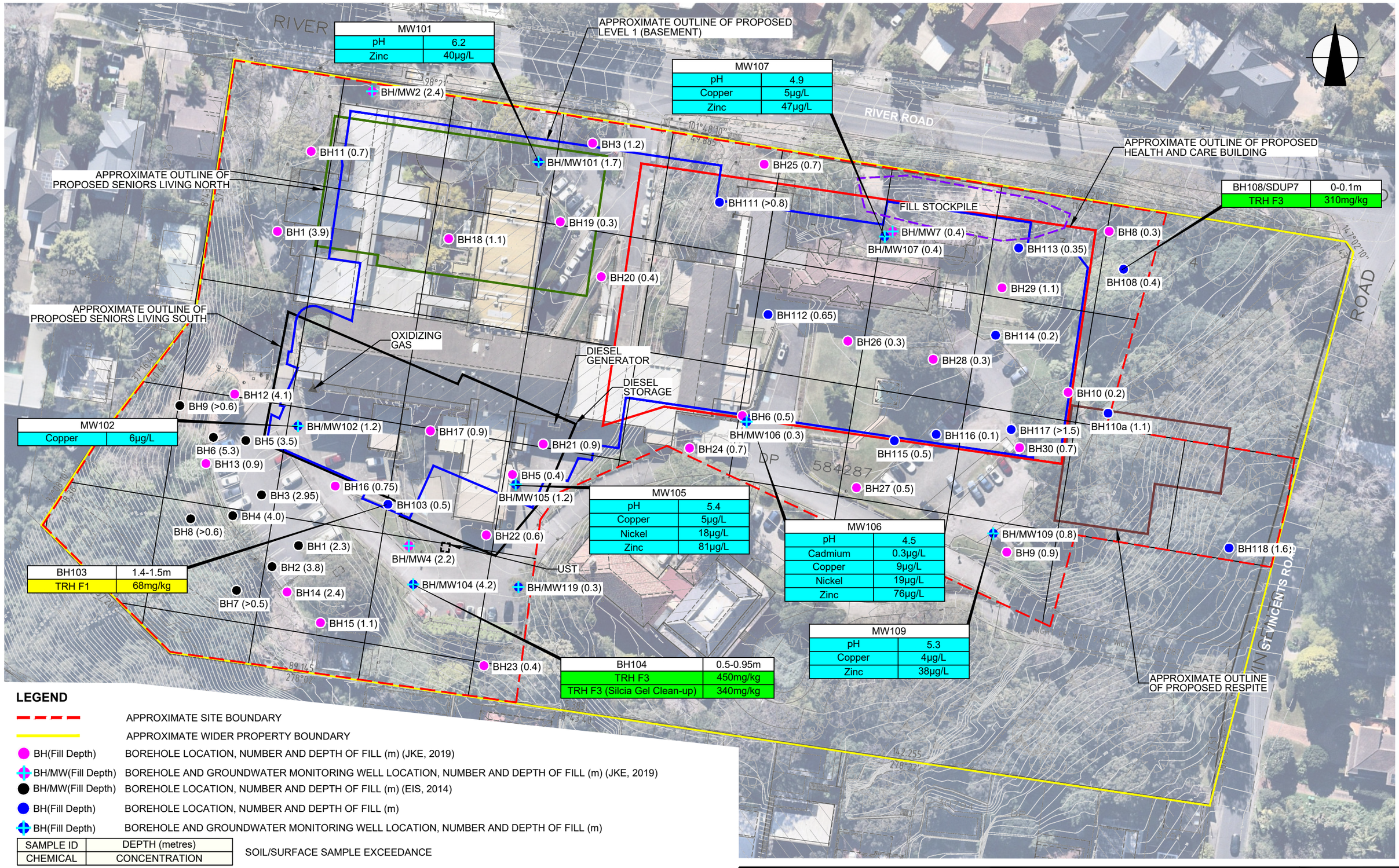

LEGEND

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE WIDER PROPERTY BOUNDARY
- BH(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2019)
- BH/MW(Fill Depth) — BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2019)
- BH/MW(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (EIS, 2014)
- BH(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH(Fill Depth) — BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION

SOIL/SURFACE SAMPLE EXCEEDANCE

SAMPLE ID	-
CHEMICAL	CONCENTRATION (µg/L)

GROUNDWATER SAMPLE EXCEEDANCE

- SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK
- SOIL CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK
- GROUNDWATER CONTAMINATION ABOVE SAC

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 8 16 24 32 40

SCALE 1:800 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAC EXCEEDANCE PLAN**

Location: 95-115 RIVER ROAD, GREENWICH, NSW

Project No: E32507BR

Figure No: 3

JKEnvironments

PLOT DATE: 9/02/2022 9:40:26 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\E32507BT GREENWICH\CAD\BRE32507BR.DWG

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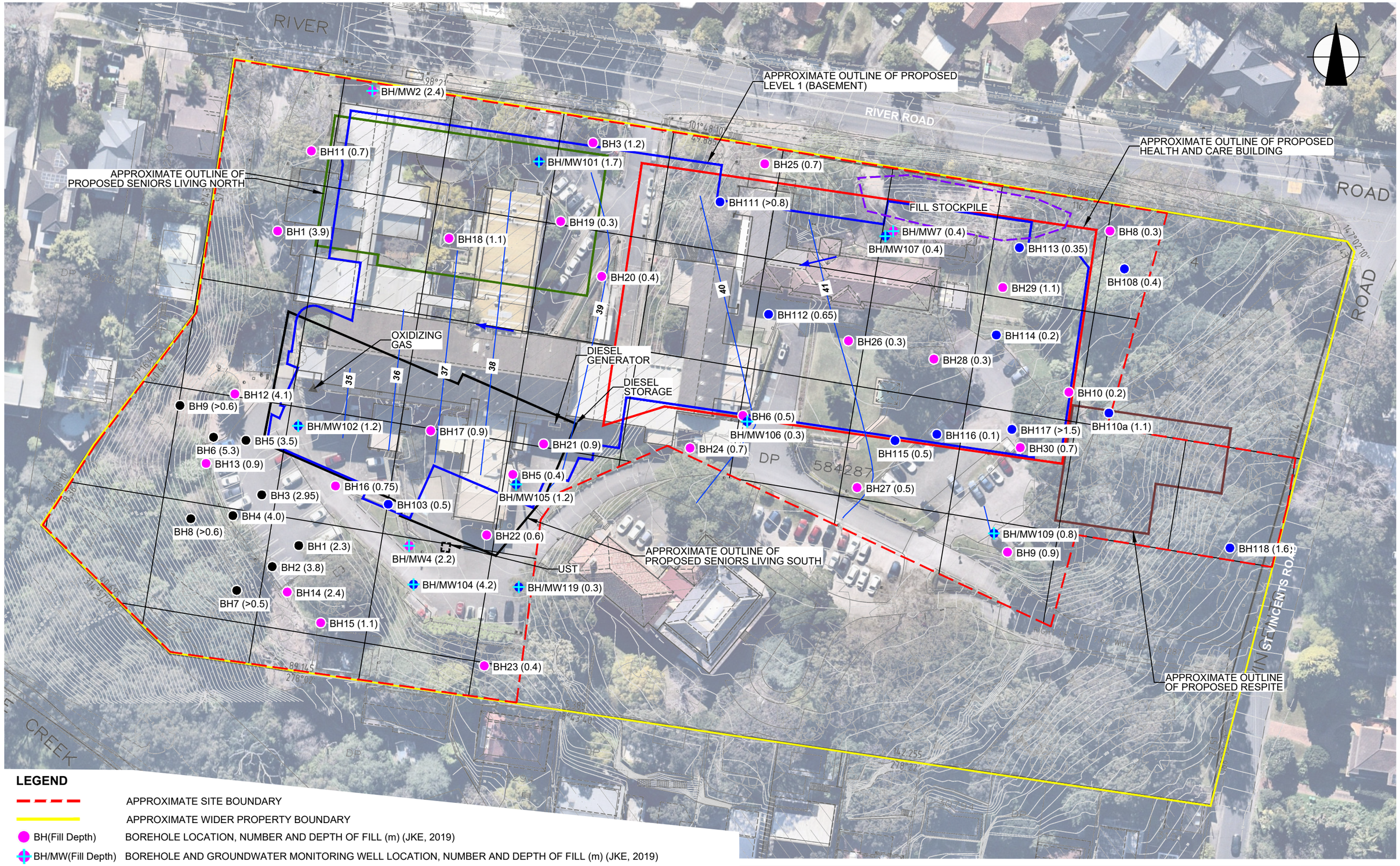

LEGEND

	APPROXIMATE SITE BOUNDARY
	APPROXIMATE WIDER PROPERTY BOUNDARY
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BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2019)
BH/MW(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (EIS, 2014)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
37	GROUNDWATER CONTOUR INTERVALS (m)
	INFERRED GROUNDWATER FLOW DIRECTION

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 8 16 24 32 40

SCALE 1:800 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **GROUNDWATER CONTOUR PLAN**

Location: 95-115 RIVER ROAD, GREENWICH, NSW

Project No: E32507BR

Figure No: 4

JKEnvironments

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DSI Figures

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 01 JUL 2019.

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This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

Location: 97-115 RIVER ROAD GREENWICH, NSW

Report No: E32507BT

Figure No: 1

JKEnvironments

PLOT DATE: 27/08/2019 3:09:46 PM DWG FILE: S:\5 EIS\5C EIS JOBS\32000\SE32507BT GREENWICH\CAD\E32507BT.DWG

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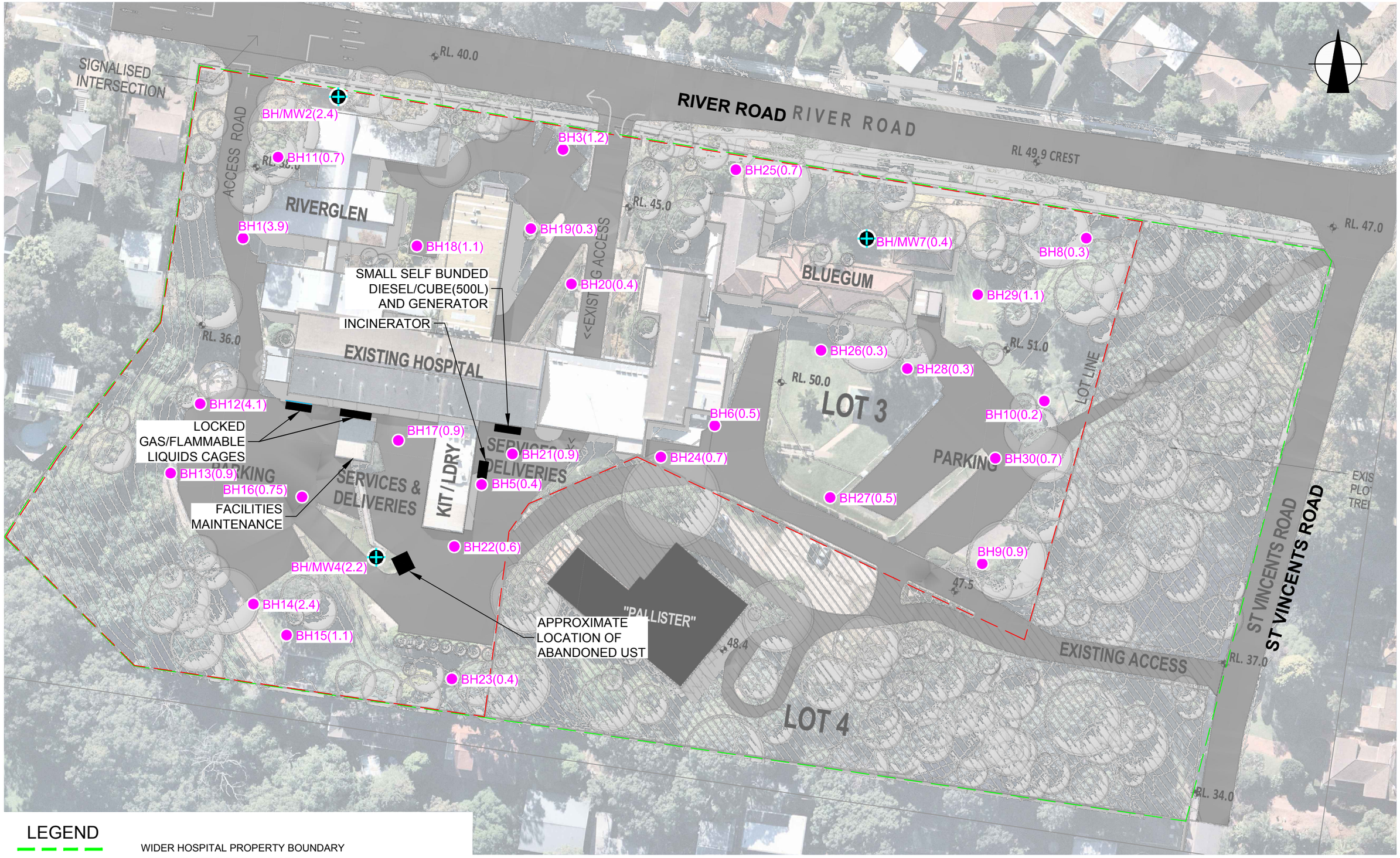

LEGEND

WIDER HOSPITAL PROPERTY BOUNDARY

APPROXIMATE SITE BOUNDARY

BH(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)

BH/MW(Fill Depth) — BOREHOLE AND GROUND WATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 12 MAY 2019.

SCALE 1:800 @A3 METRES (0 8 16 24 32 40)

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: 97-115 RIVER ROAD GREENWICH, NSW

Report No: E32507BT

Figure No: 2

JKEnvironments

PLOT DATE: 28/08/2019 7:58:37 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000\SIE32507BT GREENWICH\CADIE32507BT.DWG

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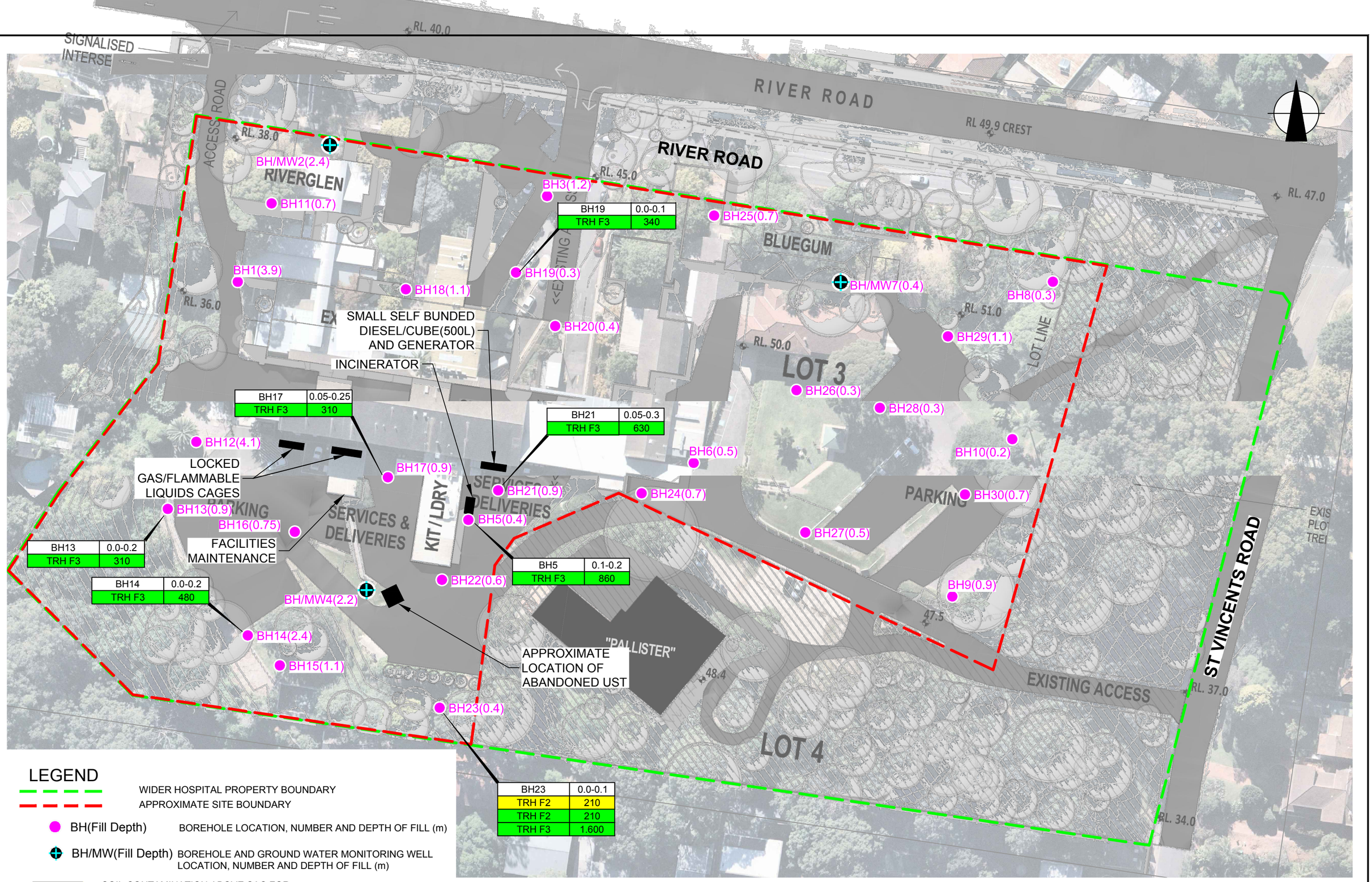

LEGEND

- WIDER HOSPITAL PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH/MW(Fill Depth) — BOREHOLE AND GROUND WATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
- SOIL CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK (mg/kg)
- SOIL CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK (mg/kg)
- GROUND WATER CONTA,MINATION ABOVE SAC FOR ECOLOGICAL RISK MG/L

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 12 MAY 2019.

SCALE 0 8 16 24 32 40 METRES — 1:800 @A3

This plan should be read in conjunction with the Environmental report.

Title: **CONTAMINATION LOCATION PLAN**

Location: 97-115 RIVER ROAD GREENWICH, NSW

Report No: E32507BT

Figure No: 3

JKEnvironments

PLOT DATE: 28/08/2019 8:03:32 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\E32507BT GREENWICH\CAD\E32507BT.DWG

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Sewer Location Plan

A3

STANDISH ST

RIVER RD

ST VINCENTS RD

ALLAWAH PL

GORE ST

GORE LANE

DBYD Address:
97-115 River Road
Greenwich NSW 2065

DBYD Job No: 30511841

DBYD Sequence No: 202991189

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Scale: 1:1500

Date of Production: 15/09/2021

Plan 1 of 1

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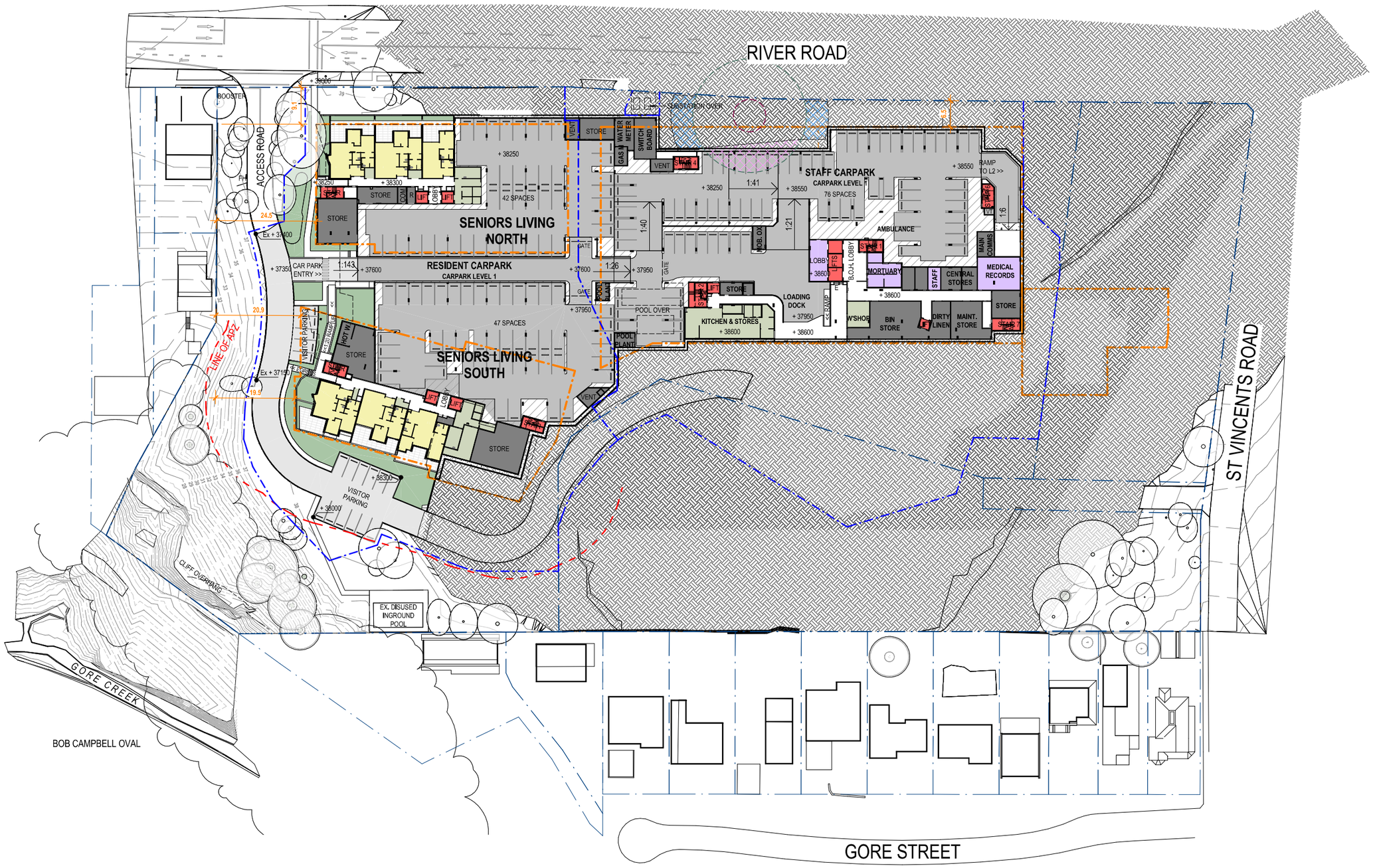
Appendix B: Site Information and Site History

Selected Proposed Development Plans



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P20	2022.04.08	LODGEMENT ISSUE FOR CLIENT SIGNOFF	AMac
P19	2022.04.01	FINAL DRAFT LODGEMENT ISSUE	AMac
P18	2022.03.28	SSD UPDATE	NAH
P17	2022.03.25	ISSUE TO CONSULTANTS	AMac
P16	2022.03.18	ISSUE TO CONSULTANTS	AMac
P15	2022.03.16	SSD UPDATE	NAH

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BIM

CLIENT: HammondCare Champion Life

PROJECT: 01605
GREENWICH HOSPITAL REDEVELOPMENT
RIVER RD, GREENWICH

REVISION: P20
DATE: 01/11/21
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 1 (BASEMENT)

DRAWING No: DD-SW-0200

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

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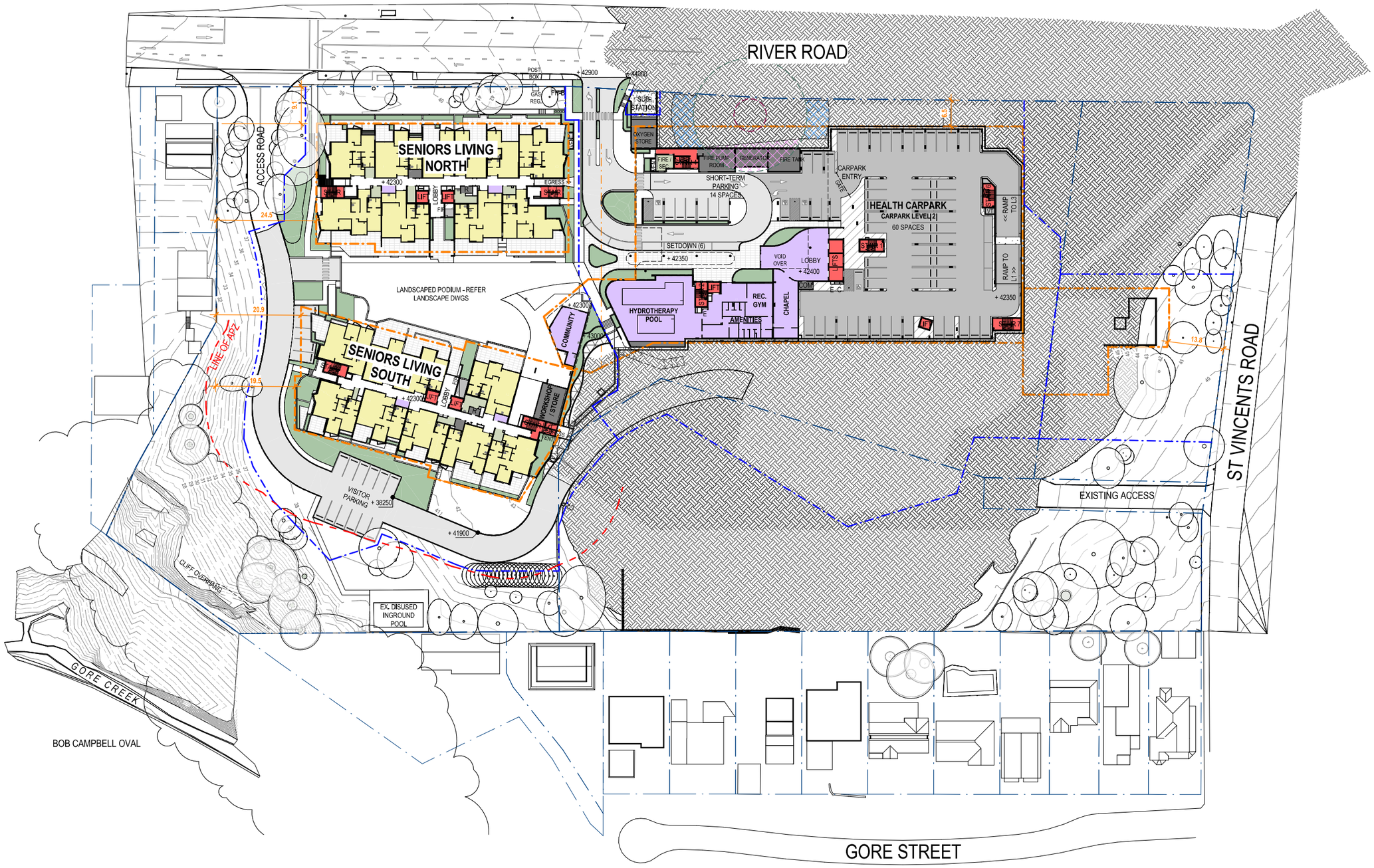

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P17	2022.03.25	ISSUE TO CONSULTANTS	AMac
P16	2022.03.18	ISSUE TO CONSULTANTS	AMac
P15	2022.03.16	SSD UPDATE	NAH

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REVISION: P20
DATE: 01/11/21
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 2 (SETDOWN)

DRAWING No: DD-SW-0201

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

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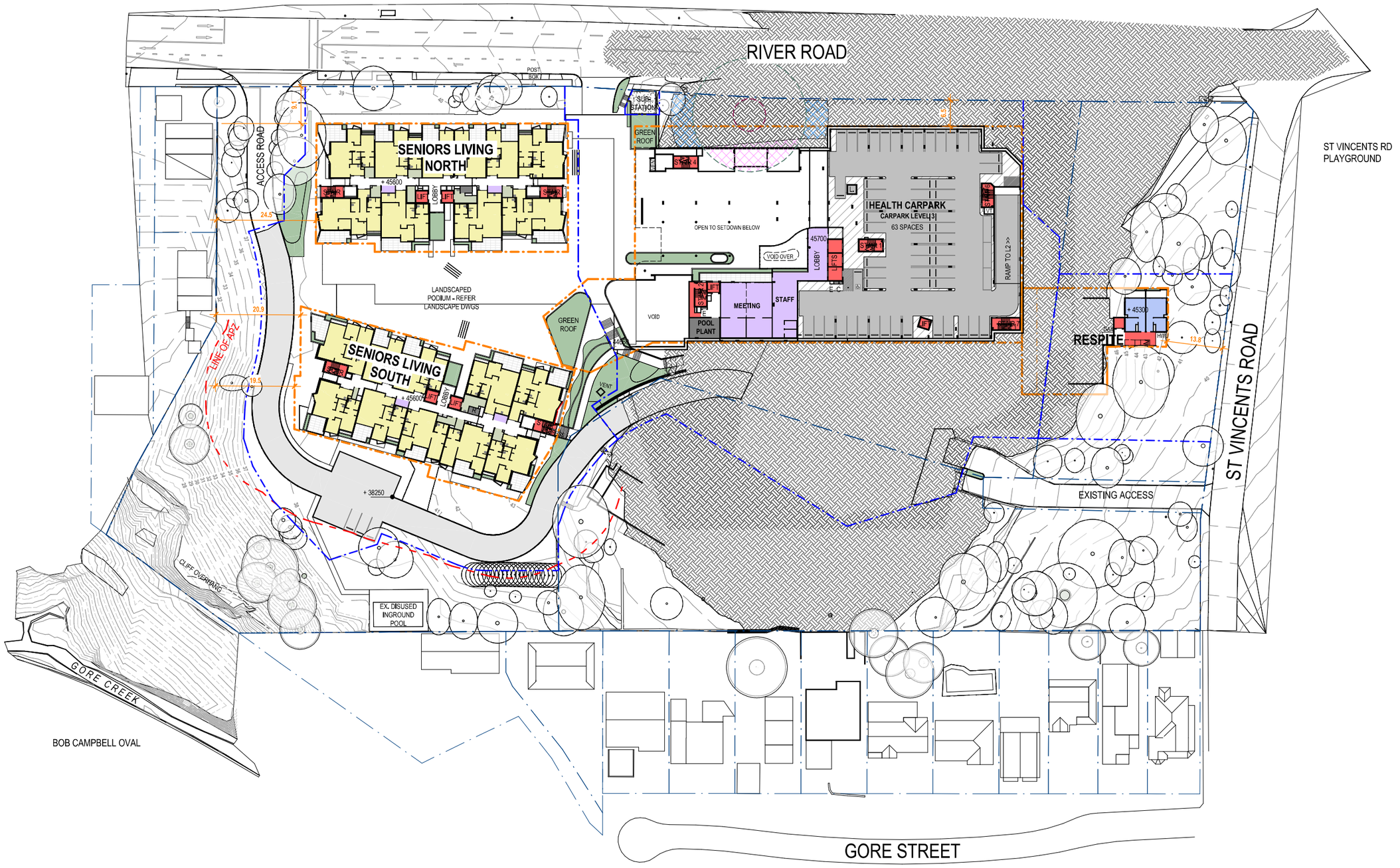

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REV	DATE	DETAILS	INITIALS
P20	2022.04.08	LODGEMENT ISSUE FOR CLIENT SIGNOFF	AMac
P19	2022.04.01	FINAL DRAFT LODGEMENT ISSUE	AMac
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P15	2022.03.16	SSD UPDATE	NAH

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PROJECT: 01605
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REDEVELOPMENT
RIVER RD, GREENWICH

REVISION: P20
DATE: 11/04/21

DRAWING No: DD-SW-0202

DRAWING TITLE:
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DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

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P15	2022.03.18	ISSUE TO CONSULTANTS	AMac
P14	2022.03.16	SSD UPDATE	NAH

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SITE PLAN LEGEND

- SITE BOUNDARY
- PLANNING ENVELOPE
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PROJECT: 01605
GREENWICH HOSPITAL REDEVELOPMENT
RIVER RD, GREENWICH

REVISION: P19
DATE: 01/11/21
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 4 (PLAZA)

DRAWING No: DD-SW-0203

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

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P16	2022.03.25	ISSUE TO CONSULTANTS	AMac
P15	2022.03.18	ISSUE TO CONSULTANTS	AMac
P14	2022.03.16	SSD UPDATE	NAH

NORTH

SITE PLAN LEGEND

- SITE BOUNDARY
- PLANNING ENVELOPE
- STAGING LINE

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SURRY HILLS 2010, NSW
www.bickertonmasters.com.au

CLIENT: HammondCare Champion Life

PROJECT: 01605
GREENWICH HOSPITAL REDEVELOPMENT
RIVER RD, GREENWICH

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REVISION: P19
DATE: 01/11/21
DRAWING No: DD-SW-0204
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 5

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

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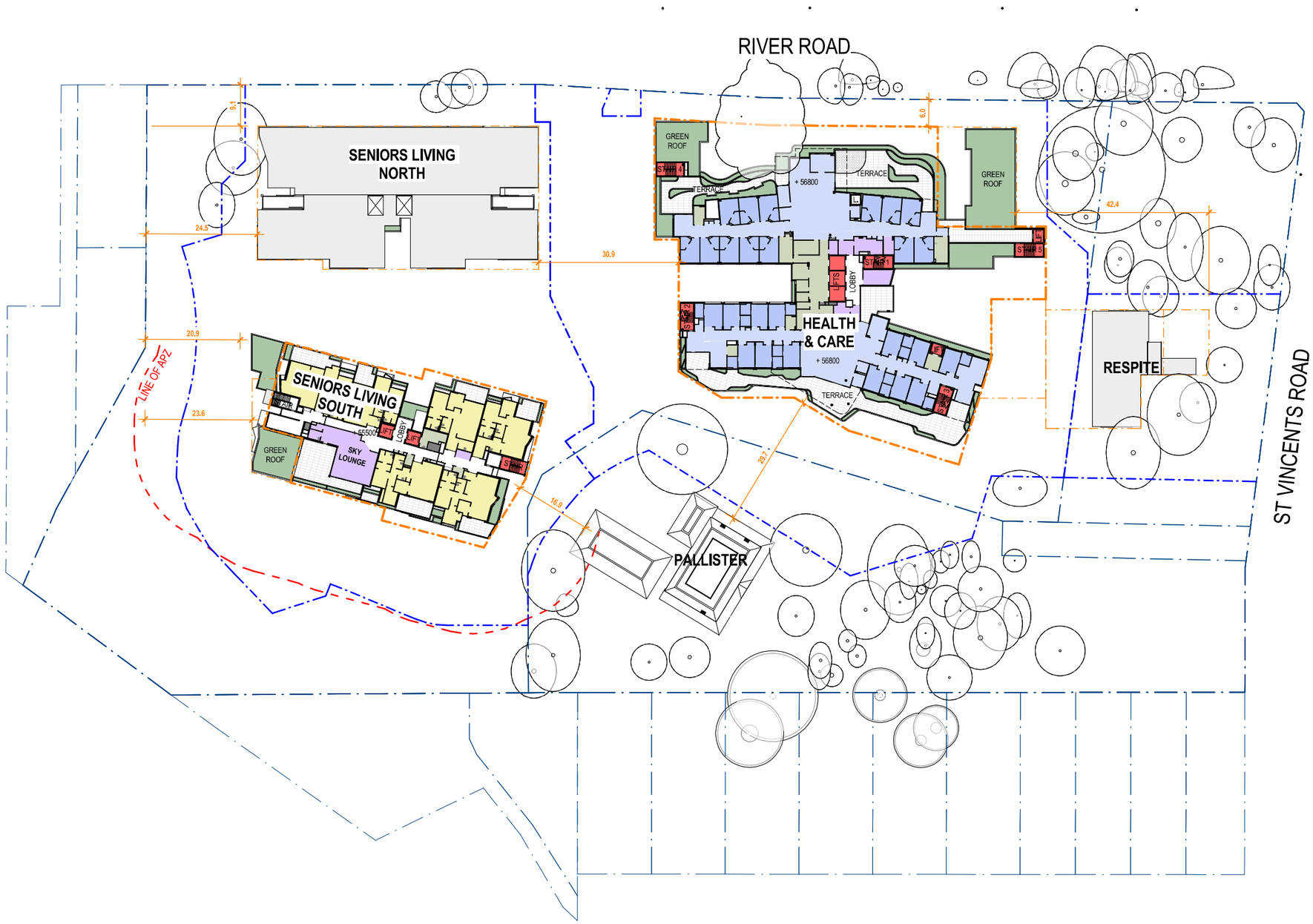

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REV	DATE	DETAILS	INITIALS
P19	2022.04.08	LODGEMENT ISSUE FOR CLIENT SIGNOFF	AMac
P18	2022.04.01	FINAL DRAFT LODGEMENT ISSUE	AMac
P17	2022.03.28	SSD UPDATE	NAH
P16	2022.03.25	ISSUE TO CONSULTANTS	AMac
P15	2022.03.18	ISSUE TO CONSULTANTS	AMac
P14	2022.03.16	SSD UPDATE	NAH

NORTH

SITE PLAN LEGEND

- SITE BOUNDARY
- PLANNING ENVELOPE
- STAGING LINE

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CLIENT: HammondCare Champion Life

PROJECT: 01605
GREENWICH HOSPITAL REDEVELOPMENT
RIVER RD, GREENWICH

REVISION: P19
DATE: 01/11/21
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 6

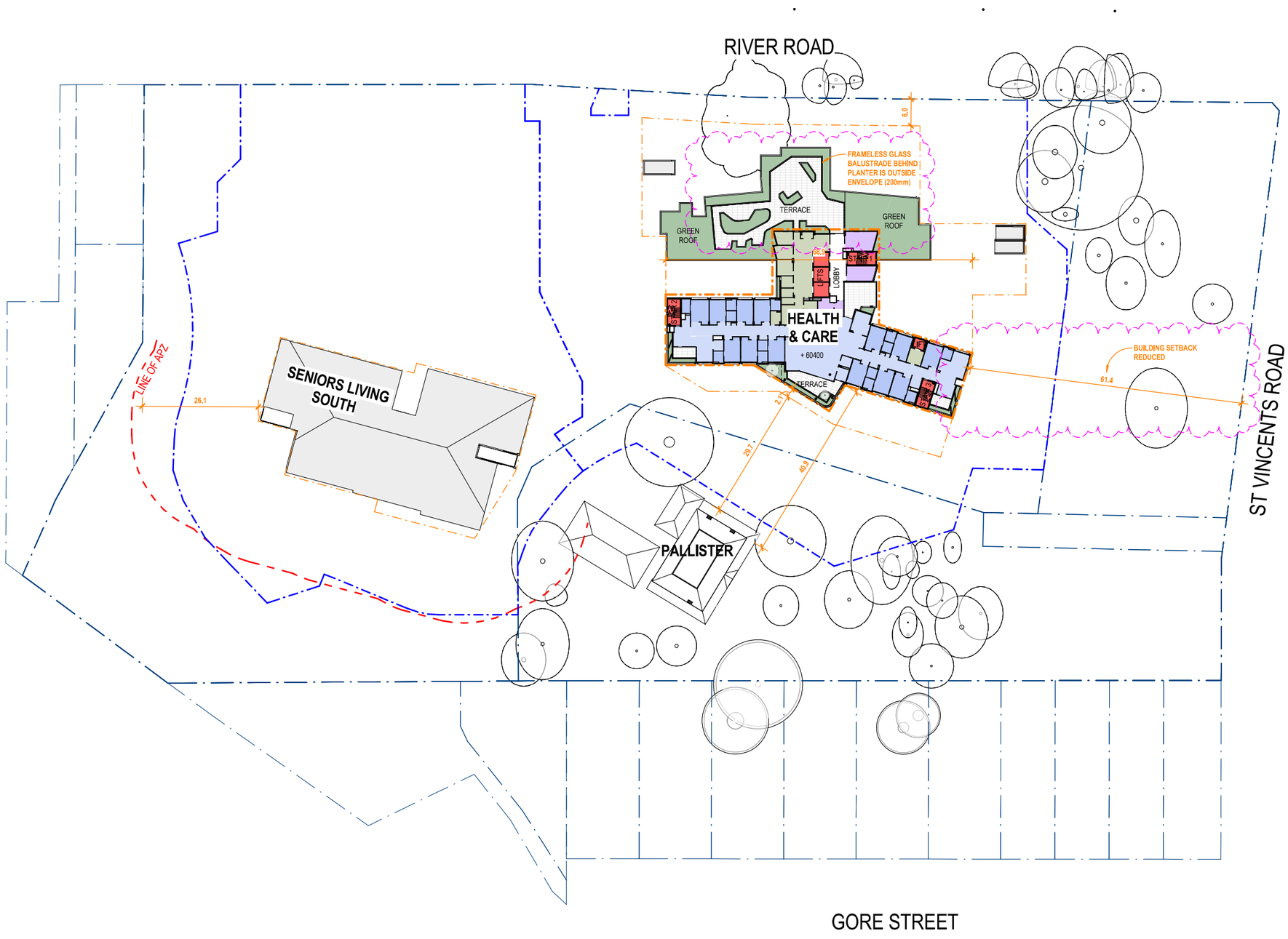
DRAWING No: DD-SW-0205

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

8/04/2022 5:30:12 PM

C:_Revit Projects\SW-AR-GREENWICH_andrewmacNRYHN.rvt



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P14	2022.03.16	SSD UPDATE	NAH

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REVISION: P19
DATE: 01/11/21
DRAWING No: DD-SW-0206
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 7

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

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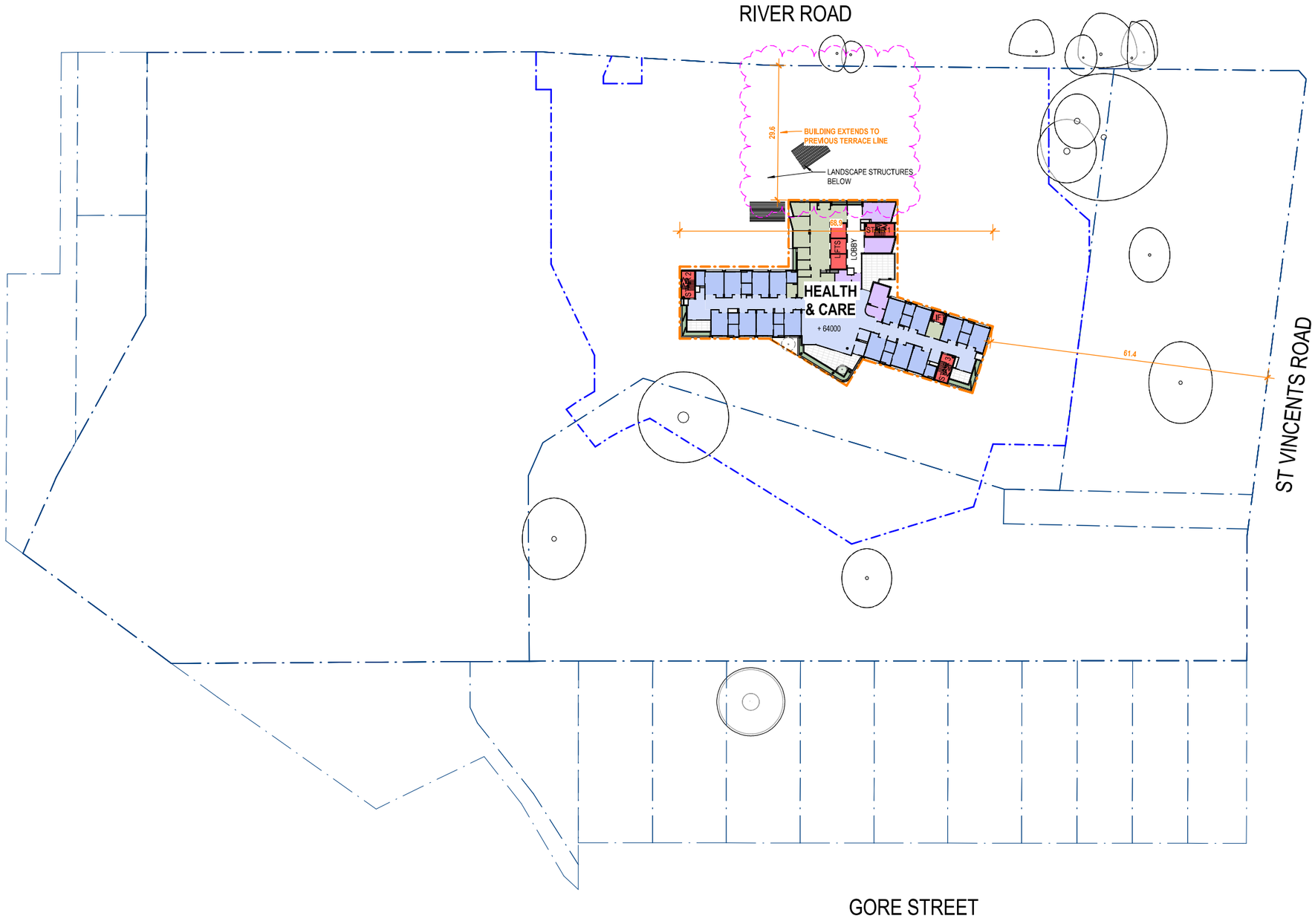

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GREENWICH HOSPITAL REDEVELOPMENT
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REVISION: P19
DATE: 01/11/21
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 8

DRAWING No: DD-SW-0207

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

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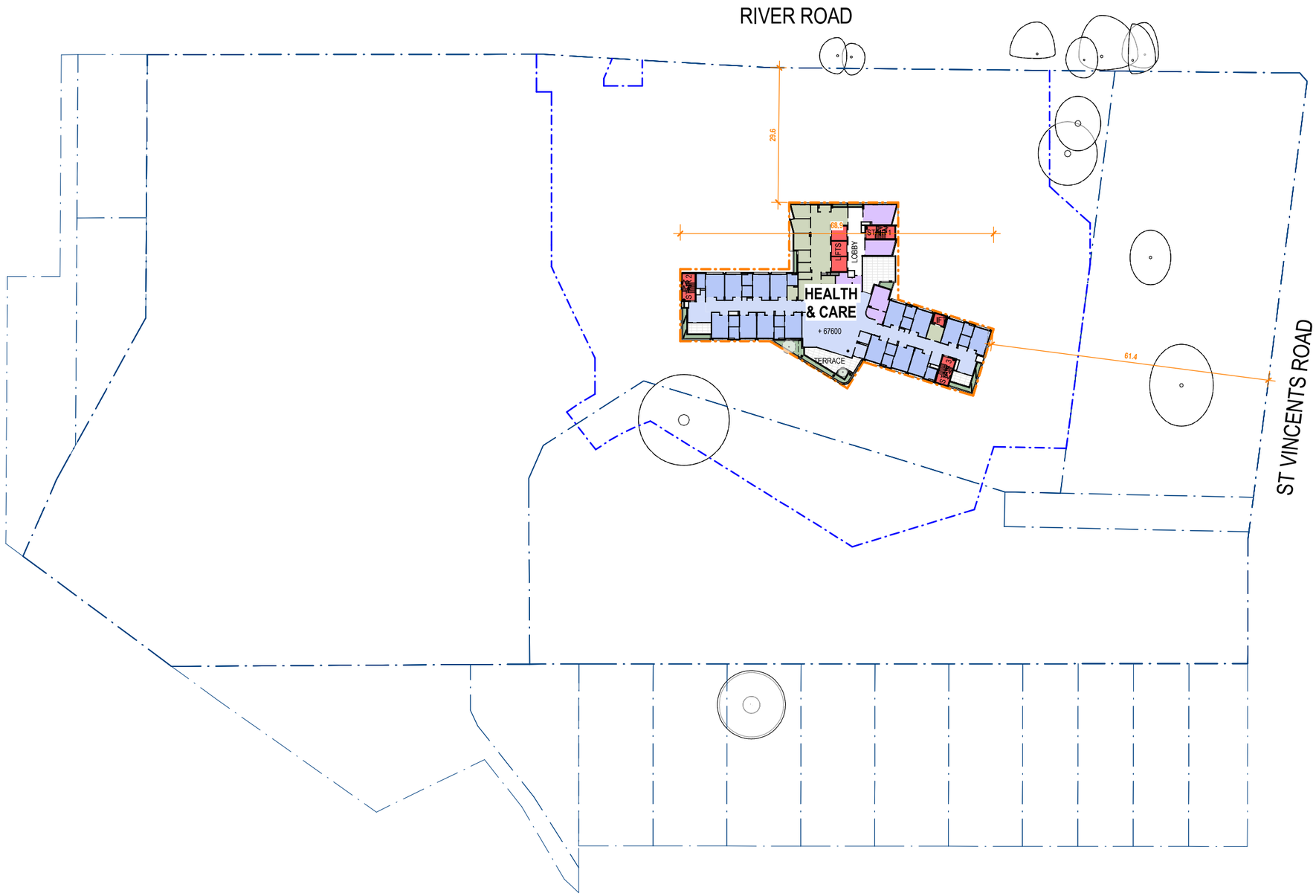

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REVISION: P19
DATE: 01/11/21
DRAWING No: DD-SW-0208
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 9
DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

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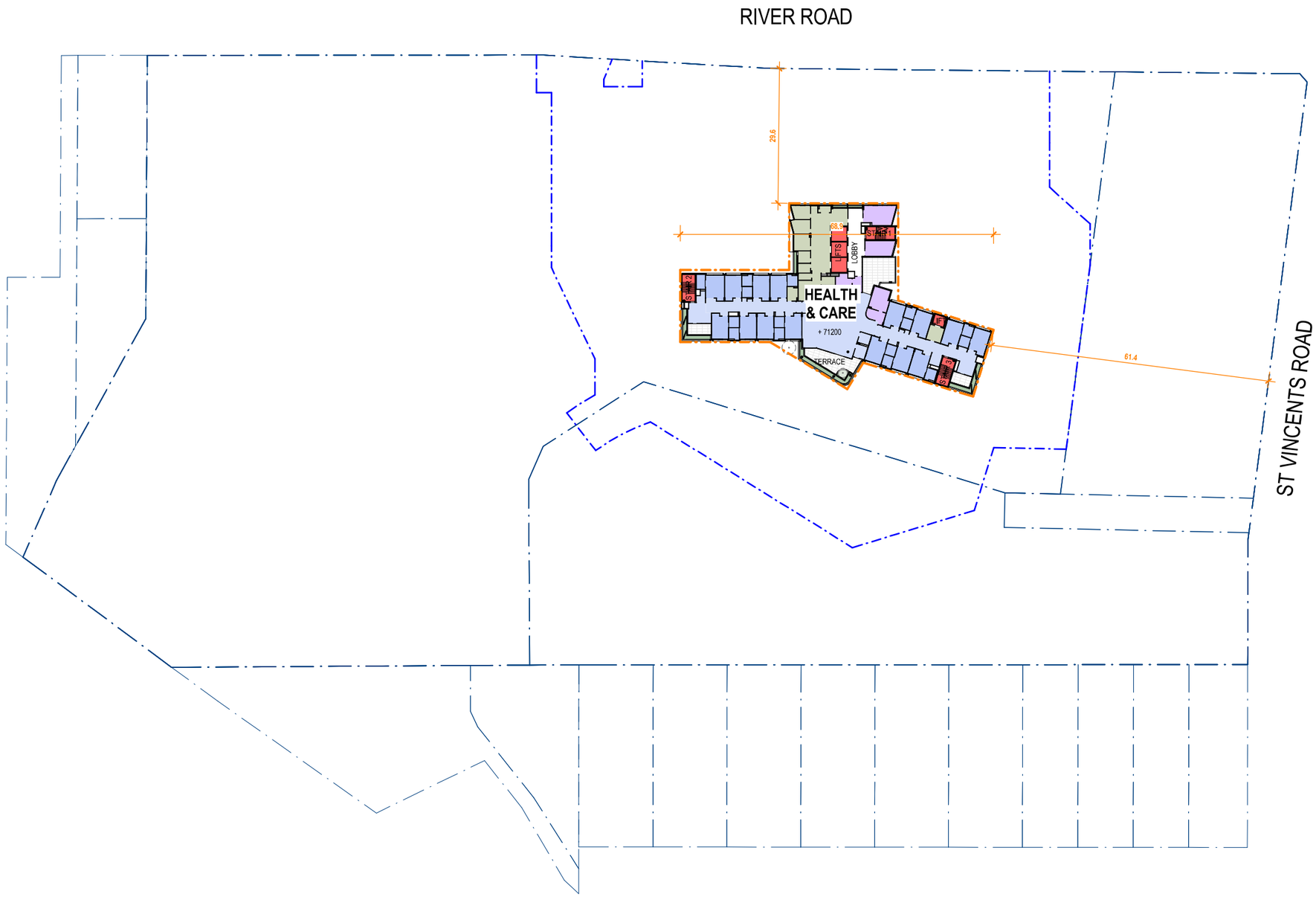

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REVISION: P17
DATE: 01/11/21
DRAWING No: DD-SW-0209
DRAWING TITLE: SITE LEVEL PLAN - LEVEL 10

DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

8/04/2022 5:31:17 PM

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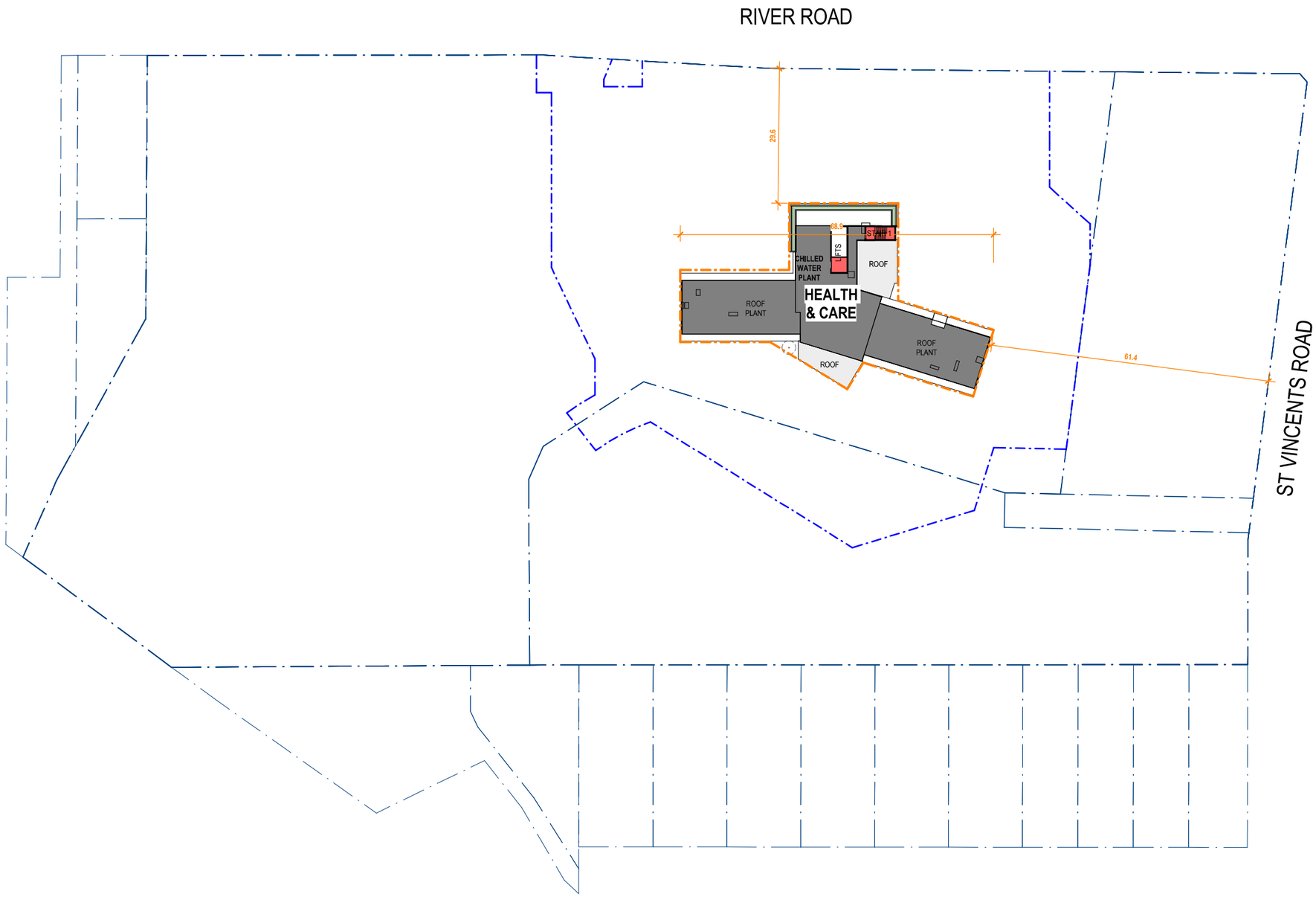

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P12	2022.03.16	SSD UPDATE	NAH

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PROJECT: 01605
GREENWICH HOSPITAL REDEVELOPMENT
RIVER RD, GREENWICH

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REVISION: P17
DATE: 04/09/21

DRAWING No: **DD-SW-0210**

DRAWING TITLE: SITE LEVEL PLAN - LEVEL 11

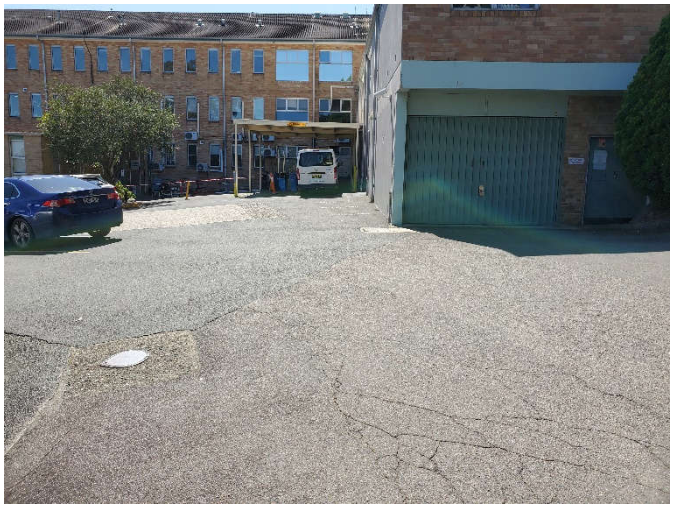
DRAWN: NAH CHECKED: SCALE: 1 : 500 @A1

NSW NOMINATED ARCHITECT: ANDREW MASTERS (9037)

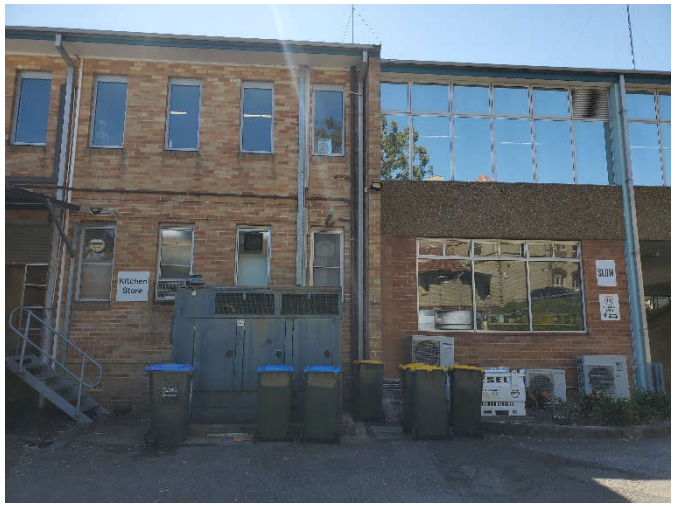
8/04/2022 5:31:27 PM

Selected Site Photographs

Photograph 1: Incinerator



Photograph 2: UST



Photograph 3: Diesel generator and cube

Photograph 4: Oxidising Gas storage

Photograph 5: Existing western driveway

Photograph 6: Eastern Carpark

Photograph 7: Pallister House

Photograph 8: Main hospital entrance

Photograph 9: BH103

Photograph 10: BH115

Photograph 11: BH104

Photograph 12: BH119

Lotsearch Environmental Risk and Planning Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 29 Sep 2021 14:52:25

Reference: LS024777 EP

Address: 97-115 River Road, Greenwich, NSW 2065

Disclaimer:
The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.
You should obtain independent advice before you make any decision based on the information within the report.
The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	20/08/2021	20/08/2021	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	08/09/2021	08/09/2021	Monthly	1000m	0	1	3
Contaminated Land Records of Notice	Environment Protection Authority	06/09/2021	06/09/2021	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	11/08/2021	11/10/2017	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	1
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	5
EPA PFAS Investigation Program	Environment Protection Authority	27/09/2021	28/04/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	28/09/2021	28/09/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	28/09/2021	28/09/2021	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	06/09/2021	06/09/2021	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	19/08/2021	19/08/2021	Quarterly	2000m	0	0	1
EPA Other Sites with Contamination Issues	Environment Protection Authority	02/02/2021	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	27/09/2021	27/09/2021	Monthly	1000m	0	0	11
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	27/09/2021	27/09/2021	Monthly	1000m	0	0	3
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	27/09/2021	27/09/2021	Monthly	1000m	1	4	7
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	1	3
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	5	5
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	97
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	0	16
Points of Interest	NSW Department of Finance, Services & Innovation	19/08/2021	19/08/2021	Quarterly	1000m	2	7	87
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	5
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	3
Major Easements	NSW Department of Finance, Services & Innovation	19/08/2021	19/08/2021	Quarterly	1000m	0	2	18
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	22/01/2021	11/12/2020	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	26/10/2020	21/02/2018	Annually	1000m	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000m	0	0	21

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	1	1	4
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	1	1	1
Soil Landscapes of Central and Eastern NSW	NSW Department of Planning, Industry and Environment	14/10/2020	27/07/2020	Annually	1000m	2	3	8
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	19/08/2021	28/06/2021	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	1	2	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	19/08/2021	05/08/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	28/09/2021	28/09/2021	Monthly	1000m	0	0	0
Mining Title Applications	NSW Department of Industry	28/09/2021	28/09/2021	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	28/09/2021	28/09/2021	Monthly	1000m	12	12	14
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	19/08/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	19/08/2021	13/08/2021	Monthly	1000m	1	10	108
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	19/08/2021	25/06/2021	Quarterly	1000m	1	1	4
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	19/08/2021	13/08/2021	Monthly	1000m	2	3	198
Bush Fire Prone Land	NSW Rural Fire Service	27/09/2021	23/08/2021	Weekly	1000m	2	2	2
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000m	4	11	41
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	24/02/2021	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	27/09/2021	27/09/2021	Weekly	10000m	-	-	-

Site Diagram

97-115 River Road, Greenwich, NSW 2065

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 33873m²

Total Perimeter: 779m

Scale: 0 25 50 Meters

Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

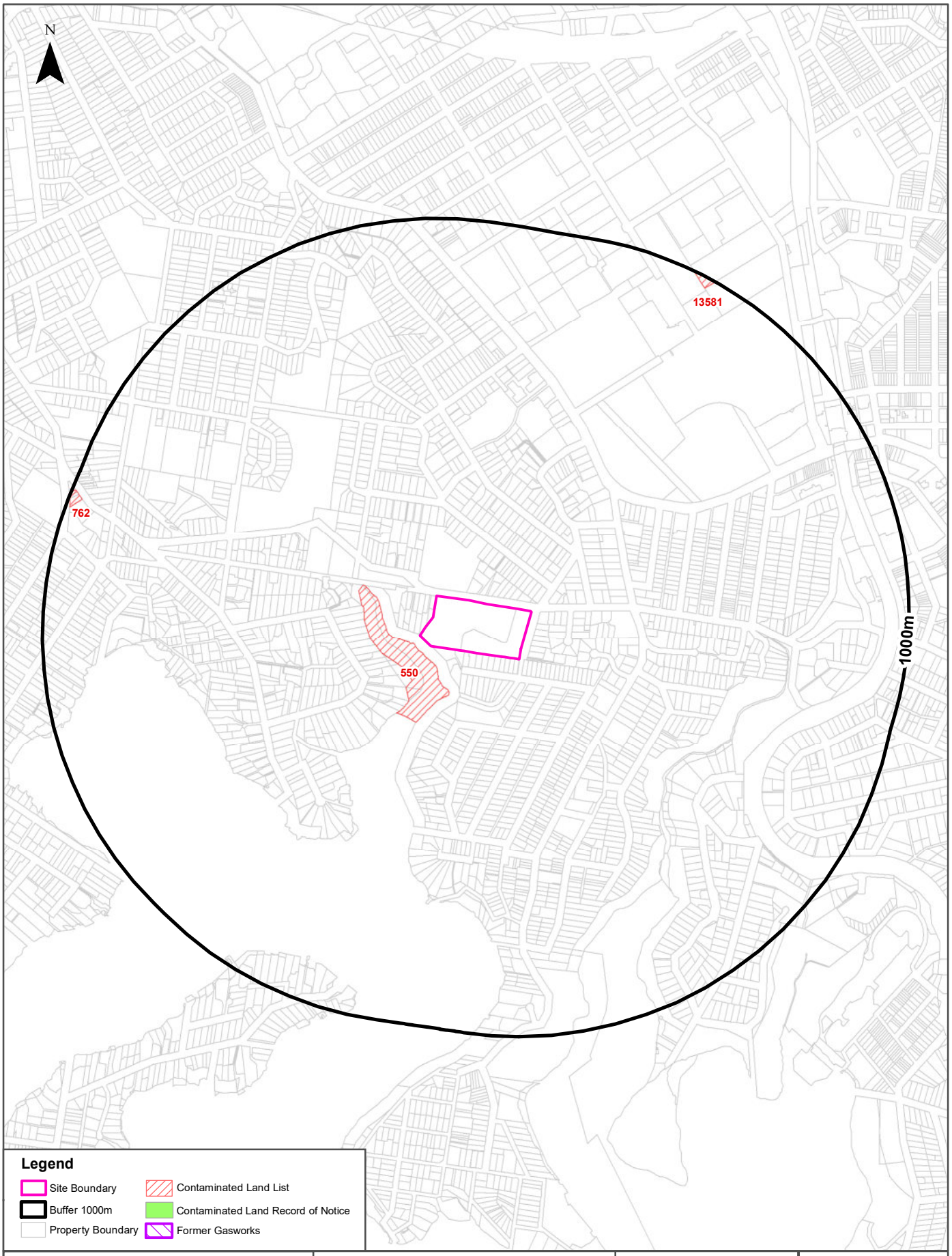
Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 29 September 2021

Contaminated Land

97-115 River Road, Greenwich, NSW 2065



Contaminated Land

97-115 River Road, Greenwich, NSW 2065

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist	Direction
550	Gore Creek Reserve - Drainage Line	St Vincents Road	Greenwich	Other Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	27m	South West
762	Caltex Service Station	5 Northwood ROAD	Longueville	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	965m	West
13581	Telstra Data Centre	4A Herbert STREET	ST LEONARDS	Other Petroleum	Regulation under CLM Act not required	Current EPA List	Premise Match	971m	North East

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land

97-115 River Road, Greenwich, NSW 2065

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

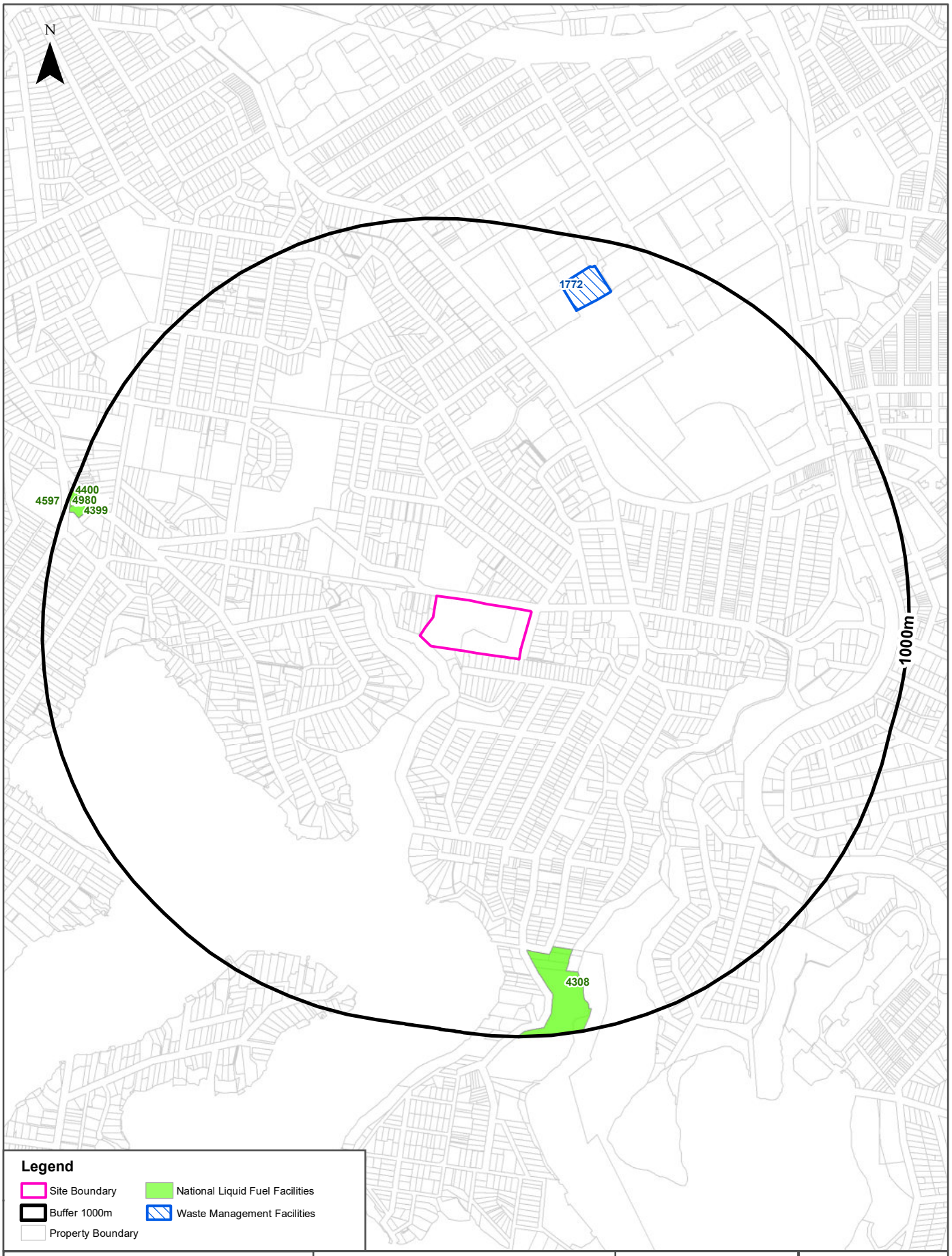
Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

97-115 River Road, Greenwich, NSW 2065



Waste Management & Liquid Fuel Facilities

97-115 River Road, Greenwich, NSW 2065

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist	Direction
1772	Sita Australia Pty Ltd	Artarmon Waste and Recycling Centre	Lanceley Place	Artarmon	Transfer Station			Operational		Premise Match	806m	North

Waste Management Facilities Data Source: Geoscience Australia
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National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
4308	Shell	Gore Bay	Manns Avenue	Greenwich	Fuel Terminal	Operational	Shell	11/06/2012	Premise Match	765m	South
4399	BP	BP Longueville	9 Northwood Road	Longueville	Petrol Station	Operational		25/07/2011	Premise Match	939m	West
4980	BP	BP Express Northwood	9 Northwood Road	Longueville	Petrol Station	Operational		25/07/2011	Premise Match	939m	West
4400	Caltex	Caltex Longueville	7 Northwood Road	Longueville	Petrol Station	Operational		25/07/2011	Premise Match	965m	West
4597	Caltex	Caltex Longueville	5-7 Northwood Road	Longueville	Petrol Station	Operational		25/07/2011	Premise Match	965m	West

National Liquid Fuel Facilities Data Source: Geoscience Australia
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PFAS Investigation & Management Programs

97-115 River Road, Greenwich, NSW 2065

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Map ID	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

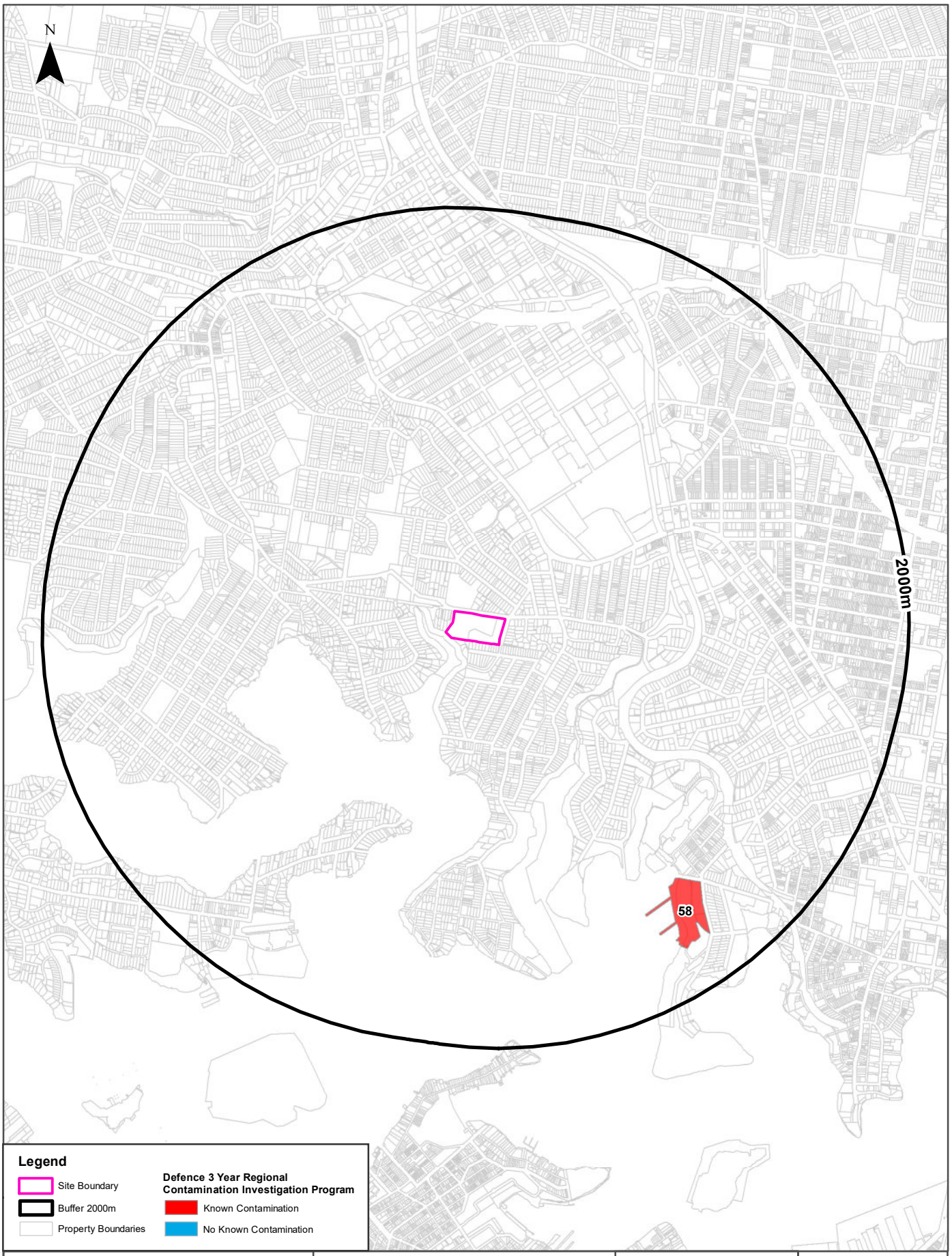
Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence 3 Year Regional Contamination Investigation Program

97-115 River Road, Greenwich, NSW 2065



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2021

Coordinate System: GDA 1994 MGA Zone 56

Date: 29 September 2021

Defence Sites

97-115 River Road, Greenwich, NSW 2065

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
58	HMAS Waterhen	Waverton, New South Wales	YES	Premise Match	1447m	South East

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

97-115 River Road, Greenwich, NSW 2065

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

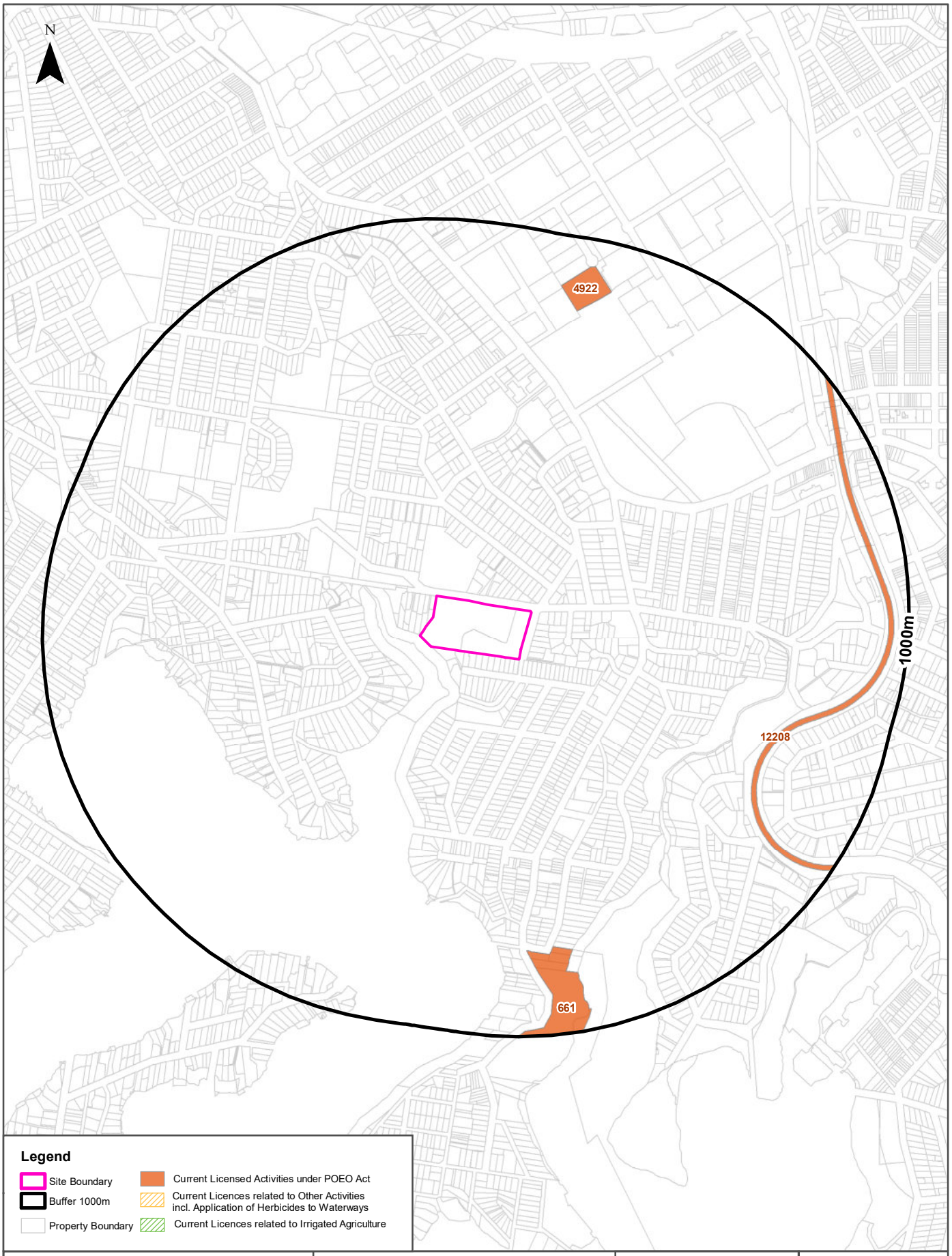
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

97-115 River Road, Greenwich, NSW 2065



EPA Activities

97-115 River Road, Greenwich, NSW 2065

Licensed Activities under the POEO Act 1997

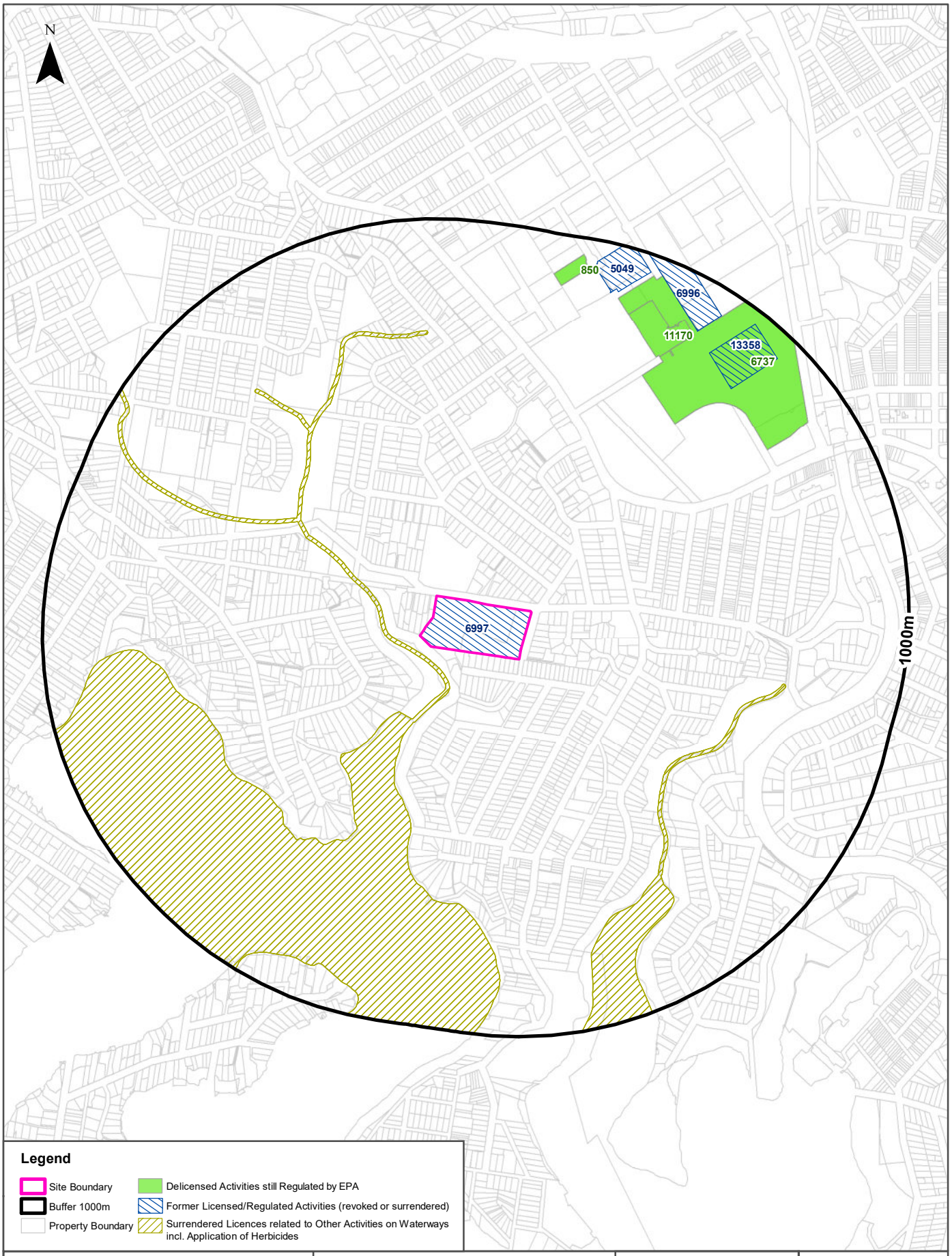
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		SYDNEY TRAINS, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	684m	East
661	VIVA ENERGY AUSTRALIA PTY LTD	GORE BAY TERMINAL	MANNS AVENUE	GREENWICH	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	765m	South
661	VIVA ENERGY AUSTRALIA PTY LTD	GORE BAY TERMINAL	MANNS AVENUE	GREENWICH	Chemical storage waste generation	Premise Match	765m	South
661	VIVA ENERGY AUSTRALIA PTY LTD	GORE BAY TERMINAL	MANNS AVENUE	GREENWICH	Petroleum products storage	Premise Match	765m	South
661	VIVA ENERGY AUSTRALIA PTY LTD	GORE BAY TERMINAL	MANNS AVENUE	GREENWICH	Shipping in bulk	Premise Match	765m	South
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Composting	Premise Match	806m	North
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	806m	North
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Waste storage - waste tyres	Premise Match	806m	North
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Recovery of general waste	Premise Match	806m	North
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Waste storage - other types of waste	Premise Match	806m	North
4922	SUEZ RECYCLING & RECOVERY PTY LTD	ARTARMON RESOURCE RECOVERY CENTRE	LANCELEY PLACE	ARTARMON	Non-thermal treatment of general waste	Premise Match	806m	North

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

97-115 River Road, Greenwich, NSW 2065



EPA Activities

97-115 River Road, Greenwich, NSW 2065

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6737	NORTHERN SYDNEY AND CENTRAL COAST AREA HEALTH SERVICE	ROYAL NORTH SHORE HOSPITAL	PACIFIC HIGHWAY	ST LEONARDS	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	626m	North East
11170	RAMSAY HEALTH CARE AUSTRALIA PTY LIMITED	NORTH SHORE PRIVATE HOSPITAL	3 Westbourne Street	ST LEONARDS	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	749m	North East
850	HANSON CONSTRUCTION MATERIALS PTY LTD	HANSON CONSTRUCTION MATERIALS PTY LTD	6 LANCELEY PLACE	ARTARMON	Concrete works	Premise Match	866m	North

Delicensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

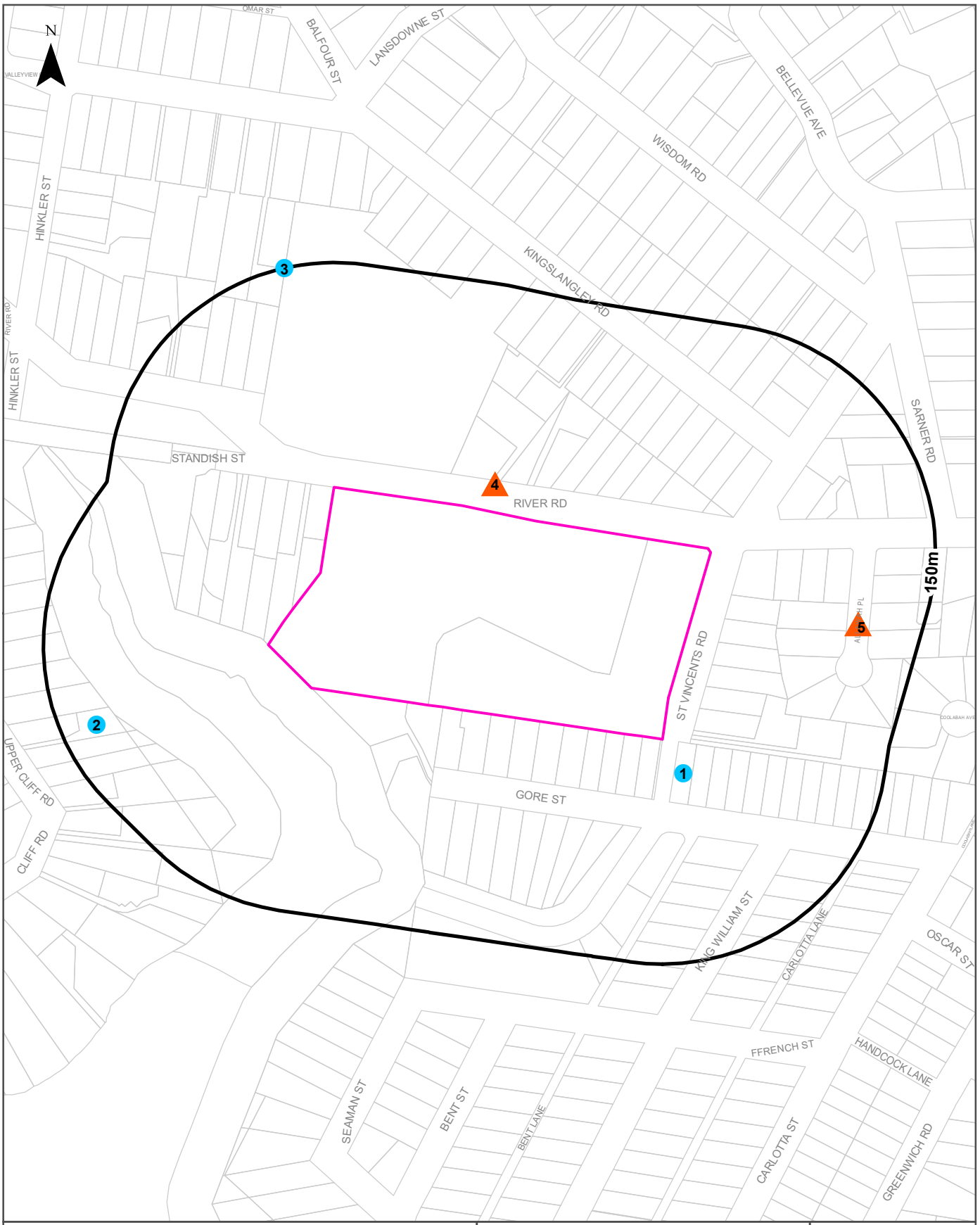
Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
6997	HOPE HEALTHCARE LIMITED	97 - 115 RIVER ROAD, GREENWICH, NSW 2065	Surrendered	07/09/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	0m	On-site
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	30m	South West
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	30m	South West
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	30m	South West
13358	VENTIA UTILITY SERVICES PTY LIMITED	Royal North Shore Hospital - Acute Services Building, Royal North Shore Hospital, Reserve Road, ST LEONARDS, NSW 2065, ST LEONARDS	Surrendered	20/04/2011	Generation of electrical power from gas	Premise Match	794m	North East
6996	MOCKRIDGE BULMER PTY LTD	2/12 FREDERICK STREET, ST LEONARDS, NSW 2065	Surrendered	26/06/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	864m	North East

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
5049	ROCK & DIRT PTY LTD	11 LANCELEY PLACE, ARTARMON, NSW 2064	Surrendered	10/08/2000	Waste Storage, Transfer, Separating or Processing; Crushing, grinding or separating	Premise Match	870m	North

Former Licensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Historical Business Directories

97-115 River Road, Greenwich, NSW 2065



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 40 80 120 160 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 29 September 2021

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2021

Historical Business Directories

97-115 River Road, Greenwich, NSW 2065

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Smith, L. N., 31 Gore St., Greenwich	41258	1950	Premise Match	11m	South East
2	ACCOUNTANTS & AUDITORS	Shetliffe, D. F. R., 40 Upper Cliff Rd., Northwood	265701	1961	Premise Match	111m	West
3	BUILDERS & CONTRACTORS-(M.M.B.A.)	Lucas, T. J. Pty. Ltd 48a Kingslangley Rd. GREENWICH	277339	1961	Premise Match	149m	North West

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Business Directory Records 1950-1991
Road or Area Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
4	CLUBS & /OR SPORTING BODIES	Lane Cove Country Club Ltd., River Rd., Northwood. 2066	18079	1975	Road Match	0m
	HOSTELS (H630)	Stella Maris Hostel., River Rd., Greenwich	316853	1970	Road Match	0m
5	Builders & Contractors - (M.M.B.A.)	Crowther, P. J., Allawah Pl. Greenwich	54740	1965	Road Match	95m
	BUILDERS & CONTRACTORS-(M.M.B.A.)	Crowther, P. J Allawah Pl GREENWICH	277004	1961	Road Match	95m
	ACCOUNTANTS & AUDITORS	Moore, R. K., Allawah Pl., Greenwich	265446	1961	Road Match	95m

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Dry Cleaners, Motor Garages & Service Stations

97-115 River Road, Greenwich, NSW 2065

Legend

- Site Boundary
- Buffer 500m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 100 200 300 400 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 29 September 2021

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2021

Historical Business Directories

97-115 River Road, Greenwich, NSW 2065

Dry Cleaners, Motor Garages & Service Stations 1948-1993 Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGES &/OR ENGINEERS.	Knodis S. D., 156 Pacific Hghwy., Greenwich	49540	1954	Premise Match	326m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Knodis S. D., 156 Pacific Hghwy., Greenwich	40241	1953	Premise Match	326m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Knodis S. D., 156 Pacific Hghwy., Greenwich	31847	1952	Premise Match	326m	North East
	MOTOR GARAGES &/OR ENGINEERS	Knodis, S. D., 156 Pacific Highway., Greenwich	83968	1950	Premise Match	326m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Knodis, S. D., 156 Pacific Hghwy., Greenwich	22532	1948-49	Premise Match	326m	North East
2	MOTOR GARAGES & ENGINEERS.	Hill Garage & Service Station., 180 Pacific Hghwy., Greenwich	29547	1962	Premise Match	402m	North East
	MOTOR GARAGES & ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., Greenwich	29548	1962	Premise Match	402m	North East
	MOTOR GARAGES & ENGINEERS	Hill Garage & Service Station, 180 Pacific Highway. GREENWICH	347368	1961	Premise Match	402m	North East
	MOTOR GARAGES & ENGINEERS	North Sydney Welding Service, 188 Pacific Highway. GREENWICH	347799	1961	Premise Match	402m	North East
	MOTOR GARAGES & ENGINEERS.	Hill Garage & Service Station., 180 Pacific Hghwy., Greenwich	14199	1959	Premise Match	402m	North East
	MOTOR GARAGES & ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., Greenwich	14200	1959	Premise Match	402m	North East
	MOTOR GARAGE/ENGINEERS.	Hill Garage & Service Station., 180 Pacific Hghwy., Grnwch.	4274	1958	Premise Match	402m	North East
	MOTOR GARAGE/ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., Grnwch	4664	1958	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Hill Garage & Service Station., 180 Pacific Hghwy., Rgnwch	57798	1956	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., N Grnwch	61205	1956	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Hill Garage & Service Station., 180 Pacific Hghwy., grnwch	49401	1954	Premise Match	402m	North East
	MOTOR SERVICE STATIONS-PETROL, ETC.	Hill Garage & Service Station., 188 Pacific Hghwy., Grnwch	54507	1954	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy, Greenwich	49767	1954	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Hill Garage & Service Station., 188 Pacific Hghwy., Grnwch	40121	1953	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., Grnwch	40432	1953	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Hill Garage & Service Station., 188 Pacific Hghwy., Grnwch	31745	1952	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	North Sydney Welding Service., 188 Pacific Hghwy., Grnwch	32011	1952	Premise Match	402m	North East
	MOTOR SERVICE STATIONS-PETROL, Etc.	Hill Garage (R. Harris, Propr.), 188 Pacific Highway., Greenwich	86056	1950	Premise Match	402m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR GARAGES &/OR ENGINEERS	Hill Garage and Service Station, 188 Pacific Highway., Greenwich	83867	1950	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS	North Sydney Welding Service., 188 Pacific Highway., Greenwich	84144	1950	Premise Match	402m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Hill Garage and Service Station., 188 Pacific Hghwy., Greenwich	22447	1948-49	Premise Match	402m	North East
3	MOTOR GARAGES &/OR ENGINEERS.	Greenwich Motors., 122 Pacific H'way., Greenwich. 2065	59003	1975	Premise Match	409m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Greenwich Motors., 124 Pacific Hghwy., Greenwich	12262	1972	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	16733	1972	Premise Match	409m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Greenwich Motors., 124 Pacific Hghwy., Greenwich	56874	1971	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	2199	1971	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS(M6S6)	Greenwich Motors., 124 Pacific Highway., GREENWICH	337945	1970	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Horsburghs Auto Centre., 126 Pacific Hghwy., GREENWICH	341216	1970	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS.	Greenwich Motors., 124 Pacific Hghwy, Greenwich	42297	1969	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy Greenwich	47861	1969	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS	Greenwich Motors., 124 Pacific Hghwy., Greenwich	25817	1968	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsbyghs Auto Centre., 126 Pacific Hghwy., Greenwich	31289	1968	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS.	Greenwich Motors., 124 Pacific Hghwy., Greenwich	10318	1967	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	15764	1967	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS.	Greenwich Motors., 124 Pacific Highway., Greenwich	56211	1966	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	1337	1966	Premise Match	409m	North East
	Motor Garages & Engineers	Greenwich Motors, 124 Pacific Highway. Greenwich	122741	1965	Premise Match	409m	North East
	Motor Service Stations - Petrol, Oil, Etc.	Horsburghs Auto Centre, 126 Pacific Highway. Greenwich	125746	1965	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS	Greenwich Motors., 124 Pacific Highway Greenwich	48009	1964	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	52031	1964	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS.	Greenwich Motors & Bodyworks., Rear 124 Pacific Hghwy., Greenwich	29546	1962	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	38248	1962	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS	Greenwich Motors & Bodyworks, Rear 124 Pacific Highway., GREENWICH	347280	1961	Premise Match	409m	North East
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Horsburghs Auto Centre, 126 Pacific Hghwy., GREENWICH	350708	1961	Premise Match	409m	North East
	MOTOR GARAGES & ENGINEERS.	Greenwich Motors & Barker Body Works., 124 Pacific Hghwy., Greenwich	14198	1959	Premise Match	409m	North East
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Horsburghs Auto Centre., 126 Pacific Hghwy., Greenwich	24222	1959	Premise Match	409m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	MOTOR GARAGE/ENGINEERS.	Greenwich Motors & Barker Body Works., 124 Pacific Hghwy., Greenwich	4208	1958	Premise Match	409m	North East
4	MOTOR GARAGE & SERVICE STATIONS.	Portview Motors (Caltex), 114 Pacific Hghwy, Greenwich. 2065	5416	1989	Premise Match	485m	North East
	MOTOR GARAGES & SERVICE STATIONS.	Portview Motors (Caltex), 114 Pacific Hghwy, Greenwich. 2065	59797	1988	Premise Match	485m	North East
	MOTOR GARAGES & SERVICE STATIONS.	Portview Motors (Caltex), 114 Pacific H'way., Greenwich. 2065	65279	1986	Premise Match	485m	North East
	MOTOR GARAGES & SERVICE STATIONS.	Portview Motors (Caltex)., 114 Pacific Hghwy, Greenwich. 2065	45389	1985	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Portview Motors (Caltex), 114 Pacific Hghwy, Greenwich. 2065	33961	1984	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Portview Motors (Caltex)., 114 Pacific H'way., Greenwich 2065	21410	1983	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Portview Motors (Caltex), 114 Pacific H'way., Greenwich. 2065.	57399	1982	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Portview Service Station., 114 Pacific Highway., St Leonards. 2065.	46175	1979	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Portview Service Station, 114 Pacific H'way, St. Leonards. 2065	50679	1978	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Portview Service Station., 114 Pacific H'way., St. Leonards 2065	34747	1976	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Portview Service Station, 114 Pacific H'way. St. Leonards.	59408	1975	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Port View Service Station., 114 Pacific Hghwy., Greenwich	12263	1972	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Port View Service Station., 114 Pacific Hghwy., Greenwich	56875	1971	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS(M6S6)	Port View Service Station, 114 Pacific Highway. GREENWICH	338438	1970	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Port View Service Station., 114 Pacific Hghwy, Greenwich	42298	1969	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS	Port View Service Station., 114 Pacific Hghwy., Greenwich	25818	1968	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Port View Service Station., 114 Pacific Hghwy., Greenwich	10319	1967	Premise Match	485m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Port View Service Station., 114 Pacific Hghwy., Greenwich	15765	1967	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Port View Service Station., 114 Pacific Hghway., Greenwich	56212	1966	Premise Match	485m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Port View Service Station., 114 Pacific Hghwy., Greenwich	1338	1966	Premise Match	485m	North East
	Motor Garages & Engineers	Port View Service Station, 114 Pacific Highway. Greenwich	122742	1965	Premise Match	485m	North East
	Motor Service Stations - Petrol, Oil, Etc.	Port View Service Station, 114 Pacific Highway. Greenwich	125747	1965	Premise Match	485m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Port View Service Station., 114 Pacific Hghwy., Greenwich	52032	1964	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS	Port View Service Station., 114 Pacific Highway Greenwich	48010	1964	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	29545	1962	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Port View Service Station., 114 Pacific Hghwy., Greenwich	29549	1962	Premise Match	485m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Port View Service Station., 114 Pacific Hghwy., Greenwich	38247	1962	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS	Cogan's Service Station, 114 Pacific Highway. Greenwich	346909	1961	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS	Park View Service Station, 114 Pacific Highway., GREENWICH	347852	1961	Premise Match	485m	North East
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Port View Service Station, 114 Pacific Hghwy., GREENWICH	350974	1961	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	14197	1959	Premise Match	485m	North East
	MOTOR GARAGES & ENGINEERS.	Park View Service Station., 114 Pacific Hghwy., Greenwich	14201	1959	Premise Match	485m	North East
	MOTOR GARAGE/ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	853	1958	Premise Match	485m	North East
	MOTOR GARAGE/ENGINEERS.	Reilly L. V., 114 Pacific Hghwy., Greenwich	4841	1958	Premise Match	485m	North East
	MOTOR GARAGE/ENGINEERS.	Wadds Heck Service Station., 114 Pacific Hghwy., Grnwch	9224	1958	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	57453	1956	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Reilly L. V., 114 Pacific Hghwy., Greenwich	61369	1956	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	49080	1954	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Reilly L. V., 114 Pacific Hghwy., Greenwich	49925	1954	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	39831	1953	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	31492	1952	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS	Cogan's Service Station, 114 Pacific Highway., Greenwich	83602	1950	Premise Match	485m	North East
	MOTOR SERVICE STATIONS-PETROL, Etc.	Cogan's Service Station, 114 Pacific Highway., Greenwich	85879	1950	Premise Match	485m	North East
	MOTOR GARAGES &/OR ENGINEERS.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	65235	1948-49	Premise Match	485m	North East
	MOTOR SERVICE STATIONS-PETROL, ETC.	Cogan's Service Station., 114 Pacific Hghwy., Greenwich	23189	1948-49	Premise Match	485m	North East

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Dry Cleaners, Motor Garages & Service Stations 1948-1993 Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
5	DRY CLEANERS, PRESSERS &/OR DYERS.	Lindfield Laundry & Dry Cleaners., Pacific H'way., St. Leonards 2065	23654	1976	Road Match	378m
	DRY CLEANERS, PRESSERS &/OR DYERS.	Lindfield Laundry & Dry Cleaners, Pacific H'way. St. Leonards. 2065	24178	1975	Road Match	378m
	Motor Service Stations - Petrol, Oil, Etc.	Scholtz, P. B., Pacific Highway. Artarmon	125387	1965	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Koala Service Station., Cnr Pacific Hghwy & Jersey St., St. Leonards	38686	1962	Road Match	378m
	MOTOR GARAGES & ENGINEERS	Atlantic Service Station, Pacific Highway. ARTARMON	346549	1961	Road Match	378m
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Scholtz, P. B., Pacific Hghwy., ARTARMON	351064	1961	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Koala Service Station., Cnr Pacific Hghwy. & Jersey St., St. Leonards	24558	1959	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Horsburghs Auto Service., Pacific Hghwy., Greenwich	9594	1958	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Horsburghs Auto Service., Pacific Hghwy., Greenwich	61952	1956	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Scholtz P. B., Pacific Hghwy Artarmon	25	1956	Road Match	378m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Horsburghs Auto Service., Pacific Hghwy., Greenwich	54509	1954	Road Match	378m
	MOTOR GARAGES &/OR ENGINEERS.	St. Leonards Garage., 54-56 Pacific Hghwy., St. Leonards	40643	1953	Road Match	378m
	MOTOR GARAGES &/OR ENGINEERS.	St. Leonards Garage., 54-56 Pacific Hghwy., St. Leonards	32209	1952	Road Match	378m
6	MOTOR GARAGES &/OR ENGINEERS.	BP North Service Station., Northwood Rd Northwood	12770	1972	Road Match	439m
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Embassy Services of Auburn Pty. Ltd., Northwood Rd., NORTHWOOD	341027	1970	Road Match	439m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Embassy Services Of Auburn Pty. Ltd., Northwood Rd Northwood	50567	1969	Road Match	439m

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Aerial Imagery 2021

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 2016

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 2011

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 2005

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 2000

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 1994

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1991

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1986

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1982

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1978

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1970

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1965

97-115 River Road, Greenwich, NSW 2065

Aerial Imagery 1961

97-115 River Road, Greenwich, NSW 2065

Scale:
0 40 80 120 160
Meters

Data Sources: Aerial Imagery:
© NSW Department of Customer Service

Coordinate System:
GDA 1994 MGA Zone 56

Date: 29 September 2021

Aerial Imagery 1955, 1956

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1951

97-115 River Road, Greenwich, NSW 2065

Scale: 0 40 80 120 160 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 28 September 2021

Aerial Imagery 1943

97-115 River Road, Greenwich, NSW 2065

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 29 September 2021
0 40 80 120 160 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 1930

97-115 River Road, Greenwich, NSW 2065

Topographic Map 2015

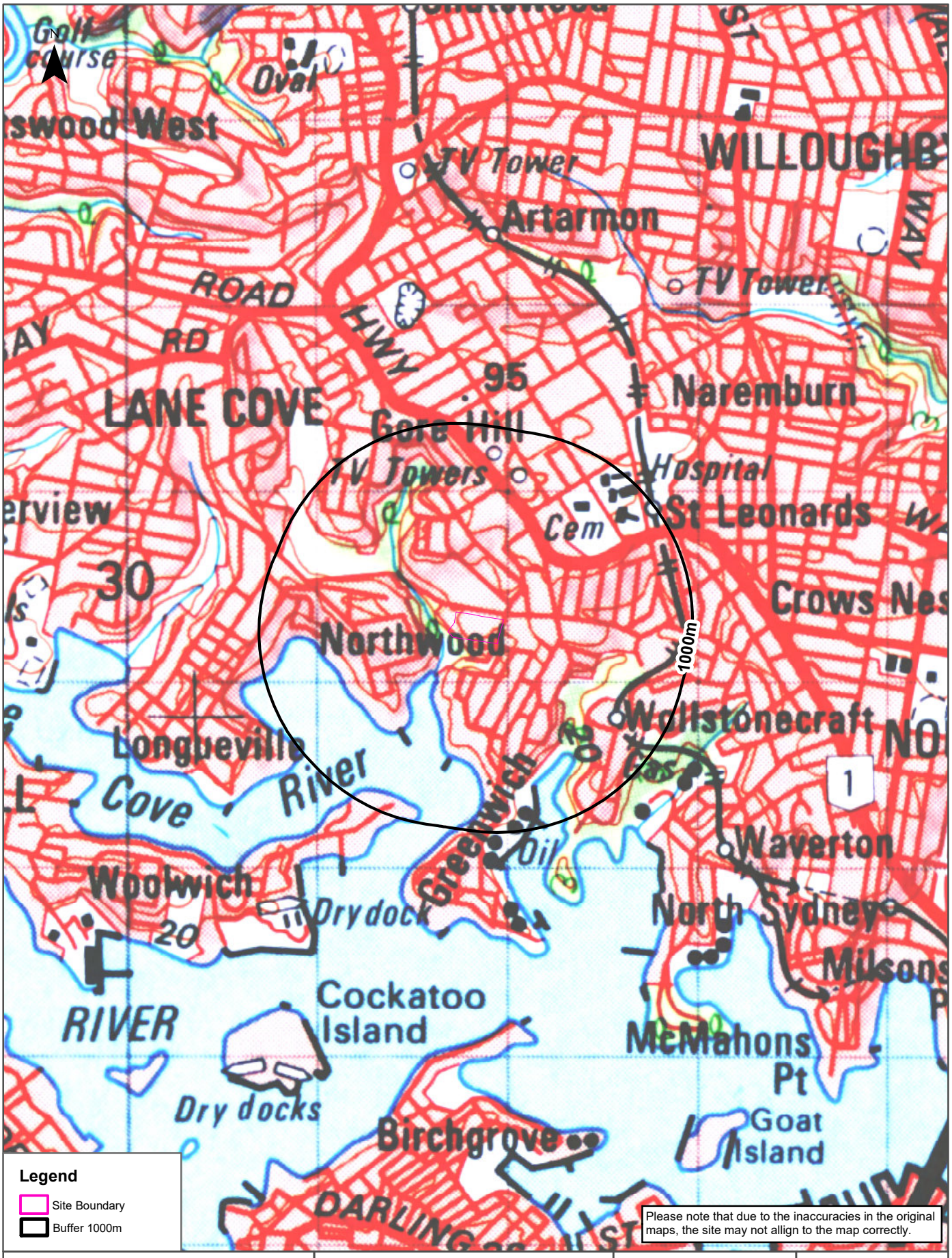
97-115 River Road, Greenwich, NSW 2065

Scale:	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 29 September 2021

0 160 320 480 640 Meters

Historical Map 1975

97-115 River Road, Greenwich, NSW 2065



Scale:	Data Sources: NATMAP 1:100,000 Topographic Maps Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 29 September 2021

0 320 640 960 1,280 Meters

Historical Map c.1936

97-115 River Road, Greenwich, NSW 2065

Scale: 0 320 640 960 1,280 Meters

Data Sources: Australia 1:63360
Produced by Australian Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

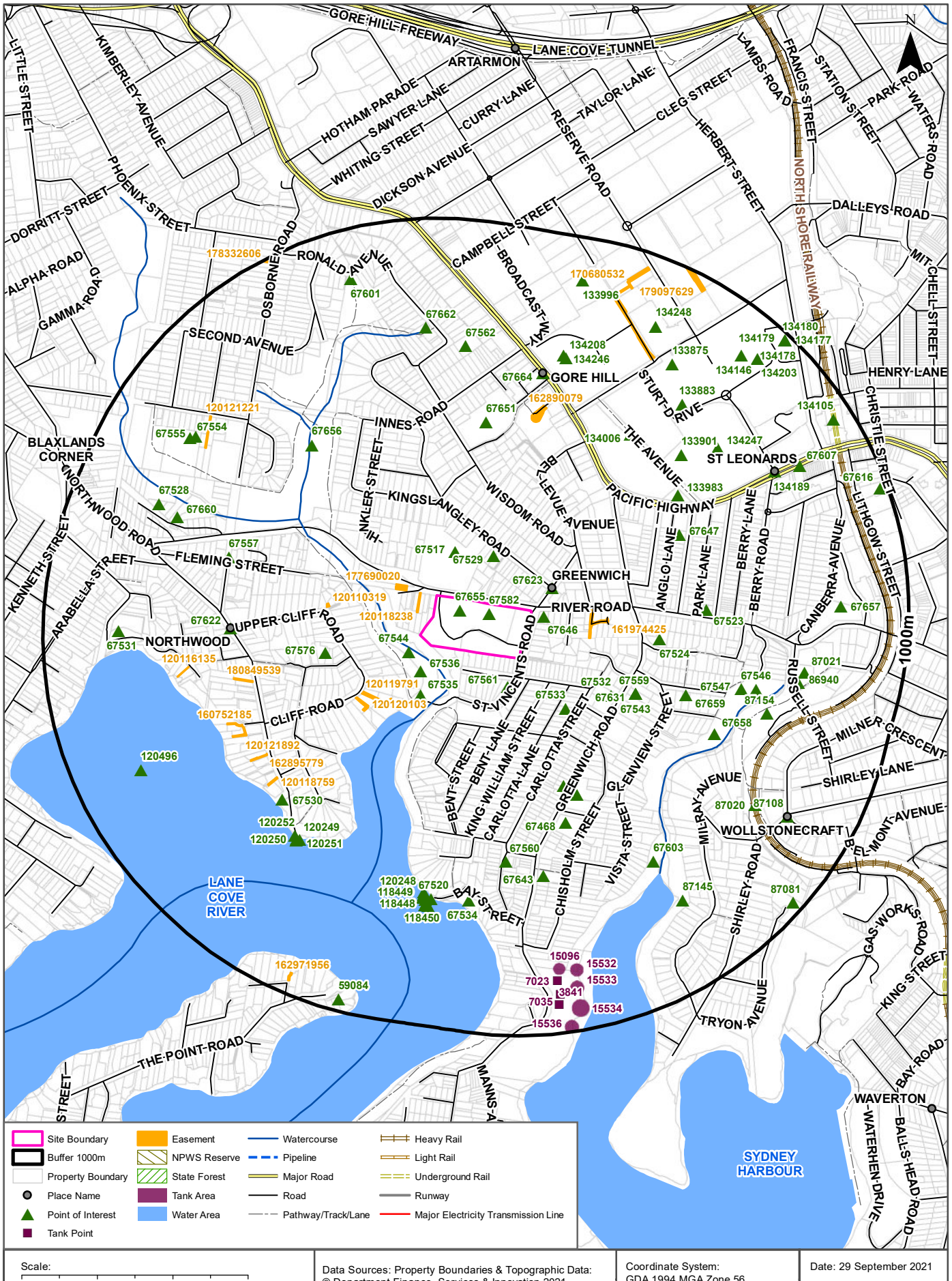
Date: 29 September 2021

Historical Map c.1917

97-115 River Road, Greenwich, NSW 2065

Topographic Features

97-115 River Road, Greenwich, NSW 2065



Topographic Features

97-115 River Road, Greenwich, NSW 2065

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
67582	Historic Site	PALLISTER	0m	On-site
67655	General Hospital	GREENWICH HOSPITAL	0m	On-site
67646	Park	ST VINCENTS RD PLAYGROUND	34m	East
67544	Park	PLAYGROUND	54m	West
67536	Sports Field	BOB CAMPBELL OVAL	73m	South West
67561	Park	GORE CREEK RESERVE	79m	South East
67623	Suburb	GREENWICH	83m	North East
67517	Primary School	GREENWICH PUBLIC SCHOOL	120m	North
67529	Park	HENNINGHAM PLAYGROUND	127m	North
67535	Picnic Area	GORE CREEK RESERVE	135m	South West
67533	Place Of Worship	UNITING CHURCH	181m	South East
67576	Historic Site	NORTHWOOD HOUSE AND COTTAGE	255m	West
67532	Place Of Worship	THE CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS	262m	South East
67543	Community Facility	GREENWICH MEMORIAL COMMUNITY CENTRE	322m	South East
67559	Child Care Centre	KU GREENWICH COMMUNITY PRESCHOOL	322m	South East
67631	Library	GREENWICH LIBRARY	322m	South East
67524	Community Home	GLENWOOD NURSING HOME	347m	East
67644	Post Office	GREENWICH POST OFFICE	357m	South East
67518	Primary School	GREENWICH PUBLIC SCHOOL	391m	South East
67647	Park	PORTVIEW RESERVE	441m	North East
67659	Place Of Worship	ANGLICAN CHURCH	452m	East
67468	Retirement Village	CLANCY TERRACE	453m	South East
67523	Park	PROPSTING PLAYGROUND	464m	East
67651	Retirement Village	WATERBROOK AT GREENWICH	473m	North
133983	Primary School	INTERNATIONAL CHINESE SCHOOL ST LEONARDS	495m	North East
67622	Suburb	NORTHWOOD	503m	West
67656	Park	LANE COVE BUSHLAND PARK	517m	North West
134145	Cemetery	GORE HILL CEMETERY	536m	North East
134006	Historic Site	GORE HILL MEMORIAL CEMETERY	536m	North East
67560	Park	CARLOTTA ST PLAYGROUND	539m	South
67557	Park	ENDEAVOUR PLAYGROUND	548m	West

Map Id	Feature Type	Label	Distance	Direction
67658	Park	GREENDALE PARK	554m	South East
67530	Park	LLOYD REES PARK	568m	South West
133901	Sports Court	BASKETBALL	574m	North East
67643	Place Of Worship	PRESBYTERIAN CHURCH	580m	South
67547	Community Facility	GREENWICH WOLLSTONECRAFT SCOUT HALL	591m	East
120252	Wharf	NORTHWOOD WHARF	620m	South West
120249	Wharf	NORTHWOOD WHARF	622m	South West
120250	Wharf	NORTHWOOD WHARF	624m	South West
67664	Urban Place	GORE HILL	626m	North
120251	Wharf	NORTHWOOD WHARF	627m	South West
67546	Park	GREENDALE PARK	629m	East
67603	Park	HOLLOWAY PARK	645m	South East
120248	Wharf	Wharf	650m	South
67534	Park	BAYVIEW PARK	653m	South
134247	Sports Field	GORE HILL PARK	656m	North East
118449	Wharf	BAY STREET WHARF	659m	South
67562	Park	BRICKHILL PLAYGROUND	665m	North
67520	Wharf	BAY STREET WHARF	665m	South
118457	Wharf	BAY STREET WHARF	666m	South
118448	Wharf	BAY STREET WHARF	668m	South
87154	Park	SMOOTHEY PARK	672m	East
134208	High School	BRADFIELD COLLEGE	676m	North
118450	Wharf	BAY STREET WHARF	677m	South
133883	Special School	ROYAL NORTH SHORE HOSPITAL SCHOOL	678m	North East
134246	TAFE College	ST LEONARDS TAFE COLLEGE	681m	North
118451	Wharf	BAY STREET WHARF	682m	South
118456	Wharf	BAY STREET WHARF	683m	South
67662	Park	RONALD PARK	709m	North
67660	Club	LANE COVE COUNTRY CLUB	716m	West
86940	Club	WOLLSTONECRAFT BOWLING AND RECREATION CLUB	733m	East
87020	Railway Station	WOLLSTONECRAFT RAILWAY STATION	736m	South East
87021	Sports Field	BOWLING GREEN	741m	East
134189	Suburb	ST LEONARDS	744m	North East
133875	Post Office	ROYAL NORTH SHORE HOSPITAL POST OFFICE	753m	North East
67555	Sports Court	TENNIS	765m	North West
87145	Park	MILRAY RESERVE	773m	South East
67528	Sports Court	TENNIS COURTS	774m	West

Map Id	Feature Type	Label	Distance	Direction
67554	Park	OSBORNE PARK	776m	North West
67531	Park	WOODFORD BAY RESERVE	800m	West
67607	Transport Interchange	ST LEONARDS BUS INTERCHANGE	808m	North East
67657	Park	NEWLANDS PARK	819m	East
120496	Bay Like	WOODFORD BAY	822m	South West
134248	General Hospital	NORTH SHORE PRIVATE HOSPITAL	823m	North East
87108	Suburb	WOLLSTONECRAFT	824m	South East
67601	Park	LANE COVE BUSHLAND PARK	869m	North
134146	General Hospital	ROYAL NORTH SHORE HOSPITAL	877m	North East
133996	Rubbish Depot	ARTARMON RESOURCE RECOVERY CENTRE	887m	North
134203	Helipad	Helipad	897m	North East
134105	Railway Station	ST LEONARDS RAILWAY STATION	949m	North East
59084	Headland	ONIONS POINT	970m	South
87081	Embassy	CONSULATE-GENERAL OF MONGOLIA	972m	South East
67616	Club	NORTHS RUGBY CLUB	980m	East
134179	Community Medical Centre	SYDNEY DIALYSIS CENTRE	983m	North East
134178	Community Medical Centre	NORTHERN SYDNEY CENTRAL COAST ACUTE CARE FACILITY	983m	North East
134180	Community Medical Centre	ROYAL NORTH SHORE COMMUNITY HEALTH CENTRE	983m	North East
134177	Community Medical Centre	NORTHERN SYDNEY AREA COMMUNITY HEALTH	983m	North East

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Topographic Features

97-115 River Road, Greenwich, NSW 2065

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
15096	Petroleum	Operational		01/11/2012	813m	South
15532	Petroleum	Operational		13/06/2001	821m	South
15533	Petroleum	Operational		13/06/2001	867m	South
15534	Petroleum	Operational		13/06/2001	917m	South
15536	Petroleum	Operational		13/06/2001	967m	South

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
7023	Undefined	Feature on Previous LPI Tank Point Supply		13/06/2001	860m	South
7035	Undefined	Feature on Previous LPI Tank Point Supply		13/06/2001	896m	South
3841	Undefined	Feature on Previous LPI Tank Point Supply		13/06/2001	922m	South

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Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120118238	Primary	Undefined		39m	North West
177690020	Primary	Right of way		80m	North West
161974425	Primary	Right of way	Variable	157m	East
120119791	Primary	Undefined		175m	South West
120120103	Primary	Undefined		230m	South West
120110319	Primary	Undefined		252m	West
180849539	Primary	Right of way	3.05 m	460m	West

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
162890079	Primary	Right of way	VAR	496m	North
162895779	Primary	Right of way	276m and VAR	514m	South West
120121892	Primary	Undefined		526m	South West
160752185	Primary	Right of way	3.5 and Var.	528m	West
120118759	Primary	Undefined		535m	South West
120116135	Primary	Undefined		618m	West
120121221	Primary	Undefined		725m	North West
170680532	Primary	Right of way	Var	738m	North East
162971956	Primary	Right of way		942m	South West
179097629	Primary	Right of way	12m & var	959m	North East
178332606	Primary	Right of way	3m	984m	North West

Easements Data Source: © Land and Property Information (2015)
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Topographic Features

97-115 River Road, Greenwich, NSW 2065

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

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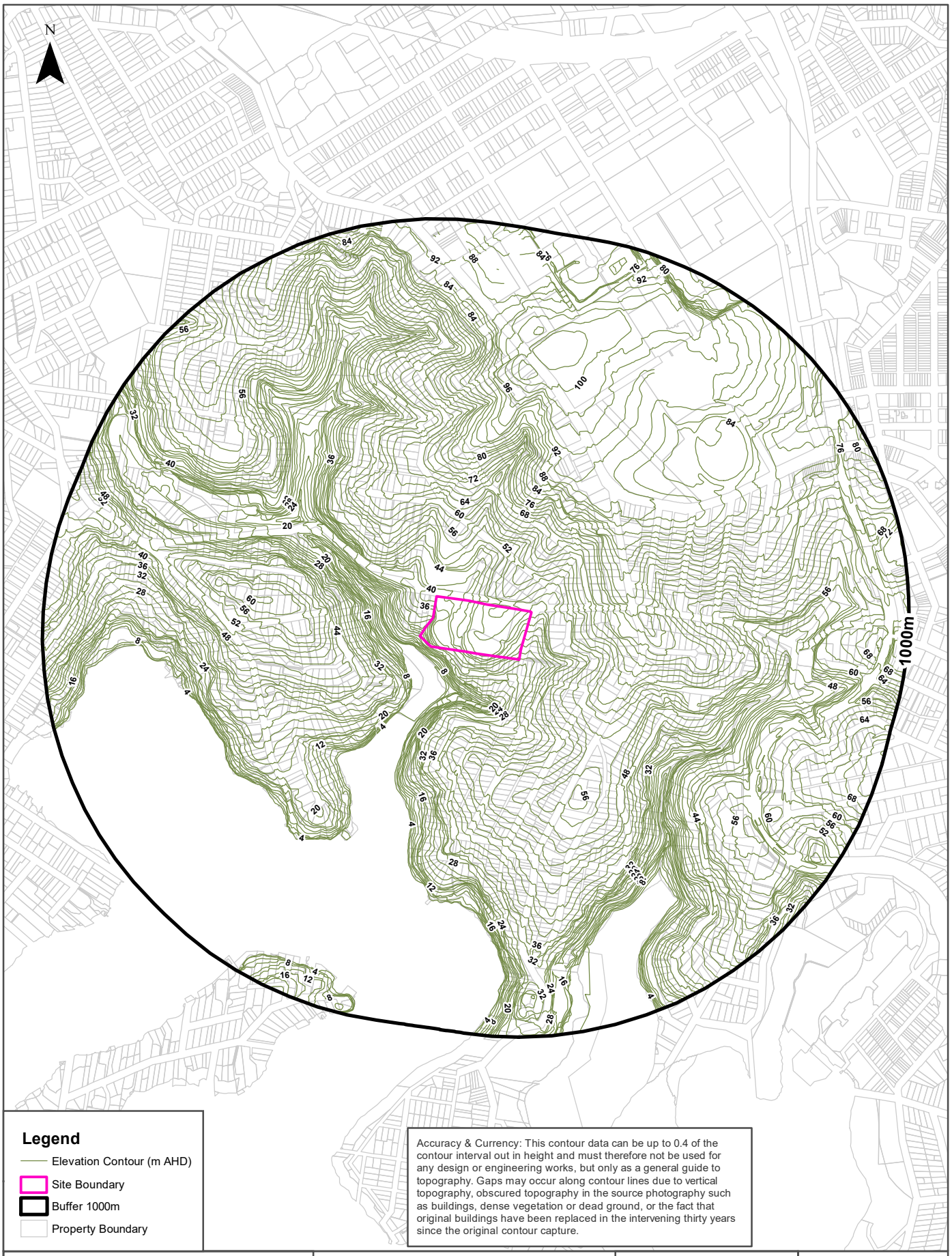
Elevation Contours (m AHD)

97-115 River Road, Greenwich, NSW 2065



Hydrogeology & Groundwater

97-115 River Road, Greenwich, NSW 2065

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive aquifers of low to moderate productivity	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

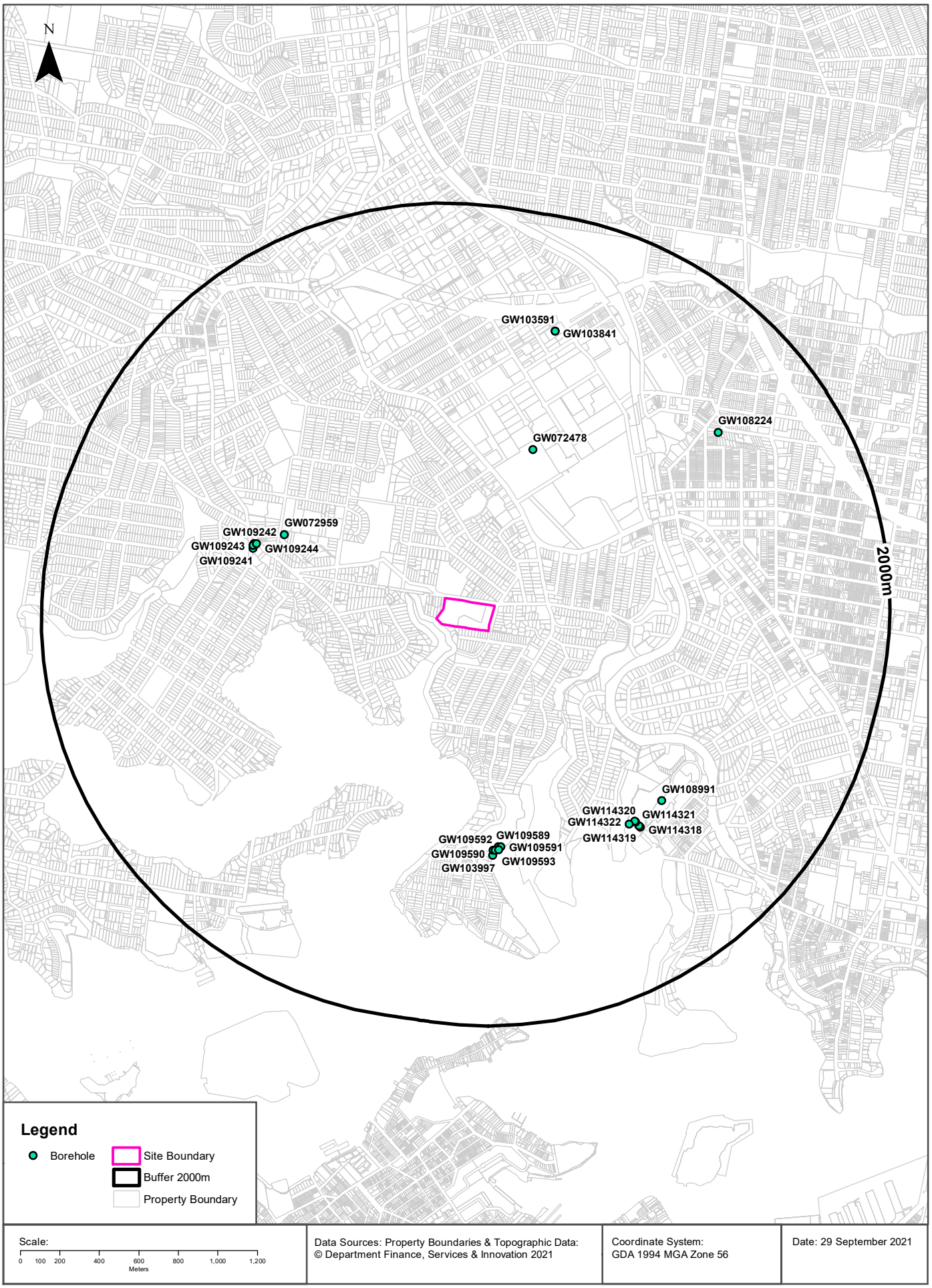
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

97-115 River Road, Greenwich, NSW 2065



Hydrogeology & Groundwater

97-115 River Road, Greenwich, NSW 2065

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW072478		Bore			Domestic		10/01/1995	180.50	180.50	270	48.00	0.700		816m	North
GW072959	10BL156425, 10BL602137, 10CA109539	Bore open thru rock	Private	Irrigation, Monitoring Bore, Recreation (groundwater)	Irrigation, Monitoring Bore		03/02/1995	24.50	24.50	0-500 ppm				873m	North West
GW109244	10BL602428	Bore	Private	Monitoring Bore	Monitoring Bore		20/08/2008	4.50	4.50					985m	West
GW109241	10BL602428	Well	Private	Monitoring Bore	Monitoring Bore		20/08/2008	4.50	4.50					993m	West
GW109242	10BL602428	Bore	Private	Monitoring Bore	Monitoring Bore		20/08/2008	4.50	4.50					998m	West
GW109243	10BL602428	Bore	Private	Monitoring Bore	Monitoring Bore		20/08/2008	4.50	4.50					998m	West
GW109589	10BL163745	Bore	Private	Monitoring Bore	Monitoring Bore		30/04/2003	2.90	2.90					1095m	South
GW109591	10BL163745	Bore	Private	Monitoring Bore	Monitoring Bore		05/09/2003	2.00	2.00					1096m	South
GW109593	10BL163745	Bore	Private	Monitoring Bore	Monitoring Bore		02/05/2003	4.00	4.00					1109m	South
GW109590	10BL163745	Bore	Private	Monitoring Bore	Monitoring Bore		30/04/2003	4.40	4.40					1111m	South
GW109592	10BL163745	Bore	Private	Monitoring Bore	Monitoring Bore		05/09/2003	4.50	4.50					1111m	South
GW103997	10BL158770	Bore		Monitoring Bore	Monitoring Bore		26/08/1998	4.50	4.50					1137m	South
GW114322	10BL604924	Bore	Private	Monitoring Bore	Monitoring Bore	North Shore Gas	03/09/1996	10.00	10.00					1211m	South East
GW114321	10BL604924	Bore	Private	Monitoring Bore	Monitoring Bore	North Shore Gas	11/09/1996	11.90	11.90					1215m	South East
GW114320	10BL604924	Bore	Private	Monitoring Bore	Monitoring Bore	North Shore Gas	12/09/1996	5.00	5.00					1222m	South East
GW108991	10BL165659, 10WA109008	Bore	Private	Domestic	Domestic		08/07/2008	168.00		300	13.00	0.120		1229m	South East
GW114319	10BL604924	Bore	Private	Monitoring Bore	Monitoring Bore	North Shore Gas	12/09/1996	5.00	5.00					1249m	South East
GW114318	10BL604924	Bore	Private	Monitoring Bore	Monitoring Bore	North Shore Gas	12/09/1996	10.00	10.00					1258m	South East
GW103591	10BL159969	Bore	Private	Monitoring Bore	Monitoring Bore		11/01/2001	5.80	5.80					1425m	North
GW103841	10BL159969	Bore		Monitoring Bore	Monitoring Bore		11/01/2001	5.80	5.80					1425m	North
GW108224	10BL600442, 10WA109080	Bore	Private	Domestic	Domestic		05/09/2006	132.40	132.40		35.00	0.300		1434m	North East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Hydrogeology & Groundwater

97-115 River Road, Greenwich, NSW 2065

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW072478	0.00m-2.50m CONCRETE OVERBURDEN 2.50m-5.10m MOIST CLAY 5.10m-28.70m L/G MED. GRAIN SANDSTONE 28.70m-30.10m LIGHT GREY MED. GRAIN S/STONE QUARTZ MATRIX 30.10m-35.90m L/GREY GRAIN SANDSTONE 35.90m-37.20m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 37.20m-45.30m L/GREY MED GRAIN S/STONE 45.30m-54.30m DARK GREY SHALE 54.30m-72.40m L/GREY CEMENTED S/STONE 72.40m-75.40m DARK GREY SHALE 75.40m-109.70m L/GREY MED GRAIN S/STONE 109.70m-110.60m QUARTZ LAYER 110.60m-121.80m L/GREY MED GRAIN S/STONE 121.80m-123.30m DARK GREY SHALE 123.30m-135.40m L/GREY MED GRAIN S/STONE 135.40m-138.00m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 138.00m-139.80m WATER BEARING QUARTZ 139.80m-143.80m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 143.80m-144.40m WATER BEARING QUARTZ 144.40m-154.10m L/GREY CEMENTED SANDSTONE 154.10m-163.70m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 163.70m-166.90m QUARTZ LAYER 166.90m-168.70m GREY MED GRAIN S/STONE 168.70m-180.50m L/GREY MED GRAIN SANDSTONE	816m	North
GW072959	0.00m-0.80m Sandy Loam 0.80m-6.90m 6.90m-9.20m 9.20m-16.60m L/grey Med Grain Sandstone 16.60m-18.10m Light Grey Med Grain Sandstone Fractured Watr Bearing Zones 18.10m-21.10m L/grey Med Grain Sandstone 21.10m-22.30m L/grey Med Grain Sandstone Fractured Water Bearing Zones 22.30m-24.50m Light Grey Marine Clay	873m	North West
GW109244	0.00m-1.00m CONCRETE,FILL,CLAY,SANDY,BROWN YELLOW 1.00m-2.00m WEATHERED SANDSTONE RED ORANGE 2.00m-4.50m WEATHERED SANDSTONE ,RED WHITE,DAMP,ODOUR	985m	West
GW109241	0.00m-1.00m CONCRETE,CLAY,WEATHERED SANDSTONE 1.00m-2.00m AS ABOVE,RED BROWN,(INCREASED DENSITY TO 1.5m) 2.00m-3.00m AS ABOVE,WHITE ORANGE,DAMP 3.00m-4.50m AS ABOVE,GREY WHITE,DAMP,BLACK LAYER 3.5, 3.8m	993m	West
GW109242	0.00m-1.00m CONCRETE,CLAY,BROWN YELLOW 1.00m-2.00m WEATHERED SANDSTONE,WHITE,BROWN 2.00m-3.00m AS ABOVE,RED BROWN, DAMP 3.00m-4.50m AS ABOVE,WHITE GREY	998m	West
GW109243	0.00m-0.50m CONCRETE,CLAY,BROWN GREY 0.50m-2.00m WEATHERED SANDSTONE,RED BROWN,DRY 2.00m-3.00m AS ABOVE,WHITE,YELLOW, DAMP 3.00m-4.50m WEATHERED SANDSTONE,BROWN,WET,DENSE	998m	West
GW109589	0.00m-0.30m CONCRETE 0.30m-0.50m DARK GREY AND BLACK SANDY LOAM/GRAVEL 0.50m-1.20m DARK GREY AND BLACK SANDY LOAM 1.20m-2.90m DARK GREY SANDY CLAY	1095m	South
GW109591	0.00m-0.30m CONCRETE 0.30m-0.60m BLACK AND DARK GREY LOAMY SAND WITH GRAVEL 0.60m-2.00m MIXTURE OF GREY AND LIGHT BROWN SANDY LOAM	1096m	South
GW109593	0.00m-0.20m CONCRETE 0.20m-0.60m DARK GREY AND BLACK SANDY LOAM WITH GRAVEL 0.60m-1.80m DARK GREY AND BLACK SANDY LOAM 1.80m-4.00m DARK GREY AND BLACK SANDY CLAY/GRAVEL	1109m	South
GW109592	0.00m-0.20m CONCRETE 0.20m-0.50m BLACK AND DARK GREY LOAMY SAND/GRAVEL 0.50m-1.10m BLACK AND DARK GREY SANDY LOAM 1.10m-4.50m BLACK SANDY AND SILTY LOAM	1111m	South
GW109590	0.00m-0.20m CONCRETE 0.20m-0.70m DARK GREY AND BLACK SANDY LOAM WITH SOME GRAVEL 0.70m-1.20m DARK GREY AND BLACK SANDY LOAM 1.20m-4.40m DARK GREY TO BLACK SANDY CLAY	1111m	South

Groundwater No	Drillers Log	Distance	Direction
GW103997	0.00m-0.20m CONCRETE 0.20m-1.00m FILL: SANDY,DARK 1.00m-2.00m SANDY CLAY 2.00m-2.90m SANDY SILT/DARK GREY 2.90m-4.50m SANDY SILT:DARK GREY	1137m	South
GW103591	0.00m-2.00m ROAD BASE 2.00m-4.00m CLAY 4.00m-5.80m SANDY CLAY	1425m	North
GW103841	0.00m-0.20m ROAD BASE 0.20m-4.00m STIFF CLAY 4.00m-5.80m SANDY CLAY	1425m	North
GW108224	0.00m-0.60m clay, sandy 0.60m-2.80m sandstone, weathered 2.80m-3.10m clay 3.10m-25.50m sandstone, weathered 25.50m-27.00m sandstone, grey quartz 27.00m-29.00m shale 29.00m-35.00m sandstone, quartz grey 35.00m-41.00m shale 41.00m-52.00m sandstone, grey 52.00m-54.00m sandstone, quartz grey 54.00m-61.00m sandstone, grey 61.00m-65.00m shale 65.00m-81.00m sandstone, grey 81.00m-84.00m sandstone, grey quartz siltstone 84.00m-98.00m sandstone, grey 98.00m-100.00m sandstone, grey quartz 100.00m-106.50m sandstone, grey 106.50m-109.00m sandstone, dark brown 109.00m-110.50m sandstone, grey quartz 110.50m-112.00m siltstone 112.00m-132.40m sandstone, grey	1434m	North East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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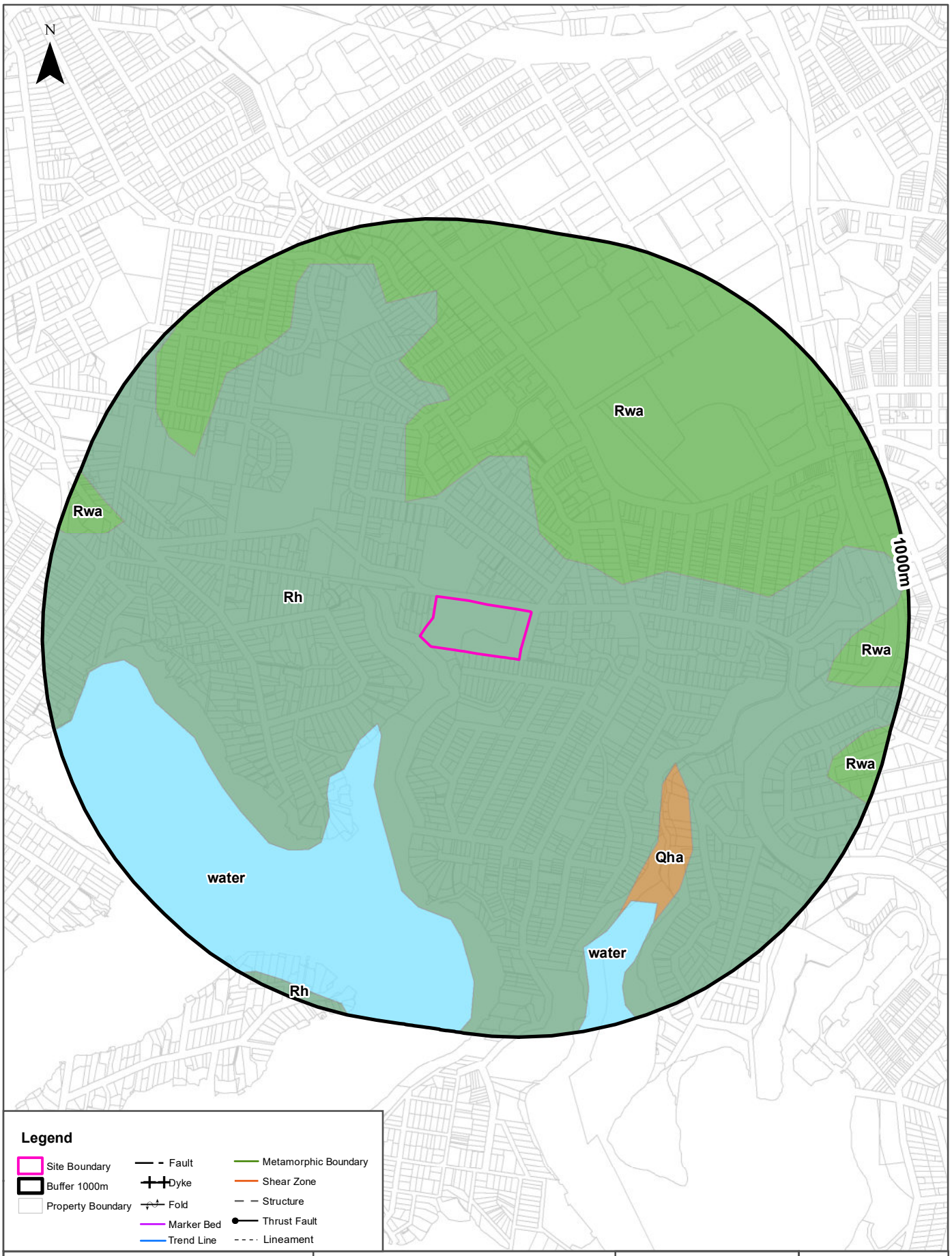
Geology

97-115 River Road, Greenwich, NSW 2065



Geology

97-115 River Road, Greenwich, NSW 2065

Geological Units 1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dist	Dir
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	0m	On-site
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	166m	North East
water							Sydney	248m	South West
Qha	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers				Quaternary		Sydney	493m	South East

Geological Structures 1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Distance	Direction
N/A	No records in buffer				

Geological Data Source : NSW Department of Industry, Resources & Energy
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Naturally Occurring Asbestos Potential

97-115 River Road, Greenwich, NSW 2065

Naturally Occurring Asbestos Potential

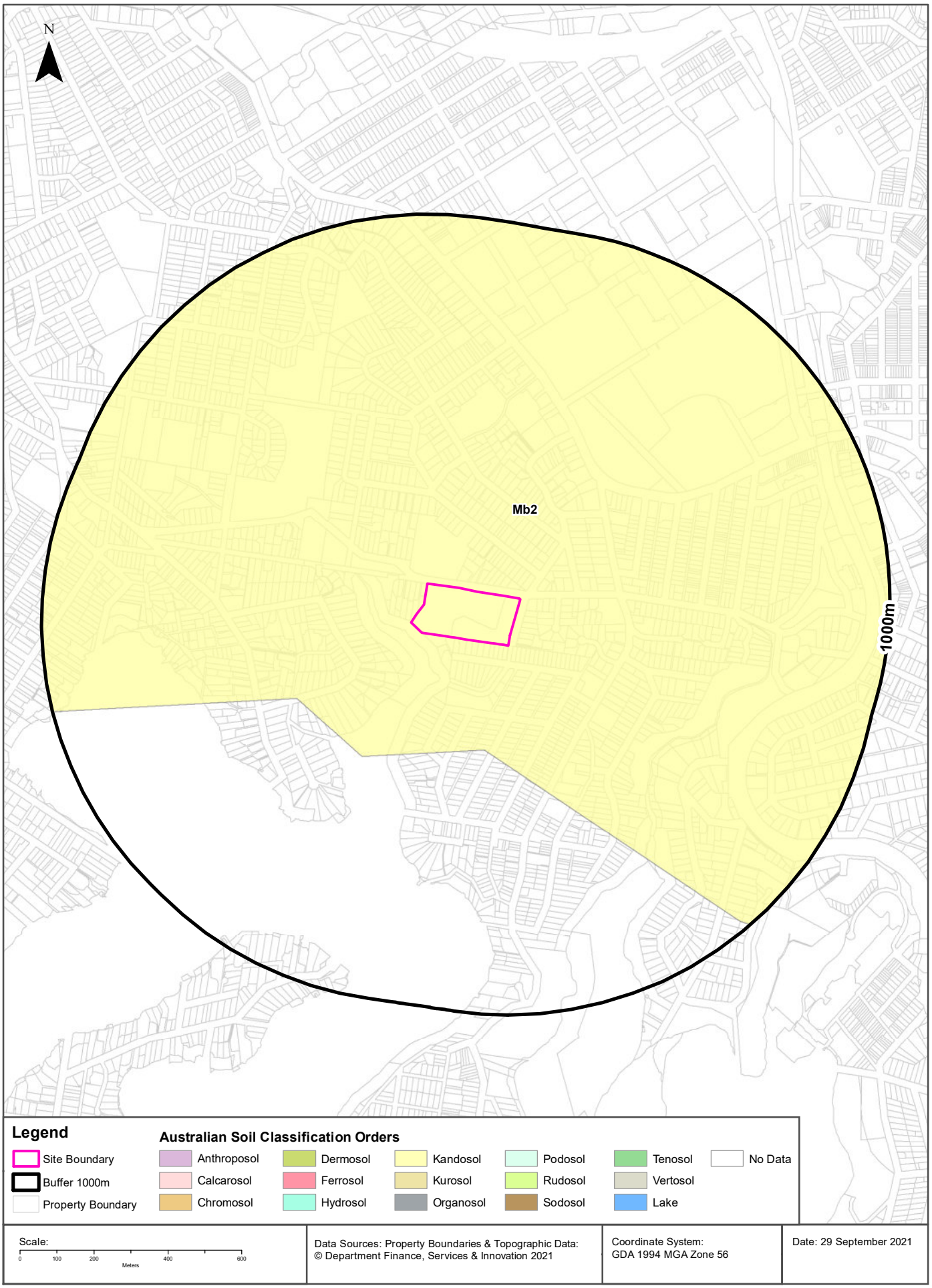
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Naturally Occurring Asbestos Potential Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Atlas of Australian Soils

97-115 River Road, Greenwich, NSW 2065



Soils

97-115 River Road, Greenwich, NSW 2065

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)- sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO
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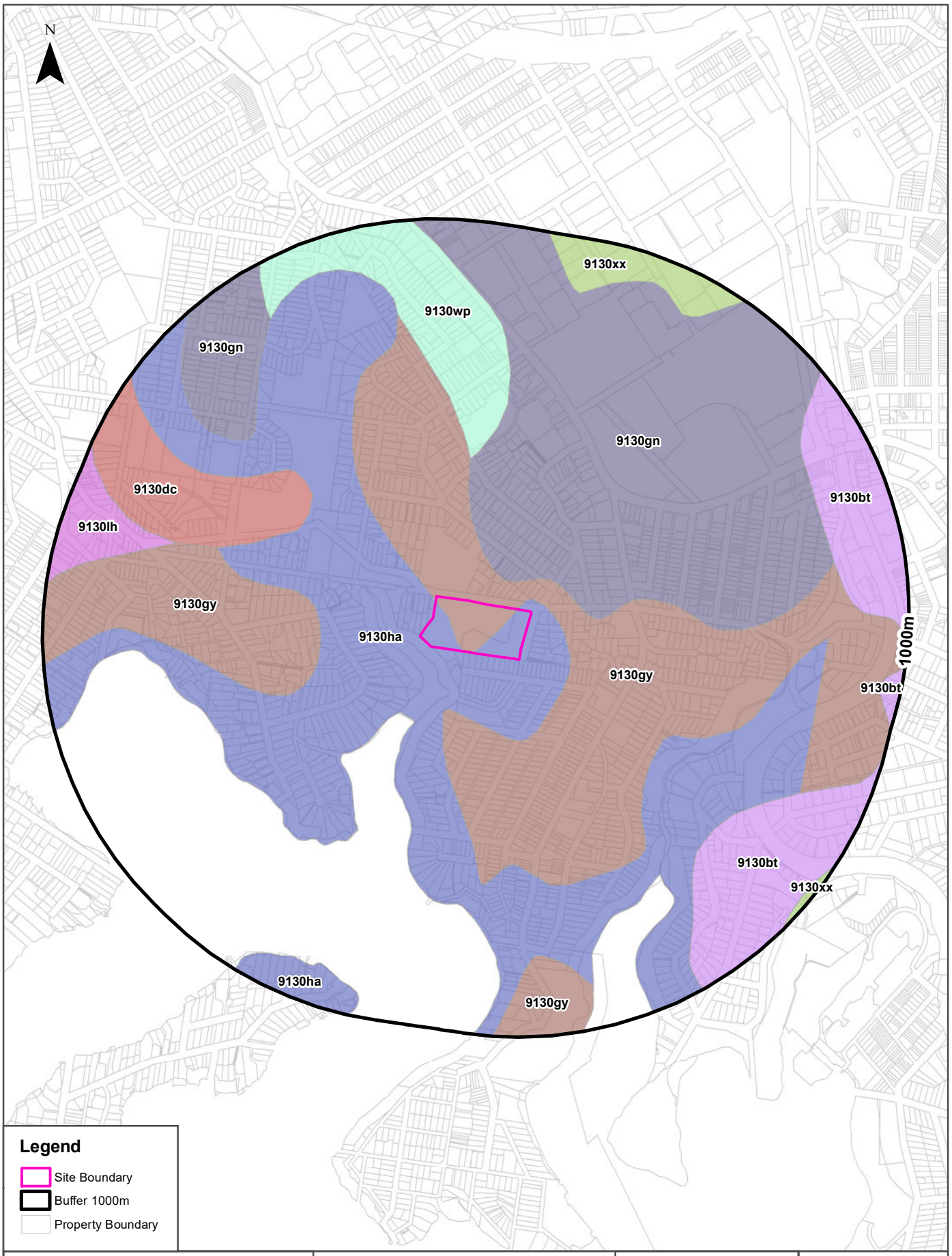
Soil Landscapes of Central and Eastern NSW

97-115 River Road, Greenwich, NSW 2065



Soils

97-115 River Road, Greenwich, NSW 2065

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
9130ha	Hawkesbury	0m	On-site
9130gy	Gymea	0m	On-site
9130gn	Glenorie	70m	North East
9130wp	West Pennant Hills	373m	North
9130dc	Deep Creek	404m	North West
9130bt	Blacktown	681m	South East
9130lh	Lucas Heights	691m	West
9130xx	Disturbed Terrain	853m	North East

Soil Landscapes of Central and Eastern NSW: NSW Department of Planning, Industry and Environment
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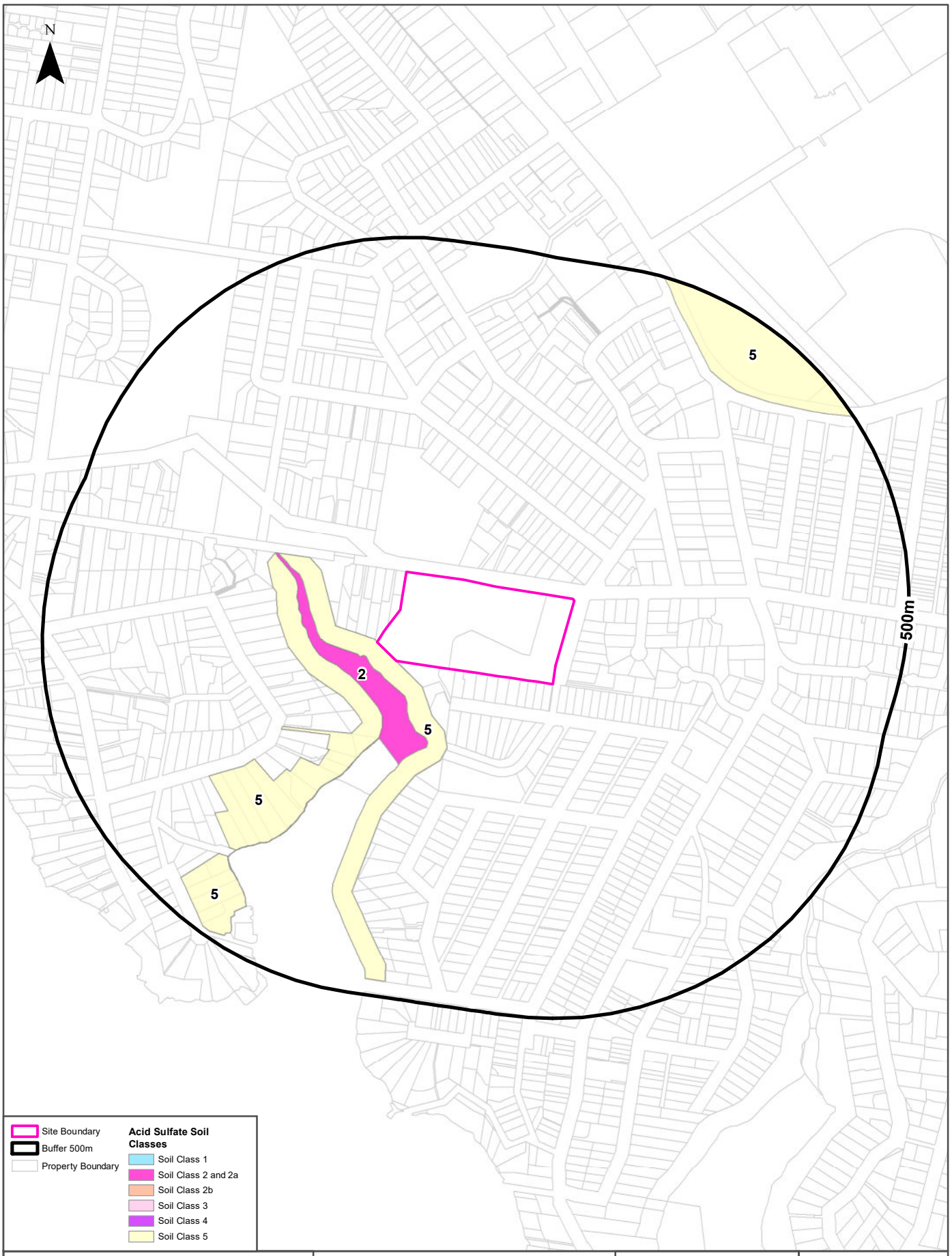
Acid Sulfate Soils

97-115 River Road, Greenwich, NSW 2065



Acid Sulfate Soils

97-115 River Road, Greenwich, NSW 2065

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Atlas of Australian Acid Sulfate Soils

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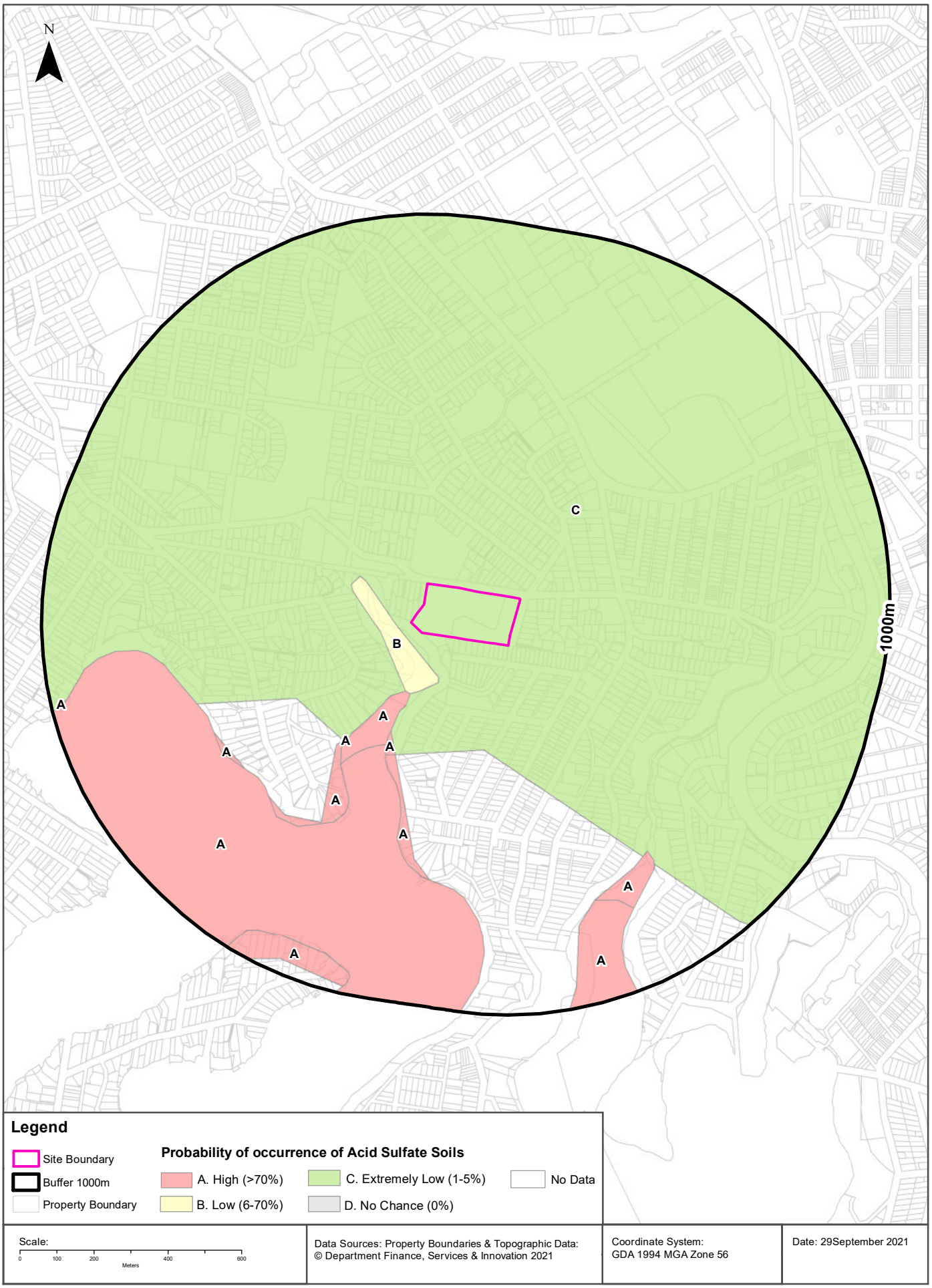

Acid Sulfate Soils

97-115 River Road, Greenwich, NSW 2065

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site
B	Low Probability of occurrence. 6-70% chance of occurrence.	38m	West
A	High Probability of occurrence. >70% chance of occurrence.	953m	West

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
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Dryland Salinity

97-115 River Road, Greenwich, NSW 2065

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A		

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Mining

97-115 River Road, Greenwich, NSW 2065

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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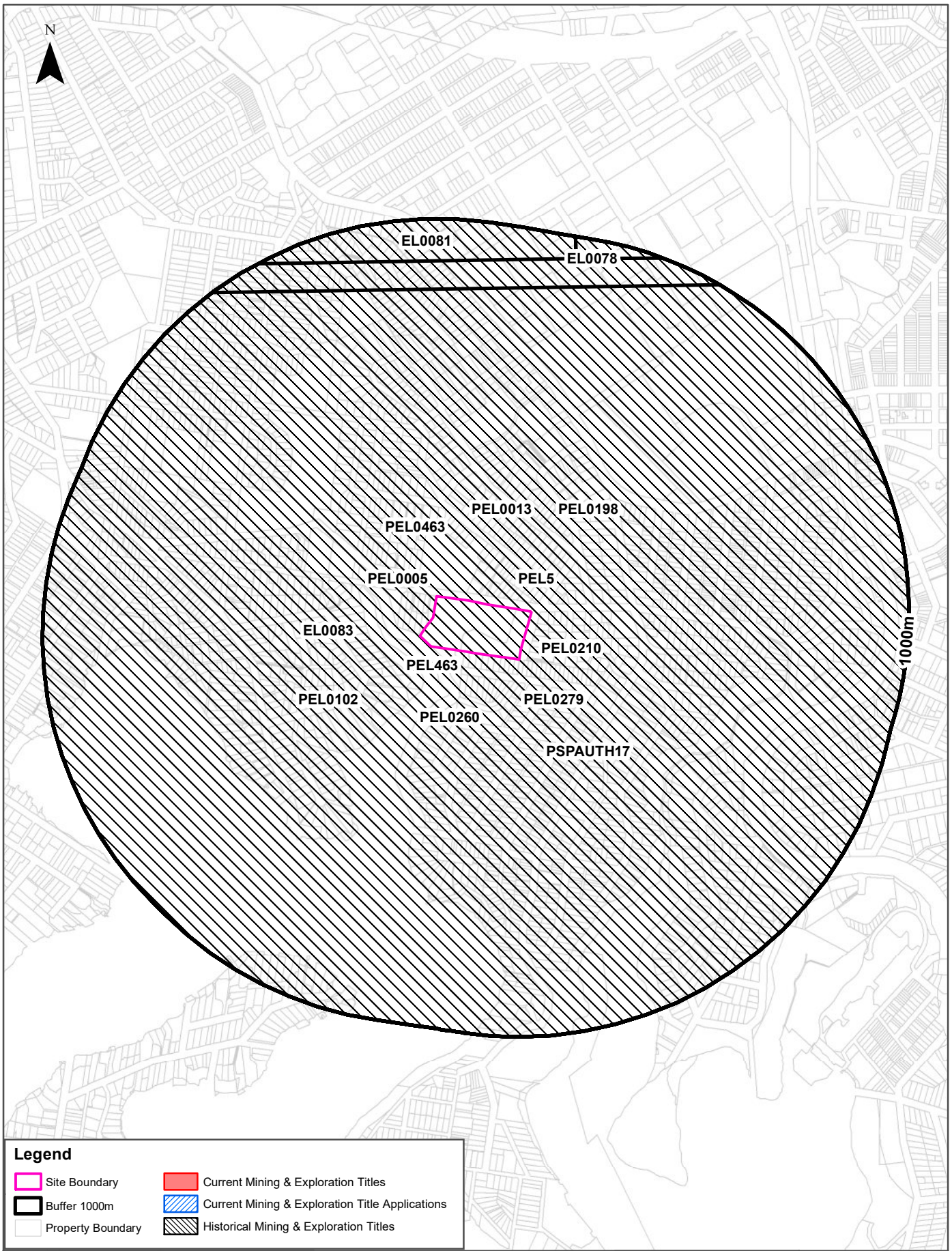
Mining & Exploration Titles

97-115 River Road, Greenwich, NSW 2065



Mining

97-115 River Road, Greenwich, NSW 2065

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

97-115 River Road, Greenwich, NSW 2065

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0279	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	17/04/1990	11/11/1993	PETROLEUM	Petroleum	0m	On-site
PEL0013	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	9/09/1981	8/03/1993	PETROLEUM	Petroleum	0m	On-site
PEL463	DART ENERGY (APOLLO) PTY LTD			MINERALS		0m	On-site
PEL5	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	On-site
PSPAUTH17	MACQUARIE ENERGY PTY LTD	8/03/2007	7/03/2008	PETROLEUM	Petroleum	0m	On-site
PEL0005	AGL UPSTREAM INVESTMENTS PTY LIMITED	11/11/1993	4/03/2015	PETROLEUM	Petroleum	0m	On-site
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	On-site
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL0463	DART ENERGY (APOLLO) PTY LTD	22/10/2008	6/03/2015	PETROLEUM	Petroleum	0m	On-site
EL0083	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		0m	On-site
EL0081	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		888m	North
EL0078	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		942m	North

Historical Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

State Environmental Planning Policy

97-115 River Road, Greenwich, NSW 2065

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No records in buffer							

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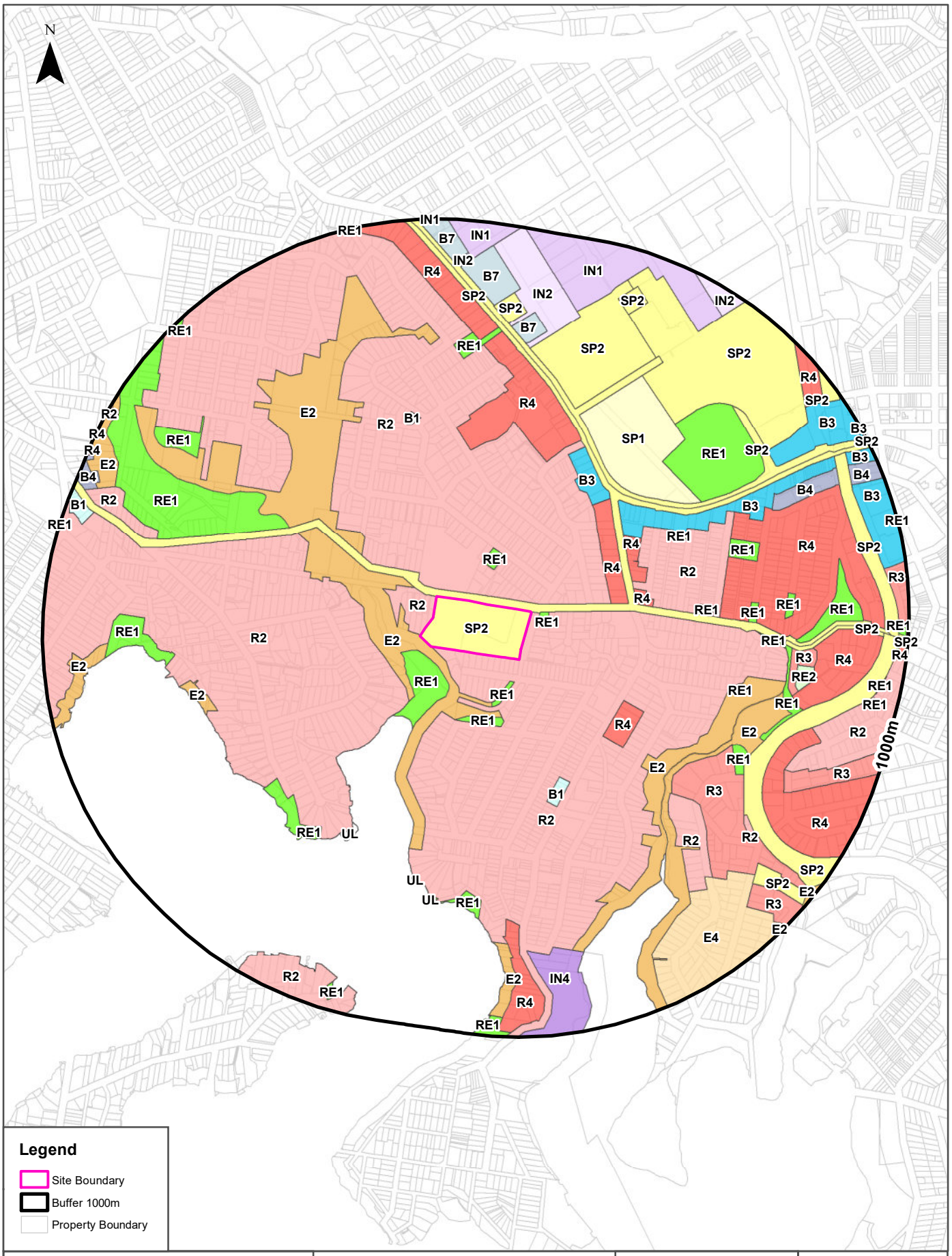
EPI Planning Zones

97-115 River Road, Greenwich, NSW 2065



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2021
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 29 September 2021

Environmental Planning Instrument

97-115 River Road, Greenwich, NSW 2065

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Health Services Facilities	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		0m	On-site
SP2	Infrastructure	Road	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		0m	North East
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		0m	West
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		0m	West
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		0m	South East
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		20m	North West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		21m	East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		28m	South West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		60m	South
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		93m	North
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		110m	West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		157m	South
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		210m	North East
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		226m	North West
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		276m	East
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	30/10/2020	30/10/2020	30/10/2020	Amendment No 25	276m	East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		278m	North East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		292m	South East
B3	Commercial Core		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		318m	North East
B3	Commercial Core		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		326m	North East
B1	Neighbourhood Centre		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		327m	South East
SP2	Infrastructure	Classified Road	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		394m	North East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		396m	North
SP1	Special Activities	Cemetery	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		409m	North East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		419m	North East
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		422m	South East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		431m	North West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		441m	East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B1	Neighbourhood Centre		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		461m	North
E2	Environmental Conservation		North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	Amendment No 30	492m	South East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	30/10/2020	30/10/2020	30/10/2020	Amendment No 25	497m	East
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		508m	South East
UL	Unzoned Land		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		509m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		526m	North East
R2	Low Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		532m	South East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		535m	South West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	30/10/2020	30/10/2020	30/10/2020	Amendment No 25	540m	East
SP2	Infrastructure	Educational Establishment	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		550m	North East
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		572m	West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	23/08/2013	23/08/2013	30/10/2020	Amendment No 12	574m	East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	30/10/2020	30/10/2020	30/10/2020	Amendment No 25	574m	East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		593m	East
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		606m	South East
UL	Unzoned Land		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		609m	South
SP2	Infrastructure	Hospital	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		626m	North East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		626m	South
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		633m	North
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		651m	South
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		651m	West
SP2	Infrastructure	Railway	North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	Amendment No 30	651m	East
UL	Unzoned Land		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		654m	South
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		667m	East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	30/10/2020	30/10/2020	30/10/2020	Amendment No 25	669m	East
SP2	Infrastructure	Classified Road	North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	Amendment No 30	675m	East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		687m	North
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		687m	South
IN2	Light Industrial		Willoughby Local Environmental Plan 2012	20/10/2017	20/10/2017	05/03/2021	Amendment No 10	688m	North
B4	Mixed Use		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		693m	North East
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		695m	East
B7	Business Park		Willoughby Local Environmental Plan 2012	05/05/2017	05/05/2017	05/03/2021	Amendment No 9	699m	North
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		704m	East
R4	High Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		713m	South East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE2	Private Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		717m	East
R4	High Density Residential		North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	Amendment No 30	722m	East
R2	Low Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		723m	South East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		732m	North West
R2	Low Density Residential		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		743m	West
SP2	Infrastructure	Telecommunications	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		743m	North
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		750m	South
B3	Commercial Core		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		754m	North East
E4	Environmental Living		North Sydney Local Environmental Plan 2013	23/05/2014	23/05/2014	30/06/2021	Amendment No 3	755m	South East
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		758m	East
R2	Low Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		758m	East
IN4	Working Waterfront		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		765m	South
B7	Business Park		Willoughby Local Environmental Plan 2012	20/10/2017	20/10/2017	05/03/2021	Amendment No 10	786m	North
IN1	General Industrial		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		806m	North
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		826m	West
SP2	Infrastructure	Health Services Facilities	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		829m	South East
SP2	Infrastructure	Electricity Transmission & Distribution	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		829m	North East
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		855m	South East
SP2	Infrastructure	Railway	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		875m	East
IN2	Light Industrial		Willoughby Local Environmental Plan 2012	20/10/2017	20/10/2017	05/03/2021	Amendment No 10	877m	North
B7	Business Park		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		890m	North
R2	Low Density Residential		Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	12/08/2013		891m	South West
E2	Environmental Conservation		Lane Cove Local Environmental Plan 2009	24/07/2015	24/07/2015	30/10/2020	Amendment No 14	900m	North West
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		905m	North East
B3	Commercial Core		Lane Cove Local Environmental Plan 2009	01/12/2017	01/12/2017	30/10/2020	Amendment No 22	909m	East
B4	Mixed Use		Lane Cove Local Environmental Plan 2009	01/12/2017	01/12/2017	30/10/2020	Amendment No 22	912m	East
B1	Neighbourhood Centre		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		924m	West
RE1	Public Recreation		Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	12/08/2013		924m	South
SP2	Infrastructure	Railway	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		929m	North East
IN2	Light Industrial		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	05/03/2021		932m	North East
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		933m	East
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		939m	East
B4	Mixed Use		Lane Cove Local Environmental Plan 2009	20/05/2020	20/05/2020	30/10/2020	Amendment No 29	940m	West

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		945m	South
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		969m	East
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		972m	East
SP2	Infrastructure	Classified Road	North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	Amendment No 30	973m	East
R4	High Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		973m	East
E2	Environmental Conservation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021		974m	South East
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	20/05/2020	20/05/2020	30/10/2020	Amendment No 29	983m	North West
B3	Commercial Core		North Sydney Local Environmental Plan 2013	15/05/2020	15/05/2020	30/06/2021	Amendment No 28	984m	North East
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	23/08/2013	23/08/2013	30/10/2020	Amendment No 12	992m	North
R4	High Density Residential		Lane Cove Local Environmental Plan 2009	31/07/2015	31/07/2015	30/10/2020	Amendment No 17	995m	North West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		995m	West
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		999m	North
RE1	Public Recreation		Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	30/10/2020		1000m	East

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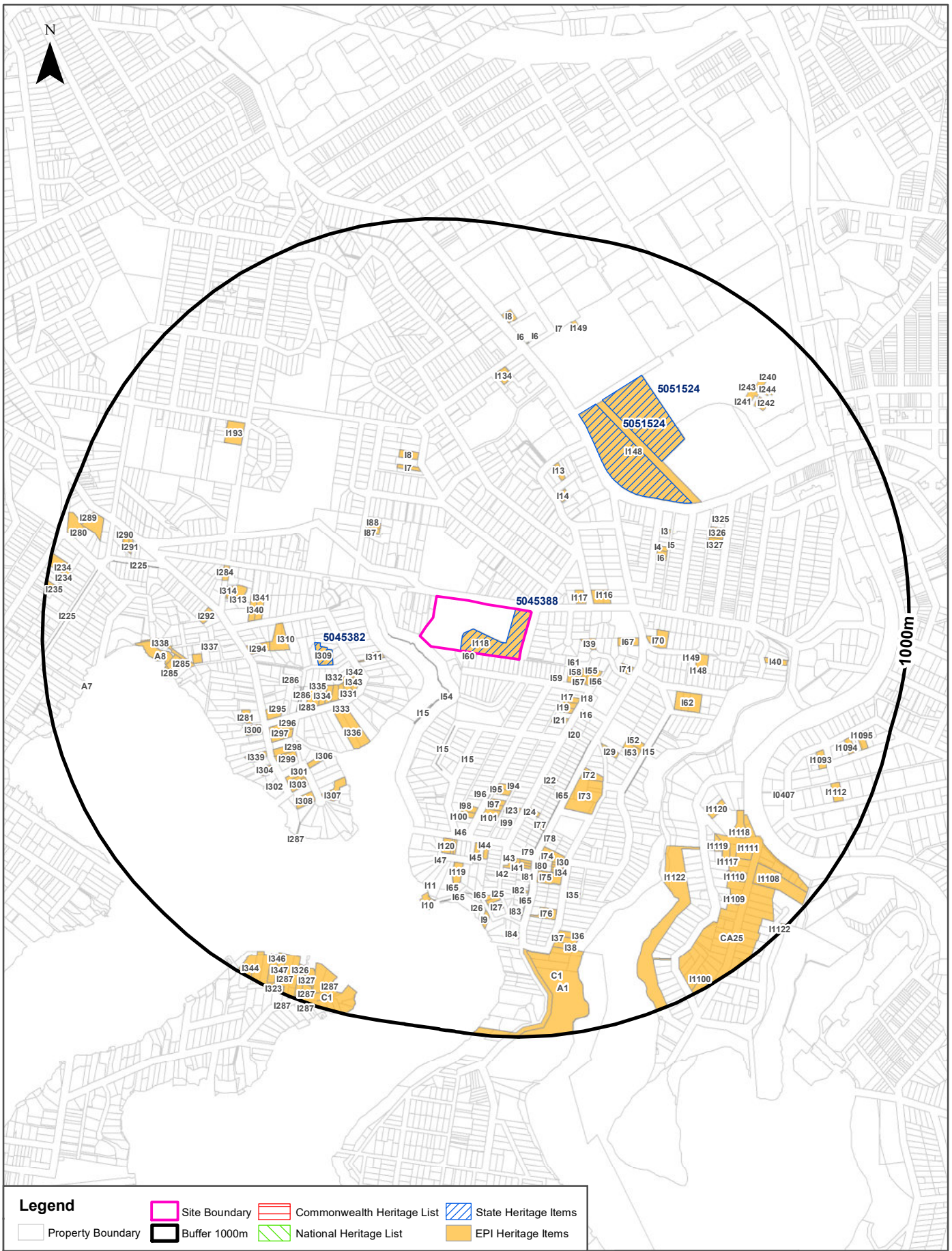
Heritage Items

97-115 River Road, Greenwich, NSW 2065



Heritage

97-115 River Road, Greenwich, NSW 2065

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5045388	Pallister	95 River Road Greenwich	LANE COVE	02/04/1999	00574	1571	0m	On-site
5045382	Northwood House & Cottage	1 Private Road Northwood	LANE COVE	02/04/1999	00440	1132	236m	West
5051524	Gore Hill Memorial Cemetery	Pacific Highway, Gore Hill	WILLOUGHBY	25/05/2001	01491	2121	409m	North East
5051524	Gore Hill Memorial Cemetery	Pacific Highway, Gore Hill	WILLOUGHBY	25/05/2001	01491	2121	528m	North East

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I60	Sandstone swimming pool (associated with Pallister, 95 River Road), 51 Gore Street	Item - General	State	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	0m	On-site
I118	Pallister, 95 River Road	Item - General	State	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	0m	On-site
I54	Gore Creek Reserve, Gore Street	Item - Landscape	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	27m	South West
I311	House, 40A Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	111m	West
I117	House, 92 River Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	120m	East
I59	Rockleigh, 11 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	132m	South East
I39	House, 5 Coolabah Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	142m	East
I58	Ione, 9 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	144m	South East
I15	Streetscape elements (drain, embankment walls, sandstone retaining walls, rocky outcrop, steps), Be*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	150m	South West
I17	Tewhare, 5 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	155m	South East
I57	Banksia, 7 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	156m	South East
I18	Marathon, 7 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	158m	South East
I19	Greenwich Uniting Church, 9 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	162m	South East
I116	Hazelhurst, 90 River Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	165m	East
I61	House, 5 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	169m	South East
I21	House, 13 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	175m	South East
I55	House, 3 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	181m	South East
I56	House, 1 Gore Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	193m	South East
I342	Stone fences, 33 Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	195m	West
I343	Stone fences, 33 Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	195m	South West
I15	Streetscape elements (drain, embankment walls, sandstone retaining walls, rocky outcrop, steps), Be*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	198m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I16	House, 2 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	213m	South East
I87	House, 1 Hinkler Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	224m	North West
I331	Stone fences, 35 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	227m	South West
I20	House, 12 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	229m	South East
I88	House, 3 Hinkler Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	234m	North West
I309	Northwood House and Cottage, 1 Private Road	Item - General	State	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	237m	West
I67	House, 35 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	238m	East
I282	House, 37 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	242m	South West
I332	Stone Fence	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	252m	South West
I71	House, 45 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	262m	East
I333	Stone fences, 41 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	265m	South West
I336	House, 62 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	272m	South West
I15	Streetscape elements (drain, embankment walls, sandstone retaining walls, rocky outcrop, steps), Be*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	274m	South
I334	Stone fences, 43 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	279m	South West
I65	Streetscape elements (sandstone gutters, steps, outcrops and kerbing), Greenwich Road, Bay Street a*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	286m	South East
I335	Stone fence	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	294m	South West
I14	House, 14 Bellevue Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	301m	North East
I283	House, 47 Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	308m	West
I29	House, 2 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	309m	South East
I70	Glenwood Nursing Home, 34-40 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	309m	East
I22	House, 32 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	314m	South East
I94	House, 36 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	332m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I72	House, 70 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	334m	South East
I7	House, 4 Balfour Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	334m	North West
I286	Streetscape elements (rocky outcrops, stone steps, sandstone kerbing), Lower Cliff Road, Private Ro*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	335m	West
I286	Streetscape elements (rocky outcrops, stone steps, sandstone kerbing), Lower Cliff Road, Private Ro*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	343m	West
I95	House, 38 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	346m	South
I310	Burdoe, 5 Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	348m	West
I73	Greenwich Infants School, 72A Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	351m	South East
I15	Streetscape elements (drain, embankment walls, sandstone retaining walls, rocky outcrop, steps), Be*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	354m	South
I52	House, 19 Glenview Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	354m	South East
I53	House, 21 Glenview Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	355m	South East
I13	House, 8 Bellevue Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	356m	North East
I6	House, 14 Anglo Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	358m	East
I5	House, 12 Anglo Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	364m	East
I8	House, 8 Balfour Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	365m	North
I4	House, 10 Anglo Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	371m	North East
I96	House, 42 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	375m	South
I97	House, 44 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	389m	South
I23	House, 45 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	390m	South
I306	House, 3 Point Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	391m	South West
I24	House, 50 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	394m	South
I294	House, 70 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	399m	West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I98	House, 45 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	400m	South
I3	House, 2 Anglo Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	400m	North East
I296	House and garden, 88 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	400m	South West
I99	House, 46 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	404m	South
I295	House, 86 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	407m	South West
I148	Gore Hill Memorial Cemetery	Item - General	State	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	409m	North East
I307	House and garden, 8 Point Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	414m	South West
I297	House and garden, 90 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	416m	South West
I101	House, 48 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	418m	South
I15	Streetscape elements (drain, embankment walls, sandstone retaining walls, rocky outcrop, steps), Be*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	418m	South East
I100	House, 47 King William Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	419m	South
I341	Streetscape element (sandstone wall), 4 Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	423m	West
I62	St. Giles Anglican Church, 6-12 Greendale Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	423m	East
I77	House, 111 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	431m	South
I149	House and garage, 20 Wilona Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	433m	East
I78	House, 113 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	436m	South
I340	Streetscape element (sandstone wall), 2 Upper Cliff Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	441m	West
I298	House and garden, 94 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	441m	South West
I148	House, 18 Wilona Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	447m	East
I299	House and garden, 96 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	449m	South West
I301	House and sandstone fence, 100 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	473m	South West
I313	Wyndarra, 4b Wyndarra Place	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	475m	West

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I302	House and sandstone fence, 102 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	477m	South West
I303	House and stone retaining wall, 104 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	480m	South West
I300	House, 97 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	483m	South West
I281	House, 1A Birriwa Place	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	492m	West
I45	House, 6 Ford Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	South
I44	House, 2 Ford Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	South
I46	Wyncourt, 14 Ford Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	South
I47	House, 16 Ford Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	South
I120	House, 11 Robertson Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	South
I327	House, 7 Park Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	496m	East
I308	House and garden, 16 Point Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	497m	South West
I74	House, 82 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	499m	South
I314	House, 6 Wyndarra Place	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	502m	West
I339	House, 109 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	510m	South West
I326	House, 5 Park Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	510m	East
I325	Sandringham, 3 Park Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	519m	East
I43	House, 6/8 Evelyn Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	524m	South
I304	House, 113 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	524m	South West
I42	House, 4 Evelyn Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	526m	South
I41	House, 2 Evelyn Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	527m	South
I79	House, 125 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	528m	South
I284	Endeavour Playground, Fleming Street (south side)	Item - Landscape	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	530m	West
I30	House, 13 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	534m	South
I80	House, 127 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	536m	South

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I31	House, 15 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	542m	South
I81	House, 129 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	543m	South
I292	House, 45 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	546m	West
I32	House, 17 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	549m	South
I33	House, 19 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	555m	South
I119	House, 10 Robertson Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	555m	South
I75	John Taylor Memorial Church, 86A Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	560m	South
I34	House, 21 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	562m	South
I337	House, 4 James Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	581m	West
I134	Mandalay, 2/4 Ulonga Avenue	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	581m	North
I287	Northwood Wharf	Item - General	Local	Lane Cove Local Environmental Plan 2009	15/12/2017	15/12/2017	15/12/2017	582m	South West
I65	Streetscape elements (sandstone gutters, steps, outcrops and kerbing), Greenwich Road, Bay Street a*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	596m	South
I338	Kellys Esplanade (Streetscape element)	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	603m	West
I82	House, 143 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	608m	South
I65	Streetscape elements (sandstone gutters, steps, outcrops and kerbing), Greenwich Road, Bay Street a*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	616m	South
I25	Bedford, 73 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	618m	South
I65	Streetscape elements (sandstone gutters, steps, outcrops and kerbing), Greenwich Road, Bay Street a*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	625m	South
I35	House, 34 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	626m	South
I1122	Wollstonecraft foreshore reserves	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	627m	South East
I40	House, 8 Eastview Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	627m	East
I26	Florence, 75 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	628m	South

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I285	Convict Stockade, Kelly's Esplanade, Woodford Bay	Item - Landscape	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	630m	West
I65	Streetscape elements (sandstone gutters, steps, outcrops and kerbing), Greenwich Road, Bay Street a*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	632m	South
I1120	'Tullamore'	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	639m	South East
I11	Greenwich 12' Flying Squadron, Bay Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	645m	South
I27	House, 79 Carlotta Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	646m	South
I193	House and garden, 6 Richardson Street East	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	654m	North West
I83	House, 153 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	656m	South
A8	Convict Stockade, 2 and 4 Kelly's Esplanade, Woodford Bay	Item - Archaeological	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	656m	West
I76	House, 100 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	657m	South
I10	Bay Street Wharf, Bay Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	661m	South
I285	Convict Stockade, Kelly's Esplanade, Woodford Bay	Item - Landscape	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	662m	West
I9	House, 8 Bay Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	669m	South
I1119	House	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	691m	South East
CA25	Wollstonecraft	Conservation Area - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	691m	South East
I6	Gateway entry pylons	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	697m	North
I1118	'The Briars'	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	700m	South East
I6	Gateway entry pylons	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	711m	North
I225	Streetscape elements (sandstone walls, kerbing and steps, including in Longueville Sailing Club and*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	716m	West
I84	House, 163 Greenwich Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	718m	South
I36	House, 48 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	724m	South
I1117	House	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	724m	South East
I37	House, 50 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	738m	South

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I8	Communications tower (excluding all ancillary buildings and structures and tower attachments)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	743m	North
I7	Footings of the former transmission tower	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	750m	North
I38	House, 52 Chisholm Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	751m	South
I149	Former stables	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	753m	North
I1111	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	756m	South East
C1	Greenwich Conservation Area, Greenwich	Conservation Area - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	765m	South
A1	Fells Shale Oil Refinery, 124 Gother Avenue	Item - Archaeological	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	765m	South
I1110	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	784m	South East
I0407	North Sydney bus shelters	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	785m	South East
I241	Pavilion Wing Building, Block 1A (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	790m	North East
I291	House, 23 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	796m	West
I242	Resident Medical Officers (RMO) Building-known as Vanderfield Building (including original interior*	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	804m	North East
I290	House, 21 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	807m	West
I1093	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	822m	East
I1108	Carpenter House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	829m	South East
I1109	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	834m	South East
I240	Pavilion Wing Building, Block 1B (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	840m	North East
I243	Anstro,Body Protein Building (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	843m	North East
I244	Orthotics Building (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	06/11/2020	846m	North East
I225	Streetscape elements (sandstone walls, kerbing and steps, including in Longueville Sailing Club and*	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	872m	West
A7	Kirk's Factory, Woodford/ Arabella Streets	Item - Archaeological	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	879m	West

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I289	Kailora, 15 Northwood Road	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	884m	West
I1094	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	884m	East
I1112	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	886m	South East
C1	Hunters Hill Conservation Area No 2 - The Peninsula	Conservation Area - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	891m	South West
I327	House, 'Yarrawa'	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	910m	South West
I326	House, formerly 'Athaliah'	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	911m	South West
I347	House, formerly 'Wonga' and 'Fairhaven'	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	912m	South West
I1095	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	912m	East
I346	House	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	914m	South West
I280	Minembah, 1 Woodford Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	924m	West
I234	House, 18 Kenneth Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	30/08/2013	30/08/2013	15/12/2017	939m	West
I234	House, 18 Kenneth Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	946m	West
I287	Stone walls	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	964m	South West
I1100	House	Item - General	Local	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	30/06/2021	966m	South East
I235	Hazelwood, 22 Kenneth Street	Item - General	Local	Lane Cove Local Environmental Plan 2009	19/02/2010	19/02/2010	15/12/2017	970m	West
I287	Stone walls	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	973m	South West
I344	House, 'Arden Lea'	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	975m	South West
I287	Stone walls	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	979m	South West
I323	House, 'Otranto'	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	981m	South West
I287	Stone walls	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	981m	South West
I1122	Wollstonecraft foreshore reserves	Item - Landscape	Local	North Sydney Local Environmental Plan 2013	30/06/2021	30/06/2021	30/06/2021	982m	South East
I287	Stone walls	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	995m	South West
I325	House	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	996m	South West
I324	House	Item - General	Local	Hunters Hill Local Environmental Plan 2012	01/02/2013	12/08/2013	20/11/2015	999m	South West

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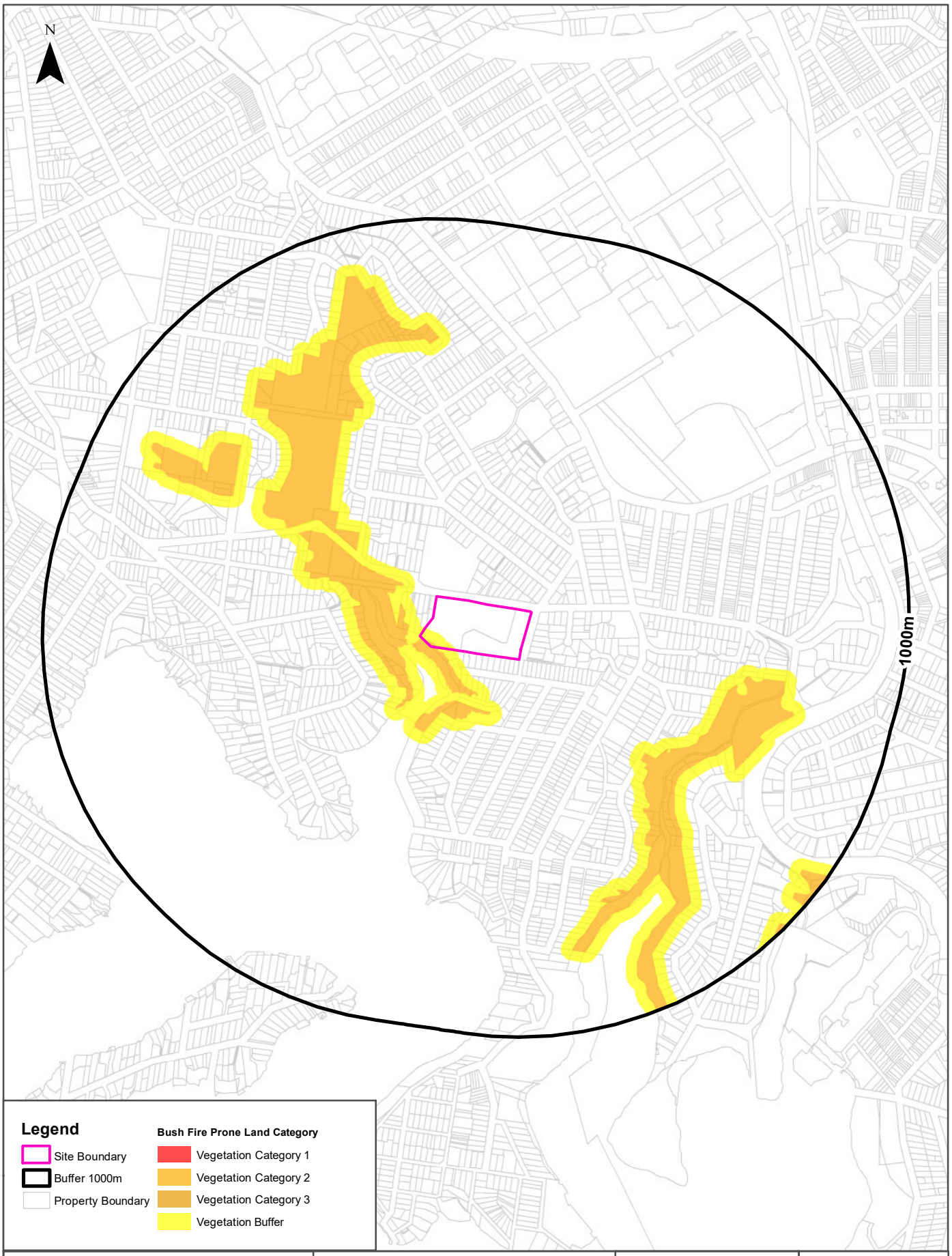
Natural Hazards - Bush Fire Prone Land

97-115 River Road, Greenwich, NSW 2065



Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2021. Property Boundaries: © Department Finance, Services & Innovation 2021

Coordinate System: GDA 1994 MGA Zone 56

Date: 29 September 2021

Natural Hazards

97-115 River Road, Greenwich, NSW 2065

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Category 2	0m	On-site
Vegetation Buffer	0m	On-site

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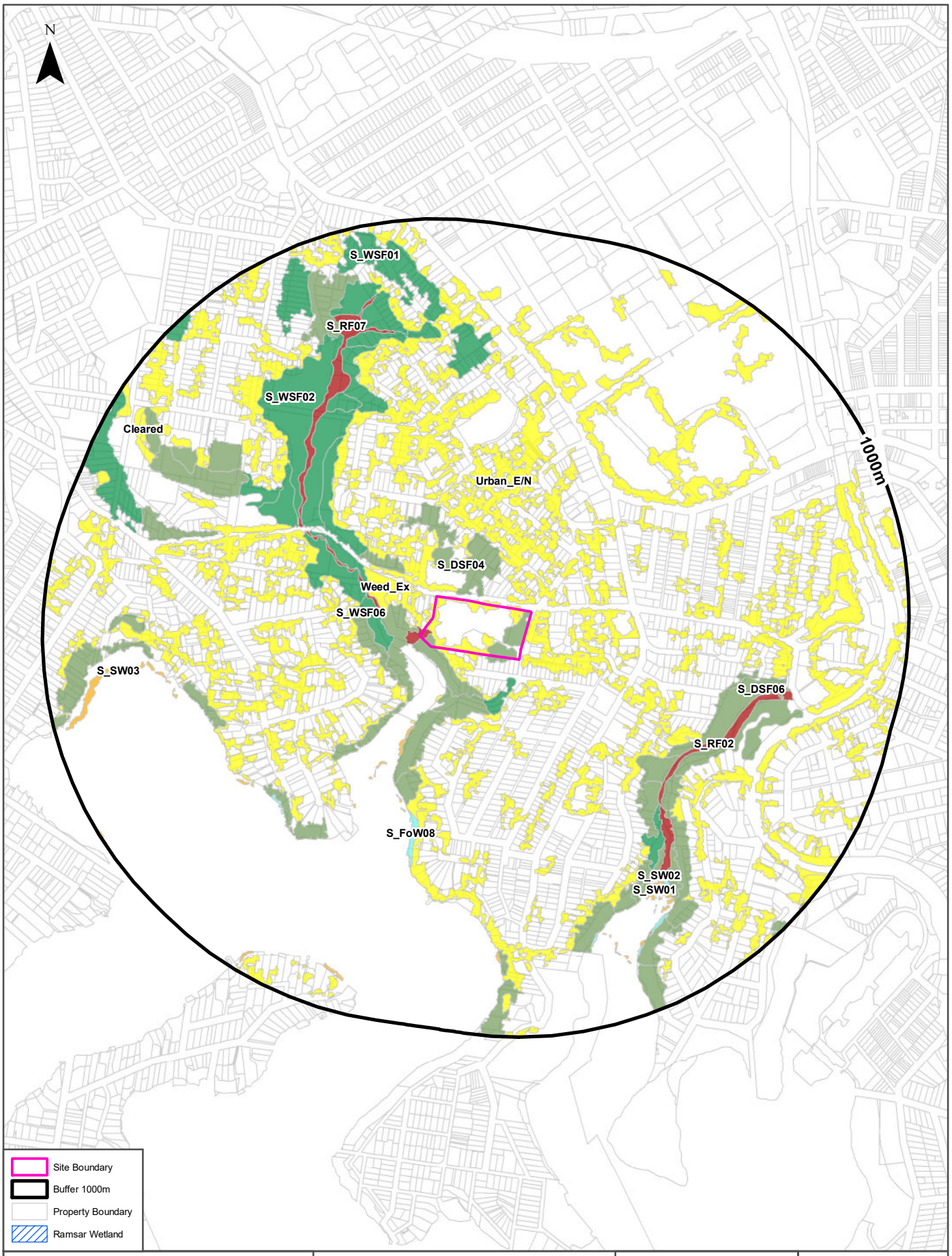
Ecological Constraints - Vegetation & Ramsar Wetlands

97-115 River Road, Greenwich, NSW 2065



Ecological Constraints

97-115 River Road, Greenwich, NSW 2065

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Dir
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			21: Ferns dominant	20: Previously cleared 1943	3: High	E.pilularis/A.costata/C.gummifera E.resinifera	0m	On-site
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	On-site
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	1: Low	E.pilularis/A.costata/C.gummifera E.resinifera	0m	On-site
S_RF02	S_RF02: Coastal Sandstone Gallery Rainforest			17: Pittosporum dominant	13: Weeds	3: High	B.integrifolia/F.rubiginosa/Kunzea sppeucalypts	0m	On-site
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	2: Moderate	E.piperita/A.costataE.pilularis	11m	West
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			24: Urban and hard surface	24: Urban mixed use	4: Very high	E.pilularis/A.costata/C.gummifera E.resinifera	12m	North
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest		10: Mesic/rainforest	20: Previously cleared 1943	3: High	E.saligna/S.gomuliferaE.pilularis	50m	South
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	54m	North West
S_WSF06	S_WSF06: Coastal Shale-Sandstone Forest			17: Pittosporum dominant	13: Weeds	2: Moderate	E.pilularis/A.costata/C.gummifera E.resinifera	71m	West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	3: High	E.pilularis/A.costata/C.gummifera E.resinifera	95m	South
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	13: Weeds	2: Moderate	E.piperita/A.costataE.pilularis	97m	West
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	13: Weeds	2: Moderate	E.pilularis/A.costata/C.gummifera E.resinifera	104m	North West
S_RF02	S_RF02: Coastal Sandstone Gallery Rainforest			10: Mesic/rainforest	13: Weeds	3: High	C.apetalum/T.laurina/C.serratifolia	114m	West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	3: High	B.integrifolia/F.rubiginosa/Kunzea sppeucalypts	162m	South West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	2: Moderate	E.pilularis/A.costata/C.gummifera E.resinifera	165m	South West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			11: Semi sheltered dry/mesic	13: Weeds	2: Moderate	E.pilularis/A.costata/C.gummifera E.resinifera	179m	West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	3: High	E.pilularis/A.costata/C.gummifera E.resinifera	182m	North West
S_SW01	S_SW01: Estuarine Mangrove Forest			00: Not assessed	00: Not assessed	0: Not assessed	Mangroves	211m	South West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	1: Low	E.piperita/A.costataE.pilularis	219m	North West
S_SW03	S_SW03: Seagrass Meadows			00: Not assessed	00: Not assessed	0: Not assessed	Seagrass (DPI)	329m	South West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	1: Low	E.pilularis/A.costata/C.gummifera E.resinifera	346m	North West

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Dir
S_RF07	S_RF07: Coastal Escarpment Littoral Rainforest	Littoral Rainforest	Littoral Rainforest and Coastal Vine Thickets (possible)	10: Mesic/rainforest	13: Weeds	2: Moderate	A.smithii/G.ferdinandii/P.undulatum	399m	North West
S_FoW08	S_FoW08: Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest		31: Saltmarsh	13: Weeds	3: High	C.glauca	437m	South
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	3: High	E.piperita/A.costataE.pilularis	452m	South East
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	14: Canopy gaps	2: Moderate	E.piperita/A.costataE.pilularis	495m	North West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	19: Clearing/Part clearing	4: Very high	E.piperita/A.costataE.pilularis	503m	South East
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			11: Semi sheltered dry/mesic	13: Weeds	1: Low	E.pilularis/A.costata/C.gummiferaE.resinifera	506m	North West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			17: Pittosporum dominant	13: Weeds	3: High	E.piperita/A.costataE.pilularis	531m	South East
S_FoW08	S_FoW08: Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest		00: Not assessed	00: Not assessed	0: Not assessed	C.glauca	570m	South West
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest		24: Urban and hard surface	24: Urban mixed use	4: Very high	E.saligna/S.gomuliferaE.pilularis	579m	North
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	24: Urban mixed use	3: High	E.pilularis/A.costata/C.gummiferaE.resinifera	600m	West
S_FoW08	S_FoW08: Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest		12: Dry xeric shrubs	99: No visible disturbance	5: No visible disturbance	C.glauca	679m	South East
S_SW02	S_SW02: Estuarine Saltmarsh	Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh (possible)	00: Not assessed	00: Not assessed	0: Not assessed	S.repens/S.quinqueflora/S.virginicusJ.krausii	679m	South East
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest		10: Mesic/rainforest	13: Weeds	2: Moderate	E.saligna/S.gomuliferaE.pilularis	682m	North
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	1: Low	E.pilularis/S.gomuliferaA.costata/E.resinifera	689m	North
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			35: Casuarina glauca near waters edge	23: Plantings	2: Moderate	E.piperita/A.costataE.pilularis	708m	West
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	13: Weeds	3: High	E.pilularis/A.costata/C.gummiferaE.resinifera	724m	North West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	3: High	A.costataE.resiniferaE.piperita/E.pilularis	768m	South
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			12: Dry xeric shrubs	15: Regrowth	2: Moderate	E.piperita/A.costataE.pilularis	825m	North West
Cleared	Cleared			00: Not assessed	00: Not assessed	0: Not assessed	Cleared	856m	North West
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	15: Regrowth	3: High	E.piperita/A.costataE.pilularis	986m	South East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Agriculture, Water and the Environment

Ecological Constraints

97-115 River Road, Greenwich, NSW 2065

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
N/A	No records in buffer					

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

97-115 River Road, Greenwich, NSW 2065

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
N/A	No records in buffer					

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

97-115 River Road, Greenwich, NSW 2065

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anous stolidus	Common Noddy	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Critically Endangered	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Erythrotriorchis radiatus	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Eudyptula minor	Little Penguin	Endangered Population	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Macronectes giganteus	Southern Giant Petrel	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Manorina melanotis	Black-eared Miner	Critically Endangered	Not Sensitive	Endangered	
Animalia	Aves	Menura alberti	Albert's Lyrebird	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	Endangered	Category 3	Vulnerable	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Pterodroma solandri	Providence Petrel	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Thalassarche chrysostoma	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Thinornis cucullatus cucullatus	Eastern Hooded Dotterel	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Aepyprymnus rufescens	Rufous Bettong	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dasyurus viverrinus	Eastern Quoll	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys gracilicaudatus	Eastern Chestnut Mouse	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Camarophyllopsis kearneyi		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe collucera		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe lanecovensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia gordonii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. Eastern Sydney	Sunshine wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Endangered	Category 3	Endangered	
Plantae	Flora	Amperea xiphoclada var. pedicellata		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Asterolasia buxifolia		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Dichanthium setosum	Bluegrass	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Doryanthes palmeri	Giant Spear Lily	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris sparsa	Sparse Heath	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus fracta	Broken Back Ironbark	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus pulverulenta	Silver-leafed Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea beadleana	Beadle's Grevillea	Endangered	Category 3	Endangered	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Category 2	Critically Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pomaderris prunifolia	Plum-leaf Pomaderris	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Prasophyllum fuscum	Slaty Leek Orchid	Critically Endangered	Category 2	Vulnerable	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Sarcochilus hartmannii	Hartman's Sarcochilus	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Wahlenbergia multicaulis	Tadgell's Bluebell	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Zannichellia palustris		Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.
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LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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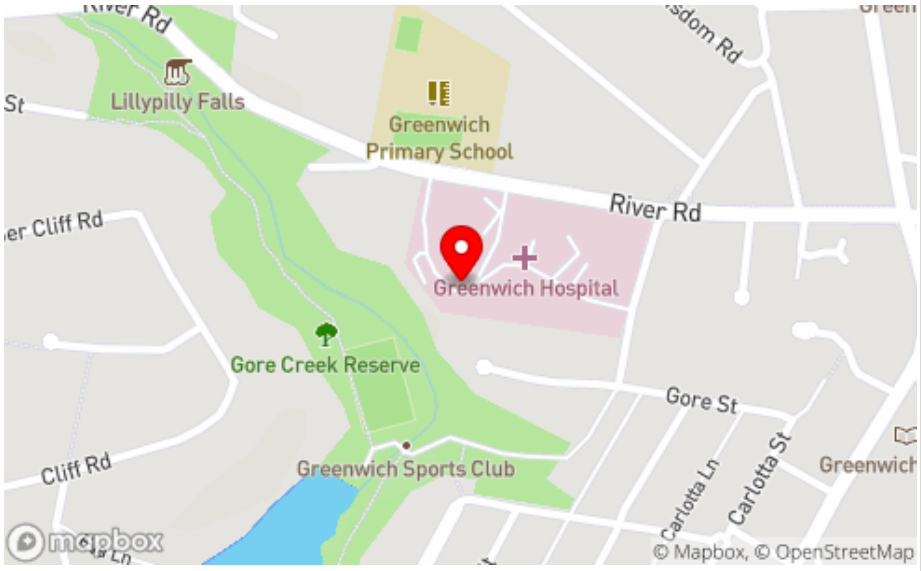
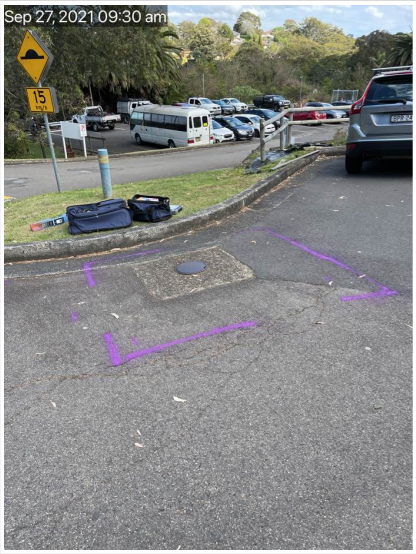
Utility Scan Report

Date Submitted: 27/09/2021 09:30 AM
Submitted By: info@geotrace.com.au

Utility Scan Report

Sequence Number	2018
ABN 77 152 097 099	1300-LOCATING 0417-147-945 info@geotrace.com.au www.geotrace.com.au
Date	27/09/2021
Time Started	09:00 AM (10 GMT)
Time Finished	09:27 AM (10 GMT)
Client	JK
Client Email	cridley@jkenvironments.com.au
Client Contact	Craig
Site Contact	Craig
Mark Out Completed By	Antony Critcher
Site Location	
	Lat: -33.827789306640625 Long: 151.18326096851683
Address	Greenwich Hospital
Detailed Scope Of Works Performed	Scanned for UST
	-33.827800, 151.183297
Targets Detected	UST
Is this a Rail Job?	No
If so are DSS or ISS available?	N/A

Utility Scan Report

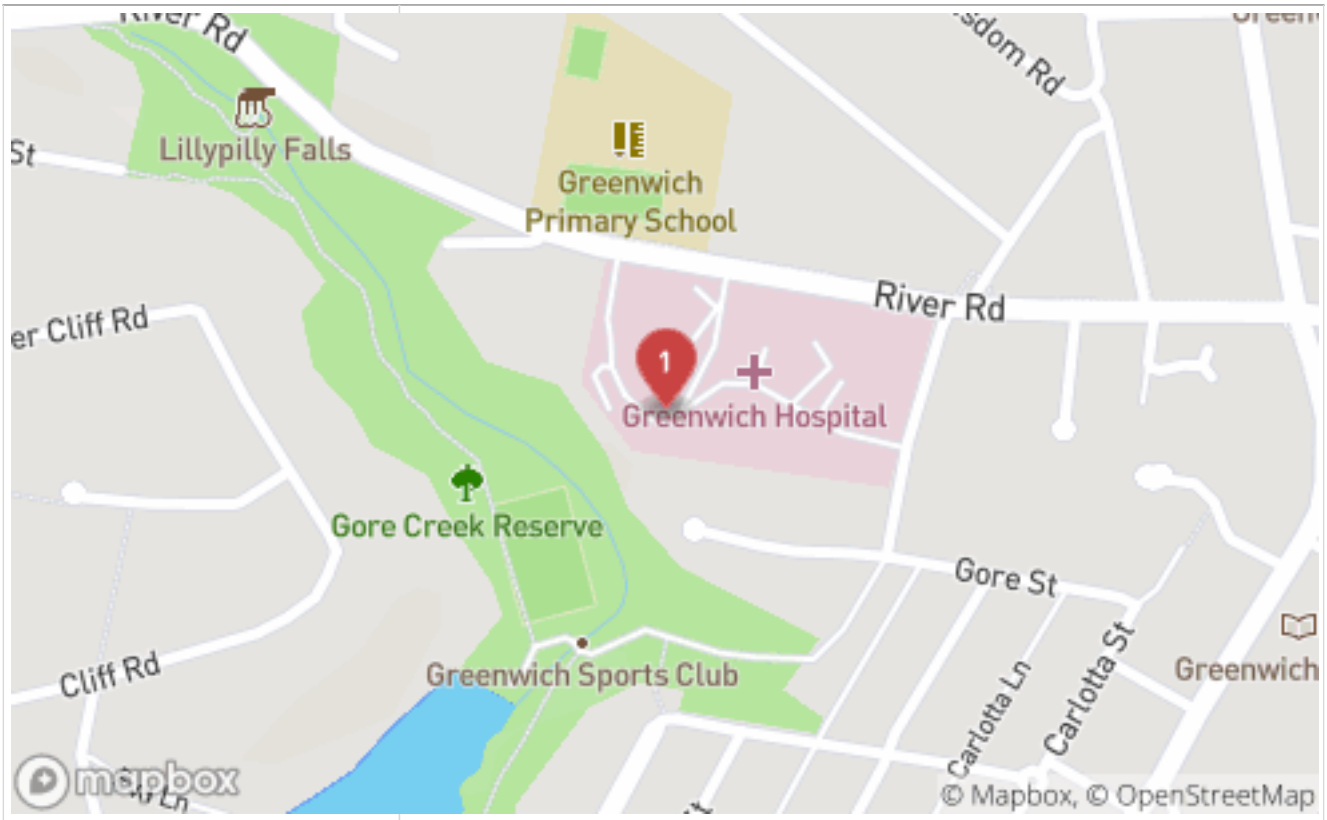
Blind Scan (Power / Radio Scan)	Yes
Was Concrete Coring Completed?	No
Equipment Used	GPR
DBYD On Site	Yes
DBYD Sequence Number	.
DBYD Submission Date	27/09/2021
Are all DBYD's listed in cover sheet available	Yes
Site Markings	Paint
Findings On Site	Scanned for UST UST found which seemed consistent with a 5000L tank Tank marked on-site
Information Summary	Utilities detected marked on site in accordance with 'AS5488'. Services colour code is as follows. White - Communications, Orange- Power, Blue-Water, Yellow-Gas, Pink-Unidentified Service. For a full definition of 'AS5488' please feel free to contact us. Utility letter coding is as follows, C=Communications (All Telco's), E=Electricity, G=Gas, HPG=High Pressure Gas, HV=High Voltage, LV=Low Voltage, W=Water, UST=Underground Storage Tank, SW=Stormwater, S=Sewer. For a full definition of 'AS5488' please feel free to contact us.
Photos	

Utility Scan Report

Acknowledgment	Whilst every effort will be made to identify potential hazards, the deployed technology does not necessarily identify all potential hazards. No representation or warranty is made to the effect that all risk is completely eliminated. Our service is to minimise your risk but we do not promise to eliminate risk. No excavation to take place within 1m in diameter of the marked excavaton area Thank You

Utility Scan Report

Form Locations



Appendix C: Laboratory Results Summary Tables

ASI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	**PCBs:**	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	**PCE:**	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
ADWG:	Australian Drinking Water Guidelines	**PFAS**	Per- and polyfluoroalkyl substances
AF:	Asbestos Fines	**PFHxS**	Perfluorohexanesulfonic acid
ANZG	Australian and New Zealand Guidelines	**PFOA**	Perfluorooctanoic acid
B(a)P:	Benzo(a)pyrene	**PFOS**	Perfluorooctanesulfonic acid
CEC:	Cation Exchange Capacity	**pH_{KCL} :**	pH of filtered 1:20, 1M KCL extract, shaken overnight
CRC:	Cooperative Research Centre	**pH_{ox} :**	pH of filtered 1:20 1M KCl after peroxide digestion
CT:	Contaminant Threshold	**PQL:**	Practical Quantitation Limit
EILs:	Ecological Investigation Levels	**RS:**	Rinsate Sample
ESLs:	Ecological Screening Levels	**RSL:**	Regional Screening Levels
FA:	Fibrous Asbestos	**RSW:**	Restricted Solid Waste
FTS:	Fluorotelomer sulfonic acid	**SAC:**	Site Assessment Criteria
GIL:	Groundwater Investigation Levels	**SCC:**	Specific Contaminant Concentration
GSW:	General Solid Waste	**S_{Cr}:**	Chromium reducible sulfur
HILs:	Health Investigation Levels	**S_{POS}:**	Peroxide oxidisable Sulfur
HSLs:	Health Screening Levels	**SSA:**	Site Specific Assessment
HSL-SSA:	Health Screening Level-SiteSpecific Assessment	**SSHSLs:**	Site Specific Health Screening Levels
kg/L	kilograms per litre	**TAA:**	Total Actual Acidity in 1M KCL extract titrated to pH6.5
NA:	Not Analysed	**TB:**	Trip Blank
NC:	Not Calculated	**TCA:**	1,1,1 Trichloroethane (methyl chloroform)
NEPM:	National Environmental Protection Measure	**TCE:**	Trichloroethylene (Trichloroethene)
NHMRC:	National Health and Medical Research Council	**TCLP:**	Toxicity Characteristics Leaching Procedure
NL:	Not Limiting	**TPA:**	Total Potential Acidity, 1M KCL peroxide digest
NSL:	No Set Limit	**TS:**	Trip Spike
OCP:	Organochlorine Pesticides	**TRH:**	Total Recoverable Hydrocarbons
OPP:	Organophosphorus Pesticides	**TSA:**	Total Sulfide Acidity (TPA-TAA)
PAHs:	Polycyclic Aromatic Hydrocarbons	**UCL:**	Upper Level Confidence Limit on Mean Value
%w/w:	weight per weight	**USEPA**	United States Environmental Protection Agency
ppm:	Parts per million	**VOCC:**	Volatile Organic Chlorinated Compounds
		WHO:	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).
- Physiochemical parameters adopted from representative samples are displayed in blue font.

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

Groundwater Ecology Tables:

- 95% refers to a concentration that has been derived to protect 95% of aquatic species

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

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TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-B: 'Residential with minimal opportunities for soil access; including dwellings with fully/permanently paved yards like high-rise buildings'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			500	150	500	30000	1200	120	1200	60000	400	4	15	400	500	10	90	600	10	340	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH101	0.02-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**62**	**59**	**14**	<0.1	**47**	**41**	**3.8**	**0.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH101 - [LAB_DUP]	0.02-0.4	Laboratory Duplicate	<4	<0.4	**73**	**57**	**14**	<0.1	**55**	**46**	**4**	**0.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH101	0.5-0.85	Fill: Silty Sand	<4	<0.4	**17**	**12**	**51**	<0.1	**15**	**44**	**0.3**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH101	1.7-1.95	XW Sandstone	<4	<0.4	**9**	**1**	**13**	<0.1	**<1**	**9**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	0.05-0.1	Fill: Silty Gravelly Sand	<4	<0.4	**44**	**74**	**7**	<0.1	**73**	**37**	**0.68**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH102	0.5-0.95	Fill: Silty Clay	**6**	<0.4	**43**	**29**	**110**	<0.1	**10**	**110**	**10**	**2.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	1.4-1.6	Sandstone	<4	<0.4	**11**	**6**	**8**	<0.1	**4**	**18**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH103	0.03-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**34**	**26**	**42**	<0.1	**39**	**73**	**11**	**2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH103	0.5-0.7	Sandy Clay	<4	<0.4	**15**	**<1**	**4**	<0.1	**<1**	**2**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH103	0.7-0.95	Silty Clay	<4	<0.4	**11**	**<1**	**7**	<0.1	**<1**	**<1**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH103	1.4-1.5	Sandy Clay	<4	<0.4	**36**	**2**	**4**	<0.1	**<1**	**1**	**1.2**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	0.04-0.3	Fill: Sandy Gravel	<4	<0.4	**73**	**24**	**5**	<0.1	**75**	**37**	**0.2**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH104 - [LAB_DUP]	0.04-0.3	Laboratory Duplicate	<4	<0.4	**83**	**27**	**6**	<0.1	**83**	**43**	**0.2**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH104	0.5-0.95	Fill: Silty Gravelly Sand	<4	<0.4	**76**	**34**	**6**	<0.1	**81**	**48**	**0.4**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH104	1.5-1.95	Fill: Silty Gravelly Sand	<4	<0.4	**19**	**8**	**83**	**0.1**	**5**	**52**	**0.4**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	3.0-3.2	Fill: Silty Gravelly Sand	<4	<0.4	**34**	**12**	**57**	<0.1	**3**	**38**	**0.08**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	3.8-4.1	Fill: Silty Sand	<4	<0.4	**30**	**17**	**43**	<0.1	**17**	**70**	**0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH105	0.25-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**74**	**27**	**13**	<0.1	**76**	**45**	**0.4**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	<4	<0.4	**72**	**26**	**10**	<0.1	**72**	**42**	**0.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH105	0.5-0.95	Fill: Clayey Silty Sand	<4	<0.4	**13**	**6**	**32**	<0.1	**9**	**30**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH105	1.2-1.4	Sandy Clay	<4	<0.4	**9**	**2**	**12**	<0.1	**1**	**14**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	<4	<0.4	**30**	**49**	**2**	<0.1	**110**	**38**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH106	0.6-0.8	Silty Clay	<4	<0.4	**12**	**<1**	**7**	<0.1	**<1**	**2**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH107	0-0.2	Fill: Silty Clay	<4	<0.4	**12**	**18**	**14**	<0.1	**6**	**22**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH107	0.2-0.4	Fill: Sandy Clay	<4	<0.4	**8**	**4**	**14**	<0.1	**2**	**21**	**0.3**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH108	0-0.1	Fill: Sandy Silty Clay	<4	<0.4	**6**	**9**	**63**	<0.1	**2**	**31**	**2.1**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	<4	<0.4	**63**	**27**	**8**	<0.1	**63**	**37**	**0.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH109	0.5-0.8	Fill: Sandy Clay	<4	<0.4	**22**	**7**	**10**	<0.1	**16**	**16**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH109	0.8-0.95	Sandy Clay	<4	<0.4	**15**	**2**	**5**	<0.1	**4**	**6**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH110A	0-0.1	Fill: Silty Gravelly Sand	<4	<0.4	**63**	**26**	**6**	<0.1	**69**	**52**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH110A	0.1-0.2	Fill: Sandy Gravel	<4	<0.4	**71**	**24**	**6**	<0.1	**73**	**39**	**0.2**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH110A	0.5-0.8	Fill: Sandy Clay	**7**	<0.4	**18**	**2**	**16**	<0.1	**1**	**10**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH111	0-0.1	Fill: Silty Sand	<4	<0.4	**9**	**12**	**54**	<0.1	**4**	**50**	**3.5**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	<4	<0.4	**9**	**12**	**51**	<0.1	**4**	**49**	**2.5**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH111	0.3-0.6	Fill: Silty Clay	**4**	<0.4	**9**	**52**	**49**	**0.1**	**6**	**79**	**2.5**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH111	0.6-0.8	Fill: Silty Clayey Sand	<4	<0.4	**16**	**13**	**58**	**0.2**	**5**	**120**	**1.8**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH112	0.22-0.65	Fill: Silty Gravelly Sand	<4	<0.4	**12**	**11**	**44**	<0.1	**4**	**57**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH112	0.65-0.8	Sandstone	<4	<0.4	**8**	**9**	**6**	<0.1	**1**	**12**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH113	0-0.1	Fill: Silty Sand	<4	<0.4	**10**	**9**	**25**	<0.1	**3**	**27**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH113	0.1-0.2	Fill: Silty Clayey Sand	<4	<0.4	**11**	**4**	**22**	<0.1	**2**	**21**	**0.3**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH113	0.35-0.45	Sandy Clay	<4	<0.4	**6**	**7**	**28**	<0.1	**1**	**29**	**3**	**0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH114	0.05-0.2	Fill: Silty Sandy Gravel	<4	<0.4	**77**	**31**	**4**	<0.1	**85**	**36**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	<4	<0.4	**93**	**34**	**5**	<0.1	**91**	**41**	**0.1**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH115	0-0.1	Fill: Silty Clayey Sand	**4**	<0.4	**11**	**11**	**40**	<0.1	**3**	**42**	**0.64**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH115	0.6-0.8	Sandy Clay	**4**	<0.4	**15**	**<1**	**6**	<0.1	**<1**	**1**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH116	0-0.1	Fill: Silty Sandy Gravel	<4	<0.4	**59**	**22**	**15**	<0.1	**54**	**42**	**0.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH116	0.1-0.3	Silty Clayey Sand	<4	<0.4	**10**	**7**	**29**	<0.1	**4**	**29**	**0.4**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH117	0-0.1	Fill: Silty Sand	<4	<0.4	**19**	**17**	**28**	<0.1	**16**	**54**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH117	0.5-0.95	Fill: Silty Sand	<4	<0.4	**8**	**3**	**15**	<0.1	**2**	**16**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH117	0.5-1.5	Fill: Silty Sand (Spoil)	NA	NA	**NA**	**NA**	**NA**	NA	**NA**	**NA**	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH117	0.5-1.5	Fragment	NA	NA	**NA**	**NA**	**NA**	NA	**NA**	**NA**	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH118	0-0.1	Fill: Silty Sandy Clay	**17**	<0.4	**8**	**26**	**220**	<0.1	**5**	**45**	**1.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	<4	<0.4	**6**	**23**	**390**	<0.1	**3**	**65**	**3.8**	**0.7**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH118	1.4-1.5	Fill: Silty Sandy Clay	**11**	<0.4	**7**	**35**	**99**	<0.1	**3**	**62**	**8.5**	**1.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH118	1.6-1.8	Sandy Clay	<4	<0.4	**11**	**1**	**6**	<0.1	**2**	**14**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH119	0.05-0.3	Fill: Silty Sand	<4	<0.4	**14**	**29**	**28**	<0.1	**8**	**37**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH119	0.05-0.3	Laboratory Duplicate	<4	<0.4	**14**	**23**	**28**	<0.1	**9**	**41**	**<0.05**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH119	0.5-0.8	Sandstone	<4	<0.4	**15**	**<1**	**4**	<0.1	**<1**	**2**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP3	0-0.1	Duplicate of BH111	<4	<0.4	**11**	**13**	**54**	<0.1	**4**	**51**	**2.6**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
SDUP4	0-0.1	Duplicate of BH115	<4	<0.4	**9**	**5**	**20**	<0.1	**2**	**25**	**0.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	Not Detected
SDUP7	0-0.1	Duplicate of BH108	<4	<0.4	**6**	**9**	**66**	<0.1	**2**	**32**	**1.7**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP8	0.04-0.3	Duplicate of BH104	<4	<0.4	**82**	**31**	**5**	<0.1	**79**	**45**	**0.4**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP9	0.02-0.4	Duplicate of BH101	<4	<0.4	**62**	**52**	**13**	<0.1	**48**	**40**	**2.3**	**<0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP10	0-0.1	Duplicate of BH117	<4	<0.4	**11**	**17**	**27**	<0.1	**12**	**60**	**<0.05**	**<0.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			62	62	62	62	62	62	62	62	62	62	28	28	28	28	28	27	28	28	28	26
Maximum Value			17	<PQL	93	74	390	0.2	110	120	11	2.1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

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TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category							HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL					
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH101	0.02-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	3.8
BH101 - [LAB_DUP]	0.02-0.4	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH101	0.5-0.85	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.8
BH101	1.7-1.95	XW Sandstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.5
BH102	0.05-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.4
BH102	0.5-0.95	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	3.3
BH102	1.4-1.6	Sandstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.6
BH103	0.03-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.2
BH103	0.5-0.7	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	7.5
BH103	0.7-0.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	505
BH103	1.4-1.5	Fill: Sandy Clay	0m to <1m	Sand	**68**	<50	<0.2	<0.5	<1	<3	<1	579
BH103 - [Replicate]	1.4-1.5	Replicate Sample (re-test)	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
BH103 - [LAB-DUP]	1.4-1.5	Laboratory Duplicate	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
BH104	0.04-0.3	Fill: Sandy Gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
BH104 - [LAB_DUP]	0.04-0.3	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH104	0.5-0.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH104 - [Silica Gel]	0.5-0.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
BH104	1.5-1.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.2
BH104	3.0-3.2	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	5.6
BH104	3.8-4.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.1
BH105	0.25-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH105	0.5-0.95	Fill: Clayey Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH105	1.2-1.4	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH106	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH107	0-0.2	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH107	0.2-0.4	Fill: Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH108	0-0.1	Fill: Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH109	0.5-0.8	Fill: Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	5
BH109	0.8-0.95	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.5
BH110A	0-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.3
BH110A	0.1-0.2	Fill: Sandy Gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH110A	0.5-0.8	Fill: Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH111	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH111	0.3-0.6	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH111	0.6-0.8	Fill: Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH112	0.22-0.65	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH112	0.65-0.8	Sandstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH113	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH113	0.1-0.2	Fill: Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH113	0.35-0.45	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH114	0.05-0.2	Fill: Silty Sandy Gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH115	0-0.1	Fill: Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH115	0.6-0.8	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH116	0-0.1	Fill: Silty Sandy Gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH116	0.1-0.3	Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH117	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	**93**	<0.2	<0.5	<1	<3	<1	9.4
BH117	0.5-0.95	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	2.4
BH118	0-0.1	Fill: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH118	1.4-1.5	Fill: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH118	1.6-1.8	Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH119	0.05-0.3	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.6
BH119	0.05-0.3	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH119	0.5-0.8	Sandstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.6
SDUP3	0-0.1	Duplicate of BH111	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
SDUP4	0-0.1	Duplicate of BH115	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
SDUP7	0-0.1	Duplicate of BH108	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
SDUP7 - [Silica Gel]	0-0.1	Duplicate of BH108	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
SDUP8	0.04-0.3	Duplicate of BH104	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP9	0.02-0.4	Duplicate of BH101	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
SDUP10	0-0.1	Duplicate of BH117	0m to <1m	Sand	<25	**63**	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples					62	62	62	62	62	62	62	49
Maximum Value					68	93	<PQL	<PQL	<PQL	<PQL	<PQL	579

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**	C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH101	0.02-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101 - [LAB_DUP]	0.02-0.4	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101	0.5-0.85	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101	1.7-1.95	XW Sandstone	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	0.05-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	0.5-0.95	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	1.4-1.6	Sandstone	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.03-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.5-0.7	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.7-0.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	1.4-1.5	Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103 - [Replicate]	1.4-1.5	Replicate Sample (re-test)	0m to <1m	Sand	--	110	--	--	--	--	--
BH103 - [LAB-DUP]	1.4-1.5	Laboratory Duplicate	0m to <1m	Sand	--	110	--	--	--	--	--
BH104	0.04-0.3	Fill: Sandy Gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104 - [LAB_DUP]	0.04-0.3	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0.5-0.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104 - [Silica Gel]	0.5-0.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	--	110	--	--	--	--	--
BH104	1.5-1.95	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	3.0-3.2	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	3.8-4.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	0.25-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	0.5-0.95	Fill: Clayey Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	1.2-1.4	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH106	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH107	0-0.2	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH107	0.2-0.4	Fill: Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH108	0-0.1	Fill: Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH109	0.5-0.8	Fill: Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH109	0.8-0.95	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH110A	0-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH110A	0.1-0.2	Fill: Sandy Gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH110A	0.5-0.8	Fill: Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH111	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH111	0.3-0.6	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH111	0.6-0.8	Fill: Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH112	0.22-0.65	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH112	0.65-0.8	Sandstone	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH113	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH113	0.1-0.2	Fill: Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH113	0.35-0.45	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH114	0.05-0.2	Fill: Silty Sandy Gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH115	0-0.1	Fill: Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH115	0.6-0.8	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH116	0-0.1	Fill: Silty Sandy Gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH116	0.1-0.3	Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH117	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH117	0.5-0.95	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH118	0-0.1	Fill: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH118	1.4-1.5	Fill: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH118	1.6-1.8	Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH119	0.05-0.3	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH119	0.05-0.3	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH119	0.5-0.8	Sandstone	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3	0-0.1	Duplicate of BH111	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	0-0.1	Duplicate of BH115	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP7	0-0.1	Duplicate of BH108	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP7 - [Silica Gel]	0-0.1	Duplicate of BH108	0m to <1m	Sand	--	110	--	--	--	--	--
SDUP8	0.04-0.3	Duplicate of BH104	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP9	0.02-0.4	Duplicate of BH101	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP10	0-0.1	Duplicate of BH117	0m to <1m	Sand	45	110	0.5	160	55	40	3

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TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH101	0.02-0.4	Coarse	<25	<50	**140**	**140**
BH101 - [LAB_DUP]	0.02-0.4	Coarse	<25	<50	<100	<100
BH101	0.5-0.85	Coarse	<25	<50	<100	<100
BH101	1.7-1.95	Coarse	<25	<50	<100	<100
BH102	0.05-0.1	Coarse	<25	<50	**190**	**150**
BH102	0.5-0.95	Coarse	<25	<50	<100	<100
BH102	1.4-1.6	Coarse	<25	<50	<100	<100
BH103	0.03-0.4	Coarse	<25	<50	<100	<100
BH103	0.5-0.7	Coarse	<25	<50	<100	<100
BH103	0.7-0.95	Coarse	<25	<50	<100	<100
BH103	1.4-1.5	Coarse	**68**	<50	<100	<100
BH104	0.04-0.3	Coarse	<25	<50	**160**	<100
BH104 - [LAB_DUP]	0.04-0.3	Coarse	<25	<50	**170**	<100
BH104	0.5-0.95	Coarse	<25	<50	**420**	**120**
BH104	1.5-1.95	Coarse	<25	<50	<100	<100
BH104	3.0-3.2	Coarse	<25	<50	<100	<100
BH104	3.8-4.1	Coarse	<25	<50	<100	<100
BH105	0.25-0.4	Coarse	<25	<50	<100	<100
BH105 - [LAB_DUP]	0.25-0.4	Coarse	<25	<50	<100	<100
BH105	0.5-0.95	Coarse	<25	<50	<100	<100
BH105	1.2-1.4	Coarse	<25	<50	<100	<100
BH106	0.03-0.3	Coarse	<25	<50	**160**	**290**
BH106	0.6-0.8	Coarse	<25	<50	<100	<100
BH107	0-0.2	Coarse	<25	<50	<100	<100
BH107	0.2-0.4	Coarse	<25	<50	<100	<100
BH108	0-0.1	Coarse	<25	<50	**160**	<100
BH109	0.01-0.4	Coarse	<25	<50	**110**	**370**
BH109	0.5-0.8	Coarse	<25	<50	<100	<100
BH109	0.8-0.95	Coarse	<25	<50	<100	<100
BH110A	0-0.1	Coarse	<25	<50	**290**	**280**
BH110A	0.1-0.2	Coarse	<25	<50	<100	<100
BH110A	0.5-0.8	Coarse	<25	<50	<100	<100
BH111	0-0.1	Coarse	<25	<50	<100	<100
BH111 - [LAB_DUP]	0-0.1	Coarse	<25	<50	<100	<100
BH111	0.3-0.6	Coarse	<25	<50	<100	<100
BH111	0.6-0.8	Coarse	<25	<50	<100	<100
BH112	0.22-0.65	Coarse	<25	<50	<100	<100
BH112	0.65-0.8	Coarse	<25	<50	**220**	<100
BH113	0-0.1	Coarse	<25	<50	<100	<100
BH113	0.1-0.2	Coarse	<25	<50	<100	<100
BH113	0.35-0.45	Coarse	<25	<50	**120**	<100
BH114	0.05-0.2	Coarse	<25	<50	<100	<100
BH114 - [LAB_DUP]	0.05-0.2	Coarse	<25	<50	<100	<100
BH115	0-0.1	Coarse	<25	<50	<100	<100
BH115	0.6-0.8	Coarse	<25	<50	<100	<100
BH116	0-0.1	Coarse	<25	<50	<100	<100
BH116	0.1-0.3	Coarse	<25	<50	<100	<100
BH117	0-0.1	Coarse	<25	**93**	**240**	**100**
BH117	0.5-0.95	Coarse	<25	<50	<100	<100
BH118	0-0.1	Coarse	<25	<50	<100	<100
BH118 - [LAB_DUP]	0-0.1	Coarse	<25	<50	<100	<100
BH118	1.4-1.5	Coarse	<25	<50	<100	<100
BH118	1.6-1.8	Coarse	<25	<50	<100	<100
BH119	0.05-0.3	Coarse	<25	<50	<100	<100
BH119	0.05-0.3	Coarse	<25	<50	<100	<100
BH119	0.5-0.8	Coarse	<25	<50	<100	<100
SDUP3	0-0.1	Coarse	<25	<50	**160**	<100
SDUP4	0-0.1	Coarse	<25	<50	**120**	<100
SDUP7	0-0.1	Coarse	<25	<50	**310**	**190**
SDUP8	0.04-0.3	Coarse	<25	<50	**450**	**210**
SDUP9	0.02-0.4	Coarse	<25	<50	**110**	**120**
SDUP10	0-0.1	Coarse	<25	**63**	**200**	**120**
Total Number of Samples			62	62	62	62
Maximum Value			68	93	450	370

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Soil Texture**	C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH101	0.02-0.4	Coarse	700	1000	2500	10000
BH101 - [LAB_DUP]	0.02-0.4	Coarse	700	1000	2500	10000
BH101	0.5-0.85	Coarse	700	1000	2500	10000
BH101	1.7-1.95	Coarse	700	1000	2500	10000
BH102	0.05-0.1	Coarse	700	1000	2500	10000
BH102	0.5-0.95	Coarse	700	1000	2500	10000
BH102	1.4-1.6	Coarse	700	1000	2500	10000
BH103	0.03-0.4	Coarse	700	1000	2500	10000
BH103	0.5-0.7	Coarse	700	1000	2500	10000
BH103	0.7-0.95	Coarse	700	1000	2500	10000
BH103	1.4-1.5	Coarse	700	1000	2500	10000
BH104	0.04-0.3	Coarse	700	1000	2500	10000
BH104 - [LAB_DUP]	0.04-0.3	Coarse	700	1000	2500	10000
BH104	0.5-0.95	Coarse	700	1000	2500	10000
BH104	1.5-1.95	Coarse	700	1000	2500	10000
BH104	3.0-3.2	Coarse	700	1000	2500	10000
BH104	3.8-4.1	Coarse	700	1000	2500	10000
BH105	0.25-0.4	Coarse	700	1000	2500	10000
BH105 - [LAB_DUP]	0.25-0.4	Coarse	700	1000	2500	10000
BH105	0.5-0.95	Coarse	700	1000	2500	10000
BH105	1.2-1.4	Coarse	700	1000	2500	10000
BH106	0.03-0.3	Coarse	700	1000	2500	10000
BH106	0.6-0.8	Coarse	700	1000	2500	10000
BH107	0-0.2	Coarse	700	1000	2500	10000
BH107	0.2-0.4	Coarse	700	1000	2500	10000
BH108	0-0.1	Coarse	700	1000	2500	10000
BH109	0.01-0.4	Coarse	700	1000	2500	10000
BH109	0.5-0.8	Coarse	700	1000	2500	10000
BH109	0.8-0.95	Coarse	700	1000	2500	10000
BH110A	0-0.1	Coarse	700	1000	2500	10000
BH110A	0.1-0.2	Coarse	700	1000	2500	10000
BH110A	0.5-0.8	Coarse	700	1000	2500	10000
BH111	0-0.1	Coarse	700	1000	2500	10000
BH111 - [LAB_DUP]	0-0.1	Coarse	700	1000	2500	10000
BH111	0.3-0.6	Coarse	700	1000	2500	10000
BH111	0.6-0.8	Coarse	700	1000	2500	10000
BH112	0.22-0.65	Coarse	700	1000	2500	10000
BH112	0.65-0.8	Coarse	700	1000	2500	10000
BH113	0-0.1	Coarse	700	1000	2500	10000
BH113	0.1-0.2	Coarse	700	1000	2500	10000
BH113	0.35-0.45	Coarse	700	1000	2500	10000
BH114	0.05-0.2	Coarse	700	1000	2500	10000
BH114 - [LAB_DUP]	0.05-0.2	Coarse	700	1000	2500	10000
BH115	0-0.1	Coarse	700	1000	2500	10000
BH115	0.6-0.8	Coarse	700	1000	2500	10000
BH116	0-0.1	Coarse	700	1000	2500	10000
BH116	0.1-0.3	Coarse	700	1000	2500	10000
BH117	0-0.1	Coarse	700	1000	2500	10000
BH117	0.5-0.95	Coarse	700	1000	2500	10000
BH118	0-0.1	Coarse	700	1000	2500	10000
BH118 - [LAB_DUP]	0-0.1	Coarse	700	1000	2500	10000
BH118	1.4-1.5	Coarse	700	1000	2500	10000
BH118	1.6-1.8	Coarse	700	1000	2500	10000
BH119	0.05-0.3	Coarse	700	1000	2500	10000
BH119	0.05-0.3	Coarse	700	1000	2500	10000
BH119	0.5-0.8	Coarse	700	1000	2500	10000
SDUP3	0-0.1	Coarse	700	1000	2500	10000
SDUP4	0-0.1	Coarse	700	1000	2500	10000
SDUP7	0-0.1	Coarse	700	1000	2500	10000
SDUP8	0.04-0.3	Coarse	700	1000	2500	10000
SDUP9	0.02-0.4	Coarse	700	1000	2500	10000
SDUP10	0-0.1	Coarse	700	1000	2500	10000

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TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		5,600	4,200	5,800	8,100	140	21,000	5,900	17,000	2,200	
Site Use		**HIGH DENSITY RESIDENTIAL - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH101	0.02-0.4	<25	<50	**140**	**140**	<0.2	<0.5	<1	<3	<1	**3.8**
BH101 - [LAB_DUP]	0.02-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH101	0.5-0.85	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.8**
BH101	1.7-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.5**
BH102	0.05-0.1	<25	<50	**190**	**150**	<0.2	<0.5	<1	<3	<1	**1.4**
BH102	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**3.3**
BH102	1.4-1.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.6**
BH103	0.03-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.2**
BH103	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**7.5**
BH103	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**505**
BH103	1.4-1.5	**68**	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**579**
BH104	0.04-0.3	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	<1	**0.1**
BH104 - [LAB_DUP]	0.04-0.3	<25	<50	**170**	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH104	0.5-0.95	<25	<50	**420**	**120**	<0.2	<0.5	<1	<3	<1	**0**
BH104	1.5-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.2**
BH104	3.0-3.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**5.6**
BH104	3.8-4.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.1**
BH105	0.25-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH105 - [LAB_DUP]	0.25-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH105	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH105	1.2-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH106	0.03-0.3	<25	<50	**160**	**290**	<0.2	<0.5	<1	<3	<1	**0**
BH106	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH107	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH107	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH108	0-0.1	<25	<50	**160**	**<100**	<0.2	<0.5	<1	<3	<1	**0**
BH109	0.01-0.4	<25	<50	**110**	**370**	<0.2	<0.5	<1	<3	<1	**0**
BH109	0.5-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**5**
BH109	0.8-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.5**
BH110A	0-0.1	<25	<50	**290**	**280**	<0.2	<0.5	<1	<3	<1	**0.3**
BH110A	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH110A	0.5-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH111	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH111 - [LAB_DUP]	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH111	0.3-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH111	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH112	0.22-0.65	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH112	0.65-0.8	<25	<50	**220**	<100	<0.2	<0.5	<1	<3	<1	**0**
BH113	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH113	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH113	0.35-0.45	<25	<50	**120**	<100	<0.2	<0.5	<1	<3	<1	**0**
BH114	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH114 - [LAB_DUP]	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH115	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH115	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH116	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH116	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH117	0-0.1	<25	**93**	**240**	**100**	<0.2	<0.5	<1	<3	<1	**9.4**
BH117	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**2.4**
BH118	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH118 - [LAB_DUP]	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH118	1.4-1.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH118	1.6-1.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH119	0.05-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.6**
BH119	0.05-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**NA**
BH119	0.5-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.6**
SDUP3	0-0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	<1	**NA**
SDUP4	0-0.1	<25	<50	**120**	<100	<0.2	<0.5	<1	<3	<1	**NA**
SDUP7	0-0.1	<25	<50	**310**	**190**	<0.2	<0.5	<1	<3	<1	**NA**
SDUP8	0.04-0.3	<25	<50	**450**	**210**	<0.2	<0.5	<1	<1	<1	**NA**
SDUP9	0.02-0.4	<25	<50	**110**	**120**	<0.2	<0.5	<1	<3	<1	**NA**
SDUP10	0-0.1	<25	**63**	**200**	**120**	<0.2	<0.5	<1	<1	<1	**NA**
Total Number of Samples		62	62	62	62	62	62	62	62	62	49
Maximum Value		68	93	450	370	<PQL	<PQL	<PQL	<PQL	<PQL	579

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

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TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-B: Residential with minimal opportunities for soil access

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.04**			**0.001**			**0.001**											**0.04**	**0.001**
6/10/2021	BH101	0.02-0.4	No	--	5,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH101	0.02-0.4	848.45	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
6/10/2021	BH101	0.4-1.4	NA	--	6,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH101	0.5-0.85	779.09	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
6/10/2021	BH101	1.4-1.7	NA	--	7,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH102	0.05-0.1	1050.98	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
6/10/2021	BH102	0.05-0.5	No	--	7,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH103	0.03-0.4	819.47	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
6/10/2021	BH102	0.5-1.2	NA	--	9,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH104	0.04-0.3	1011.06	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
6/10/2021	BH103	0.03-0.5	No	--	7,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH104	0.5-0.95	911.82	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
1/10/2021	BH104	0.04-0.2	No	--	4,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH105	0.25-0.4	155.24	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
1/10/2021	BH104	0.3-1.3	NA	--	4,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH106	0.03-0.3	876.86	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
1/10/2021	BH104	1.3-2.3	NA	--	4,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH107	0-0.2	834.55	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
1/10/2021	BH104	2.3-3.2	NA	--	5,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH108	0-0.1	918.63	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
1/10/2021	BH104	3.2-4.1	NA	--	4,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH109	0.01-0.4	907.91	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
27/09/2021	BH105	0.25-0.4	NA	--	5,250	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH110A	0-0.1	309.8	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH106	0.03-0.3	No	--	3,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH110A	0.5-0.8	546.92	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
27/09/2021	BH107	0-0.2	No	--	11,050	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH111	0-0.1	714.5	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
27/09/2021	BH107	0.2-0.4	NA	--	4,550	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH112	0.22-0.65	808.15	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH109	0.01-0.4	No	--	4,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH113	0-0.1	644.18	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH109	0.4-0.8	NA	--	7,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH114	0.05-0.2	869.03	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
29/09/2021	BH110A	0-0.1	No	--	10,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH115	0-0.1	691.37	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
29/09/2021	BH110A	0.1-0.2	NA	--	4,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH116	0-0.1	844.36	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
29/09/2021	BH110A	0.2-1.1	NA	--	5,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH117	0-0.1	417.36	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH111	0-0.1	No	--	10,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH117	0.5-0.95	525.21	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH111	0.1-0.3	NA	--	4,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	BH118	0-0.1	691.91	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH111	0.3-0.6	NA	--	5,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	280027	BH119	0.05-0.3	817.66	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
28/09/2021	BH111	0.6-0.8	NA	--	4,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	SDUP3	0-0.1	737.45	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
29/09/2021	BH112	0.22-0.65	NA	--	6,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	279440	SDUP4	0-0.1	793	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
29/09/2021	BH113	0-0.1	No	--	10,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH113	0.1-0.35	NA	--	9,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH114	0.05-0.2	No	--	9,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH115	0-0.1	No	--	11,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH115	0.1-0.5	NA	--	5,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH116	0-0.1	No	--	11,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/10/2021	BH117	0-0.1	No	--	10,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH118	0-0.1	No	--	10,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH118	0.1-1.1	NA	--	9,850	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2021	BH118	1.1-1.6	NA	--	8,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

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TABLE S6
SUMMARY OF PFAS CONCENTRATIONS IN SOIL - HUMAN HEALTH
Units are µg/Kg unless stated otherwise.

	PQL Envirolab Services	NEMP 2020 Residential min. access	BH104 0.04-0.3 Fill: Sandy Gravel	BH104 - [LAB_DUP] 0.04-0.3 Laboratory Duplicate	BH105 0.25-0.4 Fill: Silty Gravelly Sand	BH105 0.5-0.95 Fill: Clayey Silty Sand	PFAS DUP1 0.25-0.4 Duplicate of BH105	PFAS DUP3 0.04-0.3 Duplicate of BH104
PFAS Compound								
Perfluorobutanesulfonic acid	0.1	NSL	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Perfluoropentanesulfonic acid	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	0.1	20,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	0.5	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	0.5	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	0.5	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	0.5	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	5	NSL	<5	<5	<5	<5	<5	<5
4:2 FTS	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	0.1	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	0.1	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	1	NSL	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	1	NSL	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	1	NSL	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	1	NSL	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	5	NSL	<5	<5	<5	<5	<5	<5
MePer uorooctanesulf-amid oacetic acid	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EtPer uorooctanesulf-amid oacetic acid	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Positive PFHxS & PFOS	0.1	2,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Positive PFAS result **Bold**
PFAS result above the SAC **Bold**

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TABLE S7
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																		
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH101	0.02-0.4	Fill: Silty Gravelly Sand	Coarse	**9.8**	**12**	NA	<4	**62**	**59**	**14**	**47**	**41**	<1	<0.1	<25	<50	**140**	**140**	<0.2	<0.5	<1	<3	**0.4**
BH101	0.02-0.4	Laboratory Duplicate	Coarse	**9.8**	**12**	NA	<4	**73**	**57**	**14**	**55**	**46**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.4**
BH101	0.5-0.85	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**17**	**12**	**51**	**15**	**44**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.1**
BH101	1.7-1.95	XW Sandstone	Coarse	**8.7**	NA	NA	<4	**9**	**1**	**13**	<1	**9**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH102	0.05-0.1	Fill: Silty Gravelly Sand	Coarse	**9**	**12**	NA	<4	**44**	**74**	**7**	**73**	**37**	<1	<0.1	<25	<50	**190**	**150**	<0.2	<0.5	<1	<3	**0.2**
BH102	0.5-0.95	Fill: Silty Clay	Coarse	**7**	**11**	NA	**6**	**43**	**29**	**110**	**10**	**110**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**1.5**
BH102	1.4-1.6	Sandstone	Coarse	**7.8**	NA	NA	<4	**11**	**6**	**8**	**4**	**18**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH103	0.03-0.4	Fill: Silty Gravelly Sand	Coarse	**8.8**	**12**	NA	<4	**34**	**26**	**42**	**39**	**73**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**1.5**
BH103	0.5-0.7	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**15**	<1	**4**	<1	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH103	0.7-0.95	Silty Clay	Coarse	NA	NA	NA	<4	**11**	<1	**7**	<1	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH103	1.4-1.5	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**36**	**2**	**4**	<1	**1**	<1	NA	**68**	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH103 - [Replicate]	1.4-1.5	Replicate Sample (re-test)	Coarse	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<100	<100	NA	NA	NA	NA	NA
BH103 - [LAB-DUP]	1.4-1.5	Laboratory Duplicate	Coarse	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<100	<100	NA	NA	NA	NA	NA
BH104	0.04-0.3	Fill: Sandy Gravel	Coarse	**8.5**	**153**	NA	<4	**73**	**24**	**5**	**75**	**37**	<1	<0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	<0.05
BH104	0.04-0.3	Laboratory Duplicate	Coarse	**8.5**	**153**	NA	<4	**83**	**27**	**6**	**83**	**43**	<1	<0.1	<25	<50	**170**	<100	<0.2	<0.5	<1	<3	<0.05
BH104	0.5-0.95	Fill: Silty Gravelly Sand	Coarse	**9**	**48**	NA	<4	**76**	**34**	**6**	**81**	**48**	<1	NA	<25	<50	**420**	**120**	<0.2	<0.5	<1	<3	<0.05
BH104 - [Silica Gel]	0.5-0.95	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	**340**	**100**	NA	NA	NA	NA	NA
BH104	1.5-1.95	Fill: Silty Gravelly Sand	Coarse	**9**	**48**	NA	<4	**19**	**8**	**83**	**5**	**52**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.1**
BH104	3.0-3.2	Fill: Silty Gravelly Sand	Coarse	**9**	**48**	NA	<4	**34**	**12**	**57**	**3**	**38**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.08**
BH104	3.8-4.1	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**30**	**17**	**43**	**17**	**70**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.05**
BH105	0.25-0.4	Fill: Silty Gravelly Sand	Coarse	**8.8**	**12**	NA	<4	**74**	**27**	**13**	**76**	**45**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	Coarse	**8.8**	**14**	NA	<4	**72**	**26**	**10**	**72**	**42**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105	0.5-0.95	Fill: Clayey Silty Sand	Coarse	**8.7**	**15**	NA	<4	**13**	**6**	**32**	**9**	**30**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105	1.2-1.4	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**9**	**2**	**12**	**1**	**14**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	Coarse	**9.6**	**25**	NA	<4	**30**	**49**	**2**	**110**	**38**	<1	<0.1	<25	<50	**160**	**290**	<0.2	<0.5	<1	<3	<0.05
BH106	0.6-0.8	Silty Clay	Coarse	NA	NA	NA	<4	**12**	<1	**7**	<1	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH107	0-0.2	Fill: Silty Clay	Coarse	**6.8**	**11**	NA	<4	**12**	**18**	**14**	**6**	**22**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH107	0.2-0.4	Fill: Sandy Clay	Coarse	**7.7**	**4.5**	NA	<4	**8**	**4**	**14**	**2**	**21**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.06**
BH108	0-0.1	Fill: Sandy Silty Clay	Coarse	**4.9**	**5.2**	NA	<4	**6**	**9**	**63**	**2**	**31**	<1	<0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	**0.3**
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	Coarse	**9**	**18**	NA	<4	**63**	**27**	**8**	**63**	**37**	<1	<0.1	<25	<50	**110**	**370**	<0.2	<0.5	<1	<3	<0.05
BH109	0.5-0.8	Fill: Sandy Clay	Coarse	**7.7**	**4.5**	NA	<4	**22**	**7**	**10**	**16**	**16**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH109	0.8-0.95	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**15**	**2**	**5**	**4**	**6**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH110A	0-0.1	Fill: Silty Gravelly Sand	Coarse	**8.8**	**12**	NA	<4	**63**	**26**	**6**	**69**	**52**	<1	<0.1	<25	<50	**290**	**280**	<0.2	<0.5	<1	<3	<0.05
BH110A	0.1-0.2	Fill: Sandy Gravel	Coarse	**8.7**	**18**	NA	<4	**71**	**24**	**6**	**73**	**39**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH110A	0.5-0.8	Fill: Sandy Clay	Coarse	**7.7**	**4.5**	NA	**7**	**18**	**2**	**16**	**1**	**10**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH111	0-0.1	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**9**	**12**	**54**	**4**	**50**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.3**
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	Coarse	**9.1**	NA	NA	<4	**9**	**12**	**51**	**4**	**49**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.2**
BH111	0.3-0.6	Fill: Silty Clay	Coarse	**6.8**	**11**	NA	**4**	**9**	**52**	**49**	**6**	**79**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.3**
BH111	0.6-0.8	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	<4	**16**	**13**	**58**	**5**	**120**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.2**
BH112	0.22-0.65	Fill: Silty Gravelly Sand	Coarse	**8.8**	**12**	NA	<4	**12**	**11**	**44**	**4**	**57**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH112	0.65-0.8	Sandstone	Coarse	NA	NA	NA	<4	**8**	**9**	**6**	**1**	**12**	<1	NA	<25	<50	**220**	<100	<0.2	<0.5	<1	<3	<0.05
BH113	0-0.1	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**10**	**9**	**25**	**3**	**27**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH113	0.1-0.2	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	<4	**11**	**4**	**22**	**2**	**21**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.06**
BH113	0.35-0.45	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**6**	**7**	**28**	**1**	**29**	<1	NA	<25	<50	**120**	<100	<0.2	<0.5	<1	<3	**0.3**
BH114	0.05-0.2	Fill: Silty Sandy Gravel	Coarse	**10.1**	**36**	NA	<4	**77**	**31**	**4**	**85**	**36**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	Coarse	**10.1**	**36**	NA	<4	**93**	**34**	**5**	**91**	**41**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH115	0-0.1	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	**4**	**11**	**11**	**40**	**3**	**42**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.1**
BH115	0.6-0.8	Sandy Clay	Coarse	**8**	**3.2**	NA	**4**	**15**	<1	**6**	<1	**1**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH116	0-0.1	Fill: Silty Sandy Gravel	Coarse	**10.1**	**36**	NA	<4	**59**	**22**	**15**	**54**	**42**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH116	0.1-0.3	Silty Clayey Sand	Coarse	NA	NA	NA	<4	**10**	**7**	**29**	**4**	**29**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.1**
BH117	0-0.1	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**19**	**17**	**28**	**16**	**54**	<1	<0.1	<25	**93**	**240**	**100**	<0.2	<0.5	<1	<3	<0.05
BH117	0.5-0.95	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**8**	**3**	**15**	**2**	**16**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH118	0-0.1	Fill: Silty Sandy Clay	Coarse	NA	NA	NA	**17**	**8**	**26**	**220**	**5**	**45**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.2**
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	Coarse	NA	NA	NA	<4	**6**	**23**	**390**	**3**	**65**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.4**
BH118	1.4-1.5	Fill: Silty Sandy Clay	Coarse	NA	NA	NA	**11**	**7**	**35**	**99**	**3**	**62**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.89**
BH118	1.6-1.8	Sandy Clay	Coarse	**8**	**3.2**	NA	<4	**11**	**1**	**6**	**2**	**14**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH119	0.05-0.3	Fill: Silty Sand	Coarse	**9.1**	NA	NA	<4	**14**	**29**	**28**	**8**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH119	0.05-0.3	Laboratory Duplicate	Coarse	**9.1**	NA	NA	<4	**14**	**23**	**28**	**9**	**41**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH119	0.5-0.8	Sandstone	Coarse	NA	NA	NA	<4	**15**	<1	**4**	<1	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP3	0-0.1	Duplicate of BH111	Coarse	**9.1**	NA	NA	<4	**11**	**13**	**54**	**4**	**51**	<1	NA	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	**0.2**
SDUP4	0-0.1	Duplicate of BH115	Coarse	NA	NA	NA	<4	**9**	**5**	**20**	**2**	**25**	<1	<0.1	<25	<50	**120**	<100	<0.2	<0.5	<1	<3	**0.06**
SDUP7	0-0.1	Duplicate of BH108	Coarse	**4.9**	**5.2**	NA	<4	**6**	**9**	**66**	**2**	**32**	<1	NA	<25	<50	**310**	**190**	<0.2	<0.5	<1	<3	**0.2**
SDUP7 - [Silica Gel]	0-0.1	Duplicate of BH108	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<100	<100	NA	NA	NA	NA	**NA**
SDUP8	0.04-0.3	Duplicate of BH104	Coarse	**8.5**	**153**	NA	<4	**82**	**31**	**5**	**79**	**45**	<1	NA	<25	<50	**450**	**210**	<0.2	<0.5	<1	<1	<0.05
SDUP9	0.02-0.4	Duplicate of BH101	Coarse	**9.8**	**12**	NA	<4	**62**	**52**	**13**	**48**	**40**	<1	<0.1	<25	<50	**110**	**120**	<0.2	<0.5	<1	<3	**0.3**
SDUP10	0-0.1	Duplicate of BH117	Coarse	**9.1**	NA	NA	<4	**11**	**17**	**27**	**12**	**60**	<1	NA	<25	**63**	**200**	**120**	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				50	37	0	62	62	62	62	62	62	62	28	62	62	62	62	62	62	62	62	62
Maximum Value				10.1	153	NA	17	93	74	390	110	120	<PQL	<PQL	68	93	450	370	<PQL	<PQL	<PQL	<PQL	1.5

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH101	0.02-0.4	Fill: Silty Gravelly Sand	Coarse	9.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH101	0.02-0.4	Laboratory Duplicate	Coarse	9.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH101	0.5-0.85	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH101	1.7-1.95	XW Sandstone	Coarse	8.7	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH102	0.05-0.1	Fill: Silty Gravelly Sand	Coarse	9	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH102	0.5-0.95	Fill: Silty Clay	Coarse	7	11	NA	100	200	240	1300	280	820	170	--	180	120	300	2800	50	85	70	105	20
BH102	1.4-1.6	Sandstone	Coarse	7.8	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH103	0.03-0.4	Fill: Silty Gravelly Sand	Coarse	8.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH103	0.5-0.7	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH103	0.7-0.95	Silty Clay	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH103	1.4-1.5	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH103 - [Replicate]	1.4-1.5	Replicate Sample (re-test)	Coarse	NA	NA	NA	--	--	--	--	--	--	--	--	--	120	300	2800	--	--	--	--	--
BH103 - [LAB-DUP]	1.4-1.5	Laboratory Duplicate	Coarse	NA	NA	NA	--	--	--	--	--	--	--	--	--	120	300	2800	--	--	--	--	--
BH104	0.04-0.3	Fill: Sandy Gravel	Coarse	8.5	153	NA	100	200	260	1300	560	1400	170	180	180	120	300	2800	50	85	70	105	20
BH104	0.04-0.3	Laboratory Duplicate	Coarse	8.5	153	NA	100	200	260	1300	560	1400	170	180	180	120	300	2800	50	85	70	105	20
BH104	0.5-0.95	Fill: Silty Gravelly Sand	Coarse	9	48	NA	100	200	260	1300	560	1400	170	--	180	120	300	2800	50	85	70	105	20
BH104 - [Silica Gel]	0.5-0.95	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	--	--	--	--	--	--	--	--	--	120	300	2800	--	--	--	--	--
BH104	1.5-1.95	Fill: Silty Gravelly Sand	Coarse	9	48	NA	100	200	260	1300	560	1400	170	--	180	120	300	2800	50	85	70	105	20
BH104	3.0-3.2	Fill: Silty Gravelly Sand	Coarse	9	48	NA	100	200	260	1300	560	1400	170	--	180	120	300	2800	50	85	70	105	20
BH104	3.8-4.1	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH105	0.25-0.4	Fill: Silty Gravelly Sand	Coarse	8.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	Coarse	8.8	14	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH105	0.5-0.95	Fill: Clayey Silty Sand	Coarse	8.7	15	NA	100	200	240	1300	280	820	170	--	180	120	300	2800	50	85	70	105	20
BH105	1.2-1.4	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	Coarse	9.6	25	NA	100	200	250	1300	360	1100	170	180	180	120	300	2800	50	85	70	105	20
BH106	0.6-0.8	Silty Clay	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH107	0-0.2	Fill: Silty Clay	Coarse	6.8	11	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH107	0.2-0.4	Fill: Sandy Clay	Coarse	7.7	4.5	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH108	0-0.1	Fill: Sandy Silty Clay	Coarse	4.9	5.2	NA	100	200	160	1300	180	300	170	180	180	120	300	2800	50	85	70	105	20
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	Coarse	9	18	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH109	0.5-0.8	Fill: Sandy Clay	Coarse	7.7	4.5	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH109	0.8-0.95	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH110A	0-0.1	Fill: Silty Gravelly Sand	Coarse	8.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH110A	0.1-0.2	Fill: Sandy Gravel	Coarse	8.7	18	NA	100	200	240	1300	280	820	170	--	180	120	300	2800	50	85	70	105	20
BH110A	0.5-0.8	Fill: Sandy Clay	Coarse	7.7	4.5	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH111	0-0.1	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH111	0.3-0.6	Fill: Silty Clay	Coarse	6.8	11	NA	100	200	240	1300	280	820	170	--	180	120	300	2800	50	85	70	105	20
BH111	0.6-0.8	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH112	0.22-0.65	Fill: Silty Gravelly Sand	Coarse	8.8	12	NA	100	200	240	1300	280	820	170	180	180	120	300	2800	50	85	70	105	20
BH112	0.65-0.8	Sandstone	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH113	0-0.1	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH113	0.1-0.2	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH113	0.35-0.45	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH114	0.05-0.2	Fill: Silty Sandy Gravel	Coarse	10.1	36	NA	100	200	250	1300	420	1300	170	180	180	120	300	2800	50	85	70	105	20
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	Coarse	10.1	36	NA	100	200	250	1300	420	1300	170	180	180	120	300	2800	50	85	70	105	20
BH115	0-0.1	Fill: Silty Clayey Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH115	0.6-0.8	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH116	0-0.1	Fill: Silty Sandy Gravel	Coarse	10.1	36	NA	100	200	250	1300	420	1300	170	180	180	120	300	2800	50	85	70	105	20
BH116	0.1-0.3	Silty Clayey Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH117	0-0.1	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH117	0.5-0.95	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH118	0-0.1	Fill: Silty Sandy Clay	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH118	1.4-1.5	Fill: Silty Sandy Clay	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH118	1.6-1.8	Sandy Clay	Coarse	8	3.2	NA	100	200	120	1300	35	350	170	--	180	120	300	2800	50	85	70	105	20
BH119	0.05-0.3	Fill: Silty Sand	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH119	0.05-0.3	Laboratory Duplicate	Coarse	9.1	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH119	0.5-0.8	Sandstone	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120

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TABLE S8
SUMMARY OF PFAS CONCENTRATIONS IN SOIL - ECOLOGY
Units are µg/Kg unless stated otherwise.

	PQL Envirolab Services	NEMP 2020 Direct exposure All land use	NEMP 2020 Indirect exposure All land use	BH104 0.04-0.3 Fill: Sandy Gravel	BH104 - [LAB_DUP] 0.04-0.3 Laboratory Duplicate	BH105 0.25-0.4 Fill: Silty Gravelly Sand	BH105 0.5-0.95 Fill: Clayey Silty Sand	PFAS DUP1 0.25-0.4 Duplicate of BH105	PFAS DUP3 0.04-0.3 Duplicate of BH104
PFAS Compound									
Perfluorobutanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	0.1	1000	140	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	0.1	10,000	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	5	NSL	NSL	<5	<5	<5	<5	<5	<5
4:2 FTS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	0.1	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	0.1	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	5	NSL	NSL	<5	<5	<5	<5	<5	<5
MePer uorooctanesulf-amid oacetic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EtPer uorooctanesulf-amid oacetic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Positive PFHxS & PFOS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Positive PFAS result **Bold**
PFAS result above the SAC **Bold**

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TABLE S9
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH101	0.02-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**62**	**59**	**14**	<0.1	**47**	**41**	**3.8**	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**130**	**130**	<0.2	<0.5	<1	<3	Not Detected
BH101 - [LAB_DUP]	0.02-0.4	Laboratory Duplicate	<4	<0.4	**73**	**57**	**14**	<0.1	**55**	**46**	**4**	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH101	0.5-0.85	Fill: Silty Sand	<4	<0.4	**17**	**12**	**51**	<0.1	**15**	**44**	**0.3**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH101	1.7-1.95	XW Sandstone	<4	<0.4	**9**	**1**	**13**	<0.1	<1	**9**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	0.05-0.1	Fill: Silty Gravelly Sand	<4	<0.4	**44**	**74**	**7**	<0.1	**73**	**37**	**0.68**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**160**	**160**	<0.2	<0.5	<1	<3	Not Detected
BH102	0.5-0.95	Fill: Silty Clay	**6**	<0.4	**43**	**29**	**110**	<0.1	**10**	**110**	**10**	**1.5**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	1.4-1.6	Sandstone	<4	<0.4	**11**	**6**	**8**	<0.1	**4**	**18**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	0.03-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**34**	**26**	**42**	<0.1	**39**	**73**	**11**	**1.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH103	0.5-0.7	Sandy Clay	<4	<0.4	**15**	<1	**4**	<0.1	<1	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	0.7-0.95	Silty Clay	<4	<0.4	**11**	<1	**7**	<0.1	<1	<1	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	1.4-1.5	Sandy Clay	<4	<0.4	**36**	**2**	**4**	<0.1	<1	**1**	**1.2**	<0.05	NA	NA	NA	NA	NA	**34**	**62**	<100	<100	**62**	<0.2	<0.5	<1	<3	NA
BH104	0.04-0.3	Fill: Sandy Gravel	<4	<0.4	**73**	**24**	**5**	<0.1	**75**	**37**	**0.2**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**130**	**130**	<0.2	<0.5	<1	<3	Not Detected
BH104 - [LAB_DUP]	0.04-0.3	Laboratory Duplicate	<4	<0.4	**83**	**27**	**6**	<0.1	**83**	**43**	**0.2**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**140**	**140**	<0.2	<0.5	<1	<3	NA
BH104	0.5-0.95	Fill: Silty Gravelly Sand	<4	<0.4	**76**	**34**	**6**	<0.1	**81**	**48**	**0.4**	<0.05	NA	NA	NA	NA	NA	<25	<50	**130**	**340**	**470**	<0.2	<0.5	<1	<3	Not Detected
BH104	1.5-1.95	Fill: Silty Gravelly Sand	<4	<0.4	**19**	**8**	**83**	**0.1**	**5**	**52**	**0.4**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	3.0-3.2	Fill: Silty Gravelly Sand	<4	<0.4	**34**	**12**	**57**	<0.1	**3**	**38**	**0.08**	**0.08**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	3.8-4.1	Fill: Silty Sand	<4	<0.4	**30**	**17**	**43**	<0.1	**17**	**70**	**0.05**	**0.05**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH105	0.25-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**74**	**27**	**13**	<0.1	**76**	**45**	**0.4**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	<4	<0.4	**72**	**26**	**10**	<0.1	**72**	**42**	**0.3**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH105	0.5-0.95	Fill: Clayey Silty Sand	<4	<0.4	**13**	**6**	**32**	<0.1	**9**	**30**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH105	1.2-1.4	Sandy Clay	<4	<0.4	**9**	**2**	**12**	<0.1	**1**	**14**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	<4	<0.4	**30**	**49**	**2**	<0.1	**110**	**38**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**220**	**220**	<0.2	<0.5	<1	<3	Not Detected
BH106	0.6-0.8	Silty Clay	<4	<0.4	**12**	<1	**7**	<0.1	<1	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH107	0-0.2	Fill: Silty Clay	<4	<0.4	**12**	**18**	**14**	<0.1	**6**	**22**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH107	0.2-0.4	Fill: Sandy Clay	<4	<0.4	**8**	**4**	**14**	<0.1	**2**	**21**	**0.3**	**0.06**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH108	0-0.1	Fill: Sandy Silty Clay	<4	<0.4	**6**	**9**	**63**	<0.1	**2**	**31**	**2.1**	**0.3**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**130**	**130**	<0.2	<0.5	<1	<3	Not Detected
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	<4	<0.4	**63**	**27**	**8**	<0.1	**63**	**37**	**0.3**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**190**	**190**	<0.2	<0.5	<1	<3	Not Detected
BH109	0.5-0.8	Fill: Sandy Clay	<4	<0.4	**22**	**7**	**10**	<0.1	**16**	**16**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH109	0.8-0.95	Sandy Clay	<4	<0.4	**15**	**2**	**5**	<0.1	**4**	**6**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH110A	0-0.1	Fill: Silty Gravelly Sand	<4	<0.4	**63**	**26**	**6**	<0.1	**69**	**52**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**110**	**290**	**400**	<0.2	<0.5	<1	<3	Not Detected
BH110A	0.1-0.2	Fill: Sandy Gravel	<4	<0.4	**71**	**24**	**6**	<0.1	**73**	**39**	**0.2**	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH110A	0.5-0.8	Fill: Sandy Clay	**7**	<0.4	**18**	**2**	**16**	<0.1	**1**	**10**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH111	0-0.1	Fill: Silty Sand	<4	<0.4	**9**	**12**	**54**	<0.1	**4**	**50**	**3.5**	**0.3**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH111 - [LAB_DUP]	0-0.1	Laboratory Duplicate	<4	<0.4	**9**	**12**	**51**	<0.1	**4**	**49**	**2.5**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH111	0.3-0.6	Fill: Silty Clay	**4**	<0.4	**9**	**52**	**49**	**0.1**	**6**	**79**	**2.5**	**0.3**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH111	0.6-0.8	Fill: Silty Clayey Sand	<4	<0.4	**16**	**13**	**58**	**0.2**	**5**	**120**	**1.8**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH112	0.22-0.65	Fill: Silty Gravelly Sand	<4	<0.4	**12**	**11**	**44**	<0.1	**4**	**57**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH112	0.65-0.8	Sandstone	<4	<0.4	**8**	**9**	**6**	<0.1	**1**	**12**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	**160**	**160**	<0.2	<0.5	<1	<3	NA
BH113	0-0.1	Fill: Silty Sand	<4	<0.4	**10**	**9**	**25**	<0.1	**3**	**27**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH113	0.1-0.2	Fill: Silty Clayey Sand	<4	<0.4	**11**	**4**	**22**	<0.1	**2**	**21**	**0.3**	**0.06**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH113	0.35-0.45	Sandy Clay	<4	<0.4	**6**	**7**	**28**	<0.1	**1**	**29**	**3**	**0.3**	NA	NA	NA	NA	NA	<25	<50	<100	**120**	**120**	<0.2	<0.5	<1	<3	NA
BH114	0.05-0.2	Fill: Silty Sandy Gravel	<4	<0.4	**77**	**31**	**4**	<0.1	**85**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH114 - [LAB_DUP]	0.05-0.2	Laboratory Duplicate	<4	<0.4	**93**	**34**	**5**	<0.1	**91**	**41**	**0.1**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH115	0-0.1	Fill: Silty Clayey Sand	**4**	<0.4	**11**	**11**	**40**	<0.1	**3**	**42**	**0.64**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH115	0.6-0.8	Sandy Clay	**4**	<0.4	**15**	<1	**6**	<0.1	<1	**1**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH116	0-0.1	Fill: Silty Sandy Gravel	<4	<0.4	**59**	**22**	**15**	<0.1	**54**	**42**	**0.3**	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH116	0.1-0.3	Silty Clayey Sand	<4	<0.4	**10**	**7**	**29**	<0.1	**4**	**29**	**0.4**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH117	0-0.1	Fill: Silty Sand	<4	<0.4	**19**	**17**	**28**	<0.1	**16**	**54**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	**81**	**120**	**180**	**381**	<0.2	<0.5	<1	<3	Not Detected
BH117	0.5-0.95	Fill: Silty Sand	<4	<0.4	**8**	**3**	**15**	<0.1	**2**	**16**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH117	0.5-1.5	Fill: Silty Sand (Spoil)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH118	0-0.1	Fill: Silty Sandy Clay	**17**	<0.4	**8**	**26**	**220**	<0.1	**5**	**45**	**1.3**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH118 - [LAB_DUP]	0-0.1	Laboratory Duplicate	<4	<0.4	**6**	**23**	**390**	<0.1	**3**	**65**	**3.8**	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH118	1.4-1.5	Fill: Silty Sandy Clay	**11**	<0.4	**7**	**35**	**99**	<0.1	**3**	**62**	**8.5**	**0.89**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH118	1.6-1.8	Sandy Clay	<4	<0.4	**11**	**1**	**6**	<0.1	**2**	**14**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH119	0.05-0.3	Fill: Silty Sand	<4	<0.4	**14**	**29**	**28**	<0.1	**8**	**37**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH119	0.05-0.3	Laboratory Duplicate	<4	<0.4	**14**	**23**	**28**	<0.1	**9**	**41**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH119	0.5-0.8	Sandstone	<4	<0.4	**15**	<1	**4**	<0.1	<1	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP3	0-0.1	Duplicate of BH111	<4	<0.4	**11**	**13**	**54**	<0.1	**4**	**51**	**2.6**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	**160**	**160**	<0.2	<0.5	<1	<3	Not Detected
SDUP4	0-0.1	Duplicate of BH115	<4	<0.4	**9**	**5**	**20**	<0.1	**2**	**25**	**0.3**	**0.06**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**110**	**110**	<0.2	<0.5	<1	<3	Not Detected
SDUP7	0-0.1	Duplicate of BH108	<4	<0.4	**6**	**9**	**66**	<0.1	**2**	**32**	**1.7**	**0.2**	NA	NA	NA	NA	NA	<25	<50	**160**	**270**	**430**	<0.2	<0.5	<1	<3	NA
SDUP8	0.04-0.3	Duplicate of BH104	<4	<0.4	**82**	**31**	**5**	<0.1	**79**	**45**	**0.4**	<0.05	NA	NA	NA	NA	NA	<25	<50	**150**	**390**	**540**	<0.2	<0.5	<1	<1	NA
SDUP9	0.02-0.4	Duplicate of BH101	<4	<0.4	**62**	**52**	**13**	<0.1	**48**	**40**	**2.3**	**0.3**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP10	0-0.1	Duplicate of BH117	<4	<0.4	**11**	**17**	**27**	<0.1	**12**	**60**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**100**	**190**	**290**	<0.2	<0.5	<1	<1	NA
Total Number of Samples			62	62	62	62	62	62	62	62	62	62	28	28	28	28	28	62	62	62	62	62	62	62	62	62	26
Maximum Value			17	<PQL	93	74	390	0.2	110	120	11	1.5	<PQL	<PQL	<PQL	<PQL	<PQL	34	81	160	390	540	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**
Concentration above PQL — **Bold**

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TABLE S10
SUMMARY OF PFAS CONCENTRATIONS IN SOIL - WASTE CLASSIFICATION
Units are µg/Kg unless stated otherwise.

	PQL Envirolab Services	SCC1	SCC2	BH104 0.04-0.3 Fill: Sandy Gravel	BH104 - [LAB_DUP] 0.04-0.3 Laboratory Duplicate	BH105 0.25-0.4 Fill: Silty Gravelly Sand	BH105 0.5-0.95 Fill: Clayey Silty Sand	PFAS DUP1 0.25-0.4 Duplicate of BH105	PFAS DUP3 0.04-0.3 Duplicate of BH104
PFAS Compound									
Perfluorobutanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	0.1	18,000	72,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	0.5	NSL	NSL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	5	NSL	NSL	<5	<5	<5	<5	<5	<5
4:2 FTS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	0.1	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	0.1	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	1	NSL	NSL	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	5	NSL	NSL	<5	<5	<5	<5	<5	<5
MePer uorooctanesulf-amid oacetic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EtPer uorooctanesulf-amid oacetic acid	0.2	NSL	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Positive PFHxS & PFOS	0.1	1800	7,200	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	0.1	NSL	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Result above SCC1 Criteria **Bold**
Result above SCC2 Criteria **Bold**

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TABLE S11
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Lead	Nickel	B(a)P
PQL - Envirolab Services			0.03	0.02	0.001
TCLP1 - General Solid Waste			5	2	0.04
TCLP2 - Restricted Solid Waste			20	8	0.16
TCLP3 - Hazardous Waste			>20	>8	>0.16
Sample Reference	**Sample Depth**	**Sample Description**			
BH101	0.02-0.4	Fill: Silty Gravelly Sand	NA	**0.02**	NA
BH101 - [LAB_DUP]	0.02-0.4	Laboratory Duplicate	NA	**0.02**	NA
BH102	0.05-0.1	Fill: Silty Gravelly Sand	NA	**0.09**	NA
BH102	0.5-0.95	Fill: Silty Clay	**0.2**	NA	<0.001
BH103	0.03-0.4	Fill: Silty Gravelly Sand	NA	NA	<0.001
BH104	0.04-0.3	Fill: Sandy Gravel	NA	**0.07**	NA
BH104	0.5-0.95	Fill: Silty Gravelly Sand	NA	**0.06**	NA
BH105	0.25-0.4	Fill: Silty Gravelly Sand	NA	**0.08**	NA
BH105 - [LAB_DUP]	0.25-0.4	Laboratory Duplicate	NA	**0.08**	NA
BH106	0.03-0.3	Fill: Clayey Gravelly Sand	NA	**0.1**	NA
BH109	0.01-0.4	Fill: Clayey Gravelly Sand	NA	**0.09**	NA
BH110A	0-0.1	Fill: Silty Gravelly Sand	NA	<0.02	NA
BH110A	0.1-0.2	Fill: Sandy Gravel	NA	**0.03**	NA
BH114	0.05-0.2	Fill: Silty Sandy Gravel	NA	**0.05**	NA
BH116	0-0.1	Fill: Silty Sandy Gravel	NA	<0.02	NA
BH118	0-0.1	Fill: Silty Sandy Clay	**0.72**	NA	NA
BH118	1.4-1.5	Fill: Silty Sandy Clay	NA	NA	<0.001
Total Number of samples			2	13	3
Maximum Value			0.72	0.1	<PQL

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**
Concentration above PQL	**Bold**

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TABLE G1
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES								
			MW101	MW101 - [LAB_DUP]	MW102	MW105	MW106	MW107	MW109	WDUP1	WDUP2
Inorganic Compounds and Parameters											
pH		6.5 - 8.5	**6.2**	**6.2**	**7**	**5.4**	**4.5**	**4.9**	**5.3**	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**300**	**300**	**69**	**590**	**350**	**250**	**240**	NA	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Metalloids											
Arsenic (As III)	1	24	**2**	**1**	**1**	<1	**3**	**2**	**1**	**2**	**3**
Cadmium	0.1	0.2	<0.1	<0.1	<0.1	**0.2**	**0.2**	<0.1	<0.1	**0.1**	**0.3**
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1	<1	<1	<1	<1	<1	<1	**1**
Copper	1	1.4	<1	<1	**6**	**5**	**7**	**5**	**4**	**4**	**9**
Lead	1	3.4	<1	**1**	<1	<1	**17**	**3**	<1	**3**	**19**
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	11	**3**	**3**	<1	**18**	**10**	**5**	**3**	**5**	**11**
Zinc	1	8	**40**	**40**	**6**	**81**	**73**	**47**	**18**	**38**	**76**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)											
Benzene	1	950	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)											
TRH F1	10	NSL	**44**	**45**	<10	**23**	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	<100	<100	<100	<100	<100	<100	<100	<100
Volatile Organic Compounds (VOCs), including chlorinated VOCs											
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	100	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	700	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	90	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	NSL	**1**	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	NSL	**7**	**5**	<1	**2**	<1	<1	<1	<1	<1
Bromoform	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	1	370	**42**	**36**	<1	**16**	<1	<1	<1	<1	<1
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	1900	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	270	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	240	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	1	950	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	900	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	330	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	6500	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	1100	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	70	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	55	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2	<2	<2	<2
Styrene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	400	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	350	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	30	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	260	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	60	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	160	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	85	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	0.2	16	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	**0.3**	**5.1**	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**
GIL >PQL	Red

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TABLE G2
SUMMARY OF PFAS CONCENTRATIONS IN GROUNDWATER - ECOLOGY
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NEMP 2020 95% Freshwater	SAMPLES	
			MW105	WPFASDUP1
PFAS Compound				
Perfluorobutanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluoropentanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.01	NSL	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.01	0.13	<0.01	<0.01
Perfluorodecanesulfonic acid	0.02	NSL	<0.02	<0.02
Perfluorobutanoic acid	0.02	NSL	<0.02	<0.02
Perfluoropentanoic acid	0.02	NSL	<0.02	<0.02
Perfluorohexanoic acid	0.01	NSL	<0.01	<0.01
Perfluoroheptanoic acid	0.01	NSL	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.01	220	<0.01	<0.01
Perfluorononanoic acid	0.01	NSL	<0.01	<0.01
Perfluorodecanoic acid	0.02	NSL	<0.02	<0.02
Perfluoroundecanoic acid	0.02	NSL	<0.02	<0.02
Perfluorododecanoic acid	0.05	NSL	<0.05	<0.05
Perfluorotridecanoic acid	0.1	NSL	<0.1	<0.1
Perfluorotetradecanoic acid	0.5	NSL	<0.5	<0.5
4:2 FTS	0.01	NSL	<0.01	<0.01
6:2 FTS	0.01	NSL	<0.01	<0.01
8:2 FTS	0.02	NSL	<0.02	<0.02
10:2 FTS	0.02	NSL	<0.02	<0.02
Perfluorooctane sulfonamide	0.1	NSL	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	0.05	NSL	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	0.1	NSL	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	0.05	NSL	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	0.5	NSL	<0.5	<0.5
MePer uorooctanesulf-amid oacetic acid	0.02	NSL	<0.02	<0.02
EtPer uorooctanesulf-amid oacetic acid	0.02	NSL	<0.02	<0.02
Total Positive PFHxS & PFOS	0.01	NSL	<0.01	<0.01
Total Positive PFOS & PFOA	0.01	NSL	<0.01	<0.01
Total Positive PFAS	0.01	NSL	<0.01	<0.01

Positive PFAS result	**Bold**
PFAS result above the SAC	**Bold**

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TABLE G3
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	Recreational (10 x NHMRC ADWG)	SAMPLES								
			MW101	MW101 - [LAB_DUP]	MW102	MW105	MW106	MW107	MW109	WDUP1	WDUP2
Inorganic Compounds and Parameters											
pH	-	Not Applicable	**6.2**	**6.2**	**7**	**5.4**	**4.5**	**4.9**	**5.3**	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**300**	**300**	**69**	**590**	**350**	**250**	**240**	NA	NA
Turbidity (NTU)	-	NSL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Metalloids											
Arsenic (As III)	1	100	**2**	**1**	**1**	<1	**3**	**2**	**1**	**2**	**3**
Cadmium	0.1	20	<0.1	<0.1	<0.1	**0.2**	**0.2**	<0.1	<0.1	**0.1**	**0.3**
Chromium (total)	1	500	<1	<1	<1	<1	<1	<1	<1	<1	**1**
Copper	1	20000	<1	<1	**6**	**5**	**7**	**5**	**4**	**4**	**9**
Lead	1	100	<1	**1**	<1	<1	**17**	**3**	<1	**3**	**19**
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	**3**	**3**	<1	**18**	**10**	**5**	**3**	**5**	**11**
Zinc	1	30000	**40**	**40**	**6**	**81**	**73**	**47**	**18**	**38**	**76**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)											
Benzene	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)											
TRH F1	10	NSL	**44**	**45**	<10	**23**	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	<100	<100	<100	<100	<100	<100	<100	<100
Volatile Organic Compounds (VOCs), including chlorinated VOCs											
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	3	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	300	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	2500	**1**	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1		**7**	**5**	<1	**2**	<1	<1	<1	<1	<1
Bromoform	1		<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	1		**42**	**36**	**<1**	**16**	<1	<1	<1	<1	<1
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	30	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	30	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	500	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	3000	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2	<2	<2	<2
Styrene	1	300	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	200	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	400	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	15000	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	300	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1		<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	7	<1	<1	<1	<1	<1	<1	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	**0.3**	**5.1**	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
GIL >PQL — Red

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TABLE G4
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	
PQL - Envirolab Services				10	50	1	1	1	2	1	PID
NEPM 2013 - Land Use Category				**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW101	3.58	0m to <2m	Sand	**44**	<50	<1	<1	<1	<2	<1	29.7
MW101 - [LAB_DUP]	3.58	0m to <2m	Sand	**45**	<50	<1	<1	<1	<2	<1	29.7
MW102	3.67	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	40.3
MW105	6.03	0m to <2m	Sand	**23**	<50	<1	<1	<1	<2	<1	2.8
MW106	9.17	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	11.2
MW107	9.9	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	2.4
MW109	7.07	4m to <8m	Sand	<10	<50	<1	<1	<1	<2	<1	27.2
WDUP1	9.9	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
WDUP2	9.17	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				9	9	9	9	9	9	9	7
Maximum Value				45	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	40.3

Concentration above the SAC **VALUE**
Site specific assesment (SSA) required **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the Groundwater Assessment Criteria Table below

HSL GROUNDWATER ASSESSMENT CRITERIA

Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
MW101	3.58	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW101 - [LAB_DUP]	3.58	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW102	3.67	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW105	6.03	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW106	9.17	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW107	9.9	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW109	7.07	4m to <8m	Sand	1000	1000	800	NL	NL	NL	NL
WDUP1	9.9	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
WDUP2	9.17	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA

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TABLE G5
GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NHMRC ADWG 2011 (v3.6 2021)	WHO 2008	USEPA RSL Tapwater 2021	SAMPLES								
					MW101	MW101 - [LAB_DUP]	MW102	MW105	MW106	MW107	MW109	WDUP1	WDUP2
Total Recoverable Hydrocarbons (TRH)													
C_6-C_9 Aliphatics (assessed using F1)	10	-	15000	-	**44**	**45**	<10	**23**	<10	<10	<10	<10	<10
>C_9-C_{14} Aliphatics (assessed using F2)	50	-	100	-	<50	<50	<50	<50	<50	<50	<50	<50	<50
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)													
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	600	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	1	-	-	0.12	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acenaphthene	0.1	-	-	530	<0.1	NA	<0.1	<0.1	<0.1	**0.3**	**5.1**	<0.1	<0.1
Volatile Organic Compounds (VOCs), including chlorinated VOCs													
Dichlorodifluoromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	0.3	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	60	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	60	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	250	-	-	**1**	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1		-	-	**7**	**5**	<1	**2**	<1	<1	<1	<1	<1
Bromoform	1		-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	1		-	-	**42**	**36**	<1	**16**	<1	<1	<1	<1	<1
2,2-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	3	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	3	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	100	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	100	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	50	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	-	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2
Styrene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	20	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	40	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	1500	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1		-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	0.7	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
GIL >PQL — Red

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TABLE G6
SUMMARY OF PFAS CONCENTRATIONS IN GROUNDWATER - HUMAN HEALTH
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NEMP 2020 Recreational	SAMPLES	
			MW105	WPFASDUP1
PFAS Compound				
Perfluorobutanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluoropentanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.01	NSL	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.01	NSL	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.01	NSL	<0.01	<0.01
Perfluorodecanesulfonic acid	0.02	NSL	<0.02	<0.02
Perfluorobutanoic acid	0.02	NSL	<0.02	<0.02
Perfluoropentanoic acid	0.02	NSL	<0.02	<0.02
Perfluorohexanoic acid	0.01	NSL	<0.01	<0.01
Perfluoroheptanoic acid	0.01	NSL	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.01	5.6	<0.01	<0.01
Perfluorononanoic acid	0.01	NSL	<0.01	<0.01
Perfluorodecanoic acid	0.02	NSL	<0.02	<0.02
Perfluoroundecanoic acid	0.02	NSL	<0.02	<0.02
Perfluorododecanoic acid	0.05	NSL	<0.05	<0.05
Perfluorotridecanoic acid	0.1	NSL	<0.1	<0.1
Perfluorotetradecanoic acid	0.5	NSL	<0.5	<0.5
4:2 FTS	0.01	NSL	<0.01	<0.01
6:2 FTS	0.01	NSL	<0.01	<0.01
8:2 FTS	0.02	NSL	<0.02	<0.02
10:2 FTS	0.02	NSL	<0.02	<0.02
Perfluorooctane sulfonamide	0.1	NSL	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	0.05	NSL	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	0.1	NSL	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	0.05	NSL	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	0.5	NSL	<0.5	<0.5
MePer uorooctanesulf-amid oacetic acid	0.02	NSL	<0.02	<0.02
EtPer uorooctanesulf-amid oacetic acid	0.02	NSL	<0.02	<0.02
Total Positive PFHxS & PFOS	0.01	0.7	<0.01	<0.01
Total Positive PFOS & PFOA	0.01	NSL	<0.01	<0.01
Total Positive PFAS	0.01	NSL	<0.01	<0.01

Positive PFAS result	**Bold**
PFAS result above the SAC	**Bold**

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TABLE Q1
SOIL QA/QC SUMMARY

| | | | TRH C6 - C10 | TRH >C10-C16 | TRH >C16-C34 | TRH >C34-C40 | Benzene | Toluene | Ethylbenzene | m+p-xylene | o-Xylene | Naphthalene | Acenaphthylene | Acenaphthene | Fluorene | Phenanthrene | Anthracene | Fluoranthene | Pyrene | Benzo(a)anthracene | Chrysene | Benzo(b+k)fluoranthene | Benzo(a)pyrene | Indeno(1,2,3-c,d)pyrene | Dibenzo(a,h)anthra-cene | Benzo(g,h,i)perylene | HCB | alpha- BHC | gamma- BHC | beta- BHC | Heptachlor | delta- BHC | Aldrin | Heptachlor Epoxide | Gamma- Chlordane | alpha- chlordane | Endosulfan I | pp- DDE | Dieldrin | Endrin | pp- DDD | Endosulfan II | pp- DDT | Endrin Aldehyde | Endosulfan Sulphate | Methoxychlor | Azinphos-methyl (Guthion) | Bromophos-ethyl | Chlorpyriphos | Chlorpyriphos-methyl | Diazinon | Dichlorvos | Dimethoate | Ethion | Fenitrothion | Malathion | Parathion | Ronnel | Total PCBS | Arsenic | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Zinc | ACM >7mm Estimation | FA and AF Estimation |
|---|---|---

TABLE Q2
SUMMARY OF PFAS FIELD QA/QC IN SOIL
Units are µg/Kg unless stated otherwise.

			Perfluorobutanesulfonic acid	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid - PFHxS	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonic acid PFOS	Perfluorodecanesulfonic acid	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid PFOA	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctanesulfon amide	N-Me perfluorooctanesulfonamid oethanol	N-Et perfluorooctanesulfonamid oethanol	MePer uorooctanesulf-amid oacetic acid	EtPer uorooctanesulf-amid oacetic acid	Total Positive PFHxS & PFOS	Total Positive PFOS & PFOA	Total Positive PFAS
PQL Envirolab			*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.5*	*0.5*	*0.5*	*0.5*	*5*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*1*	*1*	*1*	*5*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*
PQL Envirolab VIC			*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.5*	*0.5*	*0.5*	*0.5*	*5*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*1*	*1*	*1*	*5*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*
Intra	BH105	0.25-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.1	<0.2	<0.2	<1	<1	<1	<1	<5	<0.2	<0.2	<0.1	<0.1	<0.1
laboratory	PFAS DUP1	0.25-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.1	<0.2	<0.2	<1	<1	<1	<1	<5	<0.2	<0.2	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH104	0.04-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.1	<0.2	<0.2	<1	<1	<1	<1	<5	<0.2	<0.2	<0.1	<0.1	<0.1
laboratory	PFAS DUP3	0.04-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<5	<0.1	<0.1	<0.2	<0.2	<1	<1	<1	<1	<5	<0.2	<0.2	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc

Result outside of QA/QC acceptance criteria Value

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TABLE Q3
GROUNDWATER QA/QC SUMMARY

		Dichlorodifluoromethane	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Trans-1,2-dichloroethene	1,1-dichloroethane	Cis-1,2-dichloroethene	Bromochloromethane	Chloroform	2,2-dichloropropane	1,2-dichloroethane	1,1,1-trichloroethane	1,1-dichloropropene	Cyclohexane	Carbon tetrachloride	Benzene	Dibromomethane	1,2-dichloropropane	Trichloroethene	Bromodichloromethane	trans-1,3-dichloropropene	cis-1,3-dichloropropene	1,1,2-trichloroethane	Toluene	1,3-dichloropropane	Dibromochloromethane	1,2-dibromoethane	Tetrachloroethene	1,1,1,2-tetrachloroethane	Chlorobenzene	Ethylbenzene	Bromoform	m+p-xylene	Styrene	1,1,2,2-tetrachloroethane	o-xylene	1,2,3-trichloropropane	Isopropylbenzene	Bromobenzene	n-propyl benzene	2-chlorotoluene	4-chlorotoluene	1,3,5-trimethyl benzene	Tert-butyl benzene	1,2,4-trimethyl benzene	1,3-dichlorobenzene	Sec-butyl benzene	1,4-dichlorobenzene	4-isopropyl toluene	1,2-dichlorobenzene	n-butyl benzene	1,2-dibromo-3-chloropropane	1,2,4-trichlorobenzene	Hexachlorobutadiene	1,2,3-trichlorobenzene
	PQL Envirolab SYD	*10*	*10*	*10*	*10*	*10*	*10*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
	PQL Envirolab VIC	*10*	*10*	*10*	*10*	*10*	*10*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Intra	MW107	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP1	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW106	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP2	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB-W1	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	0	0	0	0	0	0	0	0	0	0
Blank	13/10/2021																																																																												

		TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*	*0.2*	*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*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
	PQL Envirolab VIC	*10*	*50*	*100*	*100*	*1.0*	*1.0*	*1.0*	*2.0*	*1.0*	*0.2*	*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*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
Intra	MW107	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	2	<0.1	<1	5	3	<0.05	5	47
laboratory	WDUP1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<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	2	0.1	<1	4	3	<0.05	5	38
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.175	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	2	0.075	nc	4.5	3	nc	5	42.5
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	143%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	67%	nc	22%	0%	nc	0%	21%
Inter	MW106	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<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	3	0.2	<1	7	17	<0.05	10	73
laboratory	WDUP2	<10	<50	<100	<100	<1	<1	<1	<2	<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	3	0.3	1	9	19	<0.05	11	76
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	3	0.25	0.75	8	18	nc	10.5	74.5
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	40%	67%	25%	11%	nc	10%	4%
Field	TB-W1	NA	0	0	0	<1	<1	<1	<2	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blank	13/10/2021																																
Trip	TS-W1	-	-	-	-	96%	103%	115%	110%	110%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spike	13/10/2021																																

Result outside of QA/QC acceptance criteria Value

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TABLE Q4
SUMMARY OF PFAS FIELD QA/QC IN GROUNDWATER
Units are µg/L unless stated otherwise.

		Perfluorobutanesulfonic acid	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid - PFHxS	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonic acid PFOS	Perfluorodecanesulfonic acid	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid PFOA	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctanesulfon amide	N-Me perfluorooctanesulfonamid oethanol	N-Et perfluorooctanesulfonamid oethanol	MePer uorooctanesulf-amid oacetic acid	EtPer uorooctanesulf-amid oacetic acid	Total Positive PFHxS & PFOS	Total Positive PFOS & PFOA	Total Positive PFAS
PQL Envirolab		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.5*	*0.5*	*0.5*	*0.5*	*5*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*1*	*1*	*1*	*5*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*
PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.5*	*0.5*	*0.5*	*0.5*	*5*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*1*	*1*	*1*	*5*	*0.2*	*0.2*	*0.1*	*0.1*	*0.1*
Intra laboratory duplicate	MW105	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.01
	WPFASDUP1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.01
	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	PFASTB-W 13/10/2021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.01

Result outside of QA/QC acceptance criteria Value

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ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

CS	Characteristic Situation
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
GSV	Gas Screening Value
H_2S	Hydrogen Sulfide
LEL	Lower Explosive Limit
O_2	Oxygen
>>>	Measured LEL greater than 100%

Flow rates

- If the flow rate measured in the field was zero this has been adjusted to 0.1 L/hr (the minimum measurable flow rate of the instrument). The adjustment is indicated by a green font.
- If the measured flow rate was a negative value this has been converted to a positive value to account for potential flow rates. The adjustment is indicated by a green font.

GSV and CS Values

GSV and CS value calculated using the Modified Wilson Card Classification detailed in the *Assessment and Management* of *Hazardous Ground Gases, NSW EPA 2019* . Table 7 of the guidelines suggests the following adjustments:

- If methane >1% and/or carbon dioxide > 5% for CS1 then CS increased to 2 (adjustment indicated by blue italic font);
- If borehole flow rate > 70L/hr for CS2 then CS increased to 3 (adjustment indicated by blue italic font).

Gas Protection Values

Gas Protection Values derived from Table 8 of the *Assessment and Management of Hazardous Ground Gases, NSW EPA 2019.*

- For large commercial developments if Gas protection value equals 1 and methane concentration >20% then increase to CS3 (adjustment indicated by blue italic font).

GSV, CS and Gas Protection values for the entire Site

These values are calculated using the maximum values ecountered at the site and are not borehole specific.

TABLE HGG1
SUMMARY OF FIELD GAS MEASUREMENTS

Site Use: **Medium/High Density Residential**		Peak HGG (Hazardous Ground Gas) Measurements							Standing Water Level (SWL)	Atmospheric pressure	Calculated Methane Gas Screening Value (GSV)	Calculated Carbon Dioxide Gas Screening Value (GSV)	Methane Characteristic Gas Situtation (CS)	Carbon Dioxide Characteristic Gas Situtation (CS)	Maximum CS value	Gas Protection Guidance Value
		CH_4 (max)	CO_2 (max)	O_2 (min)	CH_4 LEL (max)	H_2S (max)	CO (max)	Flow (max)								
Well Reference	**Sampling Round & Date**	% v/v	% v/v	% v/v	%LEL	ppm	ppm	L/hr	m	mBar	-	-	-	-	-	-
MW101	6/10/2021 (Round 1)	0	0	21.1	0	0	6	0.1	2.29	1004	0.00	0.00	1	1	1	0
MW102	7/10/2021 (Round 1)	0	0	20.3	0	0	6	0.3	3.7	1003	0.00	0.00	1	1	1	0
MW104	5/10/2021 (Round 1)	0	2.1	18.2	0	0	6	0.2	-	998	0.00	0.00	1	1	1	0
MW105	5/10/2021 (Round 1)	0	5.1	12.3	0	0	31	0.2	5.8	1001	0.00	0.01	1	2	2	3
MW106	5/10/2021 (Round 1)	0	4	17.5	0	0	11	0.7	8.26	1001	0.00	0.03	1	1	1	0
MW107	5/10/2021 (Round 1)	0	0	20.6	0	0	4	0.4	8.75	999	0.00	0.00	1	1	1	0
MW109	5/10/2021 (Round 1)	0	10.6	5.1	0	0	61	0.4	7.27	1000	0.00	0.04	1	2	2	3
MW119	5/10/2021 (Round 1)	0	1	20.4	0	0	6	0.4	-	998	0.00	0.00	1	1	1	0
MW101	13/10/2021 (Round 2)	0	4.2	15.2	0	0	6	0.5	3.68	1006	0.00	0.02	1	1	1	0
MW102	13/10/2021 (Round 2)	0	0.1	20.6	0	0	3	0.6	1.35	1007	0.00	0.00	1	1	1	0
MW104	13/10/2021 (Round 2)	0	0.5	20.2	0	0	6	0.5	-	1007	0.00	0.00	1	1	1	0
MW105	13/10/2021 (Round 2)	0	5.5	15.9	0	0	6	0.3	6.24	1007	0.00	0.02	1	2	2	3
MW106	13/10/2021 (Round 2)	0	5.2	16.6	0	0	4	0.3	-	1007	0.00	0.02	1	2	2	3
MW107	13/10/2021 (Round 2)	0	6.4	10.5	0	0	8	0.3	9.9	1008	0.00	0.02	1	2	2	3
MW109	14/10/2021 (Round 2)	0	13.7	2.7	0	0	9	0.5	7.07	1001	0.00	0.07	1	2	2	3
MW119	13/10/2021 (Round 2)	0	3.8	16.6	0	0	6	0.5	-	1006	0.00	0.02	1	1	1	0
MW101	20/10/2021 (Round 3)	0	8.1	12.8	0	0	0	0.1	3.64	1018	0.00	0.01	1	2	2	3
MW102	20/10/2021 (Round 3)	0	0.3	20.9	0	0	0	0.1	4.37	1015	0.00	0.00	1	1	1	0
MW104	20/10/2021 (Round 3)	0	0	21.4	0	0	0	0.1	-	1013	0.00	0.00	1	1	1	0
MW105	20/10/2021 (Round 3)	0	0	20.9	0	0	0	0.7	5.95	1014	0.00	0.00	1	1	1	0
MW106	20/10/2021 (Round 3)	0	5.9	16.4	0	0	10	1.2	9.35	1015	0.00	0.07	1	2	2	3
MW107	20/10/2021 (Round 3)	0	0	20.6	0	0	0	1.6	9.96	1015	0.00	0.00	1	1	1	0
MW109	20/10/2021 (Round 3)	0	13.3	3.2	0	0	0	0.1	8.57	1015	0.00	0.01	1	2	2	3
MW119	20/10/2021 (Round 3)	0	0	20.9	0	0	0	0.4	-	1015	0.00	0.00	1	1	1	0
Total Number of Measurements		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Minimum Value		0	0	2.7	0	0	0	0.1	1.35	998	0	0	1	1	1	0
Maximum Value		0	13.7	21.4	0	0	61	1.6	9.96	1018	0.0	0.1	1	2	2	3
									GSV, CS and Gas Protection values for the entire Site		0.00	0.22	1	2	2	3

Residential not recomended without high level intervention and management
Level 3 Risk Assessment
Consider evacuation and social risks

Level 3 RA

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DSI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration
ACM:	Asbestos Containing Material
ADWG:	AustralianDrinking Water Guidelines
AF:	Asbestos Fines
ANZG	Australian and New Zealand Guidelines
B(a)P:	Benzo(a)pyrene
CEC:	Cation Exchange Capacity
CRC:	Cooperative Research Centre
CT:	Contaminant Threshold
EILs:	Ecological Investigation Levels
ESLs:	Ecological Screening Levels
FA:	Fibrous Asbestos
GIL:	Groundwater Investigation Levels
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
NA:	Not Analysed
NC:	Not Calculated
NEPM:	National Environmental Protection Measure
NHMRC:	National Health and Medical Research Council
NL:	Not Limiting
NSL:	No Set Limit
OCP:	Organochlorine Pesticides
OPP:	Organophosphorus Pesticides
PAHs:	Polycyclic Aromatic Hydrocarbons
ppm:	Parts per million
PCBs:	Polychlorinated Biphenyls
PCE:	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
pH_{KCL} :	pH of filtered 1:20, 1M KCL extract, shaken overnight
pH_{ox} :	pH of filtered 1:20 1M KCl after peroxide digestion
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
SAC:	Site Assessment Criteria
SCC:	Specific Contaminant Concentration
S_{Cr}:	Chromium reducible sulfur
S_{POS}:	Peroxide oxidisable Sulfur
SSA:	Site Specific Assessment
SSHSLs:	Site Specific Health Screening Levels
TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
TB:	Trip Blank
TCA:	1,1,1 Trichloroethane (methyl chloroform)
TCE:	Trichloroethylene (Trichloroethene)
TCLP:	Toxicity Characteristics Leaching Procedure
TPA:	Total Potential Acidity, 1M KCL peroxide digest
TS:	Trip Spike
TRH:	Total Recoverable Hydrocarbons
TSA:	Total Sulfide Acidity (TPA-TAA)
UCL:	Upper Level Confidence Limit on Mean Value
USEPA	United States Environmental Protection Agency
VOCs:	Volatile Organic Compounds
VOCC:	Volatile Organic Chlorinated Compounds
WHO:	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

TABLE A

SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.

HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL VOCs	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos			
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	0.2*	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																					
BH1	0.2-0.3	Fill: silty sandy gravel	<4	<0.4	14	17	22	<0.1	24	34	0.71	<0.5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH1	0.2-0.3	Laboratory duplicate	<4	<0.4	13	22	8	<0.1	41	26	0.1	<0.5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH1	0.2-0.3	Laboratory triplicate	<4	<0.4	15	24	16	<0.1	40	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0.0-0.1	Fill: silty sand	<4	<0.4	11	21	160	0	5	120	1.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH2	2.5-2.7	Sandstone	<4	<0.4	45	10	30	<0.1	4	150	24	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	45	46	4	<0.1	37	26	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH4	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	92	30	4	<0.1	76	41	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH4	0.5-0.7	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
BH4	0.5-0.7	Laboratory duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH4	1.9-2.0	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH4	2.4-2.5	Clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH5	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	59	19	6	<0.1	59	33	0.4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH5	0.7-0.8	Clayey sand	<4	<0.4	7	<1	5	<0.1	<1	<1	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	17	58	2	<0.1	110	36	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH6	0.6-0.7	Sandy clay	<4	<0.4	10	<1	4	<0.1	3	3	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH7	0.0-0.1	Fill: silty sand	5	<0.4	23	13	24	<0.1	13	43	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH8	0.0-0.1	Fill: silty sand	<4	<0.4	11	17	95	0	3	89	4.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH8	0.3-0.4	Sandstone	<4	<0.4	9	5	15	0	2	17	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH9	0.1-0.2	Fill: silty sandy gravel	<4	<0.4	37	15	8	<0.1	38	26	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH10	0.0-0.1	Fill: silty sand	<4	<0.4	7	7	26	<0.1	2	28	0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH11	0.0-0.2	Fill: silty sand	<4	<0.4	5	11	30	<0.1	3	36	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH11	0.0-0.2	Laboratory duplicate	<4	<0.4	6	10	32	<0.1	3	37	1.6	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH12	0.3-0.5	Fill: silty sand	<4	<0.4	15	18	34	<0.1	9	43	4	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH13	0.0-0.2	Fill: silty sand	<4	<0.4	24	47	84	<0.1	19	120	1.4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH14	0.05-0.25	Fill: silty sand	<4	<0.4	23	51	5	<0.1	47	37	1.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH14	1.0-1.2	Fill: clayey sand	6	<0.4	14	23	110	0	7	120	5.4	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH15	0.0-0.3	Fill: silty sand	<4	<0.4	5	6	54	<0.1	2	35	2.7	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH16	0.0-0.15	Fill: silty clayey sand	<4	<0.4	8	31	17	<0.1	18	55	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH16	0.15-0.3	Fill: silty clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH17	0.05-0.25	Fill: sandy gravel	<4	<0.4	88	38	5	<0.1	55	34	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH17	0.7-0.75	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH17	0.75-0.85	Fill: sandy clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH18	0.05-0.25	Fill: sandy gravel	<4	<0.4	76	50	5	<0.1	61	43	0.4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH19	0.0-0.1	Fill: silty sand	17	<0.4	27	100	32	0	9	100	0.72	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH20	0.0-0.2	Fill: silty sand	<4	<0.4	10	16	47	<0.1	4	63	0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH21	0.05-0.3	Fill: silty sand	<4	<0.4	7	27	9	<0.1	23	23	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH21	0.05-0.3	Laboratory duplicate	<4	<0.4	8	36	12	<0.1	27	25	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
BH21	0.6-0.9	Fill: silty sand	<4	<0.4	6	12	75	<0.1	2	110	0.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH21	0.9-1.1	Fill: clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
BH22	0.05-0.2	Fill: sandy gravel	<4	<0.4	70	22	4	0	69	38	0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH23	0.0-0.1	Fill: silty sand	<4	<0.4	12	25	120	<0.1	6	110	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH23	0.3-0.4	Fill: silty clay	<4	<0.4	17	5	28	<0.1	9	19	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH24	0.0-0.3	Fill: silty sand	<4	<0.4	15	25	54	<0.1	25	150	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH25	0.0-0.2	Fill: silty sand	<4	<0.4	11	14	37	<0.1	5	60	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH26	0.0-0.1	Fill: silty sand	4	<0.4	15	10	34	<0.1	5	34	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH27	0.0-0.2	Fill: silty sand	<4	<0.4	9	12	44	0	7	39	0.3	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH28	0.0-0.2	Fill: silty sand	4	<0.4	15	11	41	<0.1	3	40	0.84	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH29	0.0-0.2	Fill: silty sand	<4	<0.4	6	5	13	<0.1	3	21	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH30	0.05-0.15	Fill: sandy gravel	<4	<0.4	82	28	5	<0.1	78	44	0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	Not Detected
BH30	0.05-0.15	Laboratory duplicate	<4	<0.4	70	22	4	<0.1	69	39	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	NA
Total Number of Samples			42	42	42	42	42	42	42	42	41	41	34	34	34	34	34	34	34	34	9	34	26
Maximum Value			17	<PQL	92	100	160	0.2	110	150	24	2.5	<PQL	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	NC

Concentration above the SAC **VALUE**

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TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					**HSL-A/B:LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0.2-0.3	Fill: silty sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH1	0.2-0.3	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH1	0.2-0.3	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA	0
BH2	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	2.5-2.7	Sandstone	2m to <4m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH3	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH4	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH5	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH5	0.7-0.8	Clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.6-0.7	Sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH7	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.3-0.4	Sandstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH9	0.1-0.2	Fill: silty sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH10	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH11	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH11	0.0-0.2	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH12	0.3-0.5	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH13	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH14	0.05-0.25	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH14	1.0-1.2	Fill: clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH15	0.0-0.3	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH16	0.0-0.15	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH17	0.05-0.25	Fill: sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH18	0.05-0.25	Fill: sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH19	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	100	<0.2	<0.5	<1	<3	<1	0
BH20	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH21	0.05-0.3	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH21	0.05-0.3	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH21	0.6-0.9	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH22	0.05-0.2	Fill: sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH23	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	210	<0.2	<0.5	<1	<3	<1	0
BH23	0.3-0.4	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH24	0.0-0.3	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH25	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH26	0.0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH27	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH28	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH29	0.0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH30	0.05-0.15	Fill: sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH30	0.05-0.15	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples					41	41	41	41	41	41	41	42
Maximum Value					<PQL	210	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1
NEPM 2013 HSL Land Use Category					**HSL-A/B:LOW/HIGH DENSITY RESIDENTIAL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH1	0.2-0.3	Fill: silty sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.2-0.3	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.2-0.3	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA
BH2	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	2.5-2.7	Sandstone	2m to <4m	Sand	110	440	0.5	310	NL	95	NL
BH3	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0.7-0.8	Clayey sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6	0.1-0.2	Fill: silty gravelly sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6	0.6-0.7	Sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0.3-0.4	Sandstone	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH9	0.1-0.2	Fill: silty sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH10	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	0.0-0.2	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH12	0.3-0.5	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH13	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH14	0.05-0.25	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH14	1.0-1.2	Fill: clayey sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH15	0.0-0.3	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH16	0.0-0.15	Fill: silty clayey sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH17	0.05-0.25	Fill: sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH18	0.05-0.25	Fill: sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH19	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH20	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH21	0.05-0.3	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH21	0.05-0.3	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH21	0.6-0.9	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH22	0.05-0.2	Fill: sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH23	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH23	0.3-0.4	Fill: silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH24	0.0-0.3	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH25	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH26	0.0-0.1	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH27	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH28	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH29	0.0-0.2	Fill: silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH30	0.05-0.15	Fill: sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH30	0.05-0.15	Laboratory duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3

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TABLE C
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																		
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	$>C_{16}$-C_{34} (F3)	$>C_{34}$-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0.2-0.3	Fill: silty sandy gravel	Coarse	8.3	22.7	8.7	<4	14	17	22	24	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH1	0.2-0.3	Laboratory duplicate	Coarse	8.3	22.7	8.7	<4	13	22	8	41	26	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH1	0.2-0.3	Laboratory triplicate	Coarse	8.3	22.7	8.7	<4	15	24	16	40	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	11	21	160	5	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.2
BH2	2.5-2.7	Sandstone	Coarse	8.3	22.7	8.7	<4	45	10	30	4	150	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	1.8
BH3	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	<4	45	46	4	37	26	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH4	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	<4	92	30	4	76	41	<1	<0.1	<25	<50	120	180	<0.2	<0.5	<1	<3	<0.05
BH5	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	<4	59	19	6	59	33	<1	<0.1	<25	<50	860	310	<0.2	<0.5	<1	<3	0.1
BH5	0.7-0.8	Clayey sand	Coarse	8.3	22.7	8.7	<4	7	<1	5	<1	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH6	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	<4	17	58	2	110	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH6	0.6-0.7	Sandy clay	Coarse	8.3	22.7	8.7	<4	10	<1	4	3	3	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH7	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	5	23	13	24	13	43	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH8	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	11	17	95	3	89	<1	<0.1	<25	<50	200	150	<0.2	<0.5	<1	<3	0.4
BH8	0.3-0.4	Sandstone	Coarse	8.3	22.7	8.7	<4	9	5	15	2	17	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH9	0.1-0.2	Fill: silty sandy gravel	Coarse	8.3	22.7	8.7	<4	37	15	8	38	26	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH10	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	7	7	26	2	28	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH11	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	5	11	30	3	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH11	0.0-0.2	Laboratory duplicate	Coarse	8.3	22.7	8.7	<4	6	10	32	3	37	<1	<0.1	<25	<50	110	<100	<0.2	<0.5	<1	<3	0.1
BH12	0.3-0.5	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	15	18	34	9	43	<1	<0.1	<25	<50	270	270	<0.2	<0.5	<1	<3	0.4
BH13	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	24	47	84	19	120	<1	<0.1	<25	<50	310	240	<0.2	<0.5	<1	<3	0.2
BH14	0.05-0.25	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	23	51	5	47	37	<1	<0.1	<25	<50	480	370	<0.2	<0.5	<1	<3	0.2
BH14	1.0-1.2	Fill: clayey sand	Coarse	8.3	22.7	8.7	6	14	23	110	7	120	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.4
BH15	0.0-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	5	6	54	2	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.2
BH16	0.0-0.15	Fill: silty clayey sand	Coarse	8.3	22.7	8.7	<4	8	31	17	18	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH17	0.05-0.25	Fill: sandy gravel	Coarse	8.3	22.7	8.7	<4	88	38	5	55	34	<1	<0.1	<25	<50	310	470	<0.2	<0.5	<1	<3	<0.05
BH18	0.05-0.25	Fill: sandy gravel	Coarse	8.3	22.7	8.7	<4	76	50	5	61	43	<1	<0.1	<25	<50	200	250	<0.2	<0.5	<1	<3	0.05
BH19	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	17	27	100	32	9	100	<1	<0.1	<25	100	340	240	<0.2	<0.5	<1	<3	0.09
BH20	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	10	16	47	4	63	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.05
BH21	0.05-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	7	27	9	23	23	<1	<0.1	<25	<50	610	850	<0.2	<0.5	<1	<3	<0.05
BH21	0.05-0.3	Laboratory duplicate	Coarse	8.3	22.7	8.7	<4	8	36	12	27	25	<1	<0.1	<25	<50	690	1000	<0.2	<0.5	<1	<3	<0.05
BH21	0.6-0.9	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	6	12	75	2	110	<1	NA	<25	<50	150	<100	<0.2	<0.5	<1	<3	0.09
BH22	0.05-0.2	Fill: sandy gravel	Coarse	8.3	22.7	8.7	<4	70	22	4	69	38	<1	<0.1	<25	<50	130	<100	<0.2	<0.5	<1	<3	<0.05
BH23	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	12	25	120	6	110	<1	<0.1	<25	210	1600	610	<0.2	<0.5	<1	<3	<0.05
BH23	0.3-0.4	Fill: silty clay	Coarse	8.3	22.7	8.7	<4	17	5	28	9	19	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH24	0.0-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	15	25	54	25	150	<1	<0.1	<25	<50	180	150	<0.2	<0.5	<1	<3	<0.05
BH25	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	11	14	37	5	60	<1	<0.1	<25	<50	170	180	<0.2	<0.5	<1	<3	<0.05
BH26	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	4	15	10	34	5	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH27	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	9	12	44	7	39	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.07
BH28	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	4	15	11	41	3	40	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH29	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	<4	6	5	13	3	21	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH30	0.05-0.15	Fill: sandy gravel	Coarse	8.3	22.7	8.7	<4	82	28	5	78	44	<1	<0.1	<25	<50	<100	120	<0.2	<0.5	<1	<3	<0.05
BH30	0.05-0.15	Laboratory duplicate	Coarse	8.3	22.7	8.7	<4	70	22	4	69	39	<1	<0.1	<25	<50	110	140	<0.2	<0.5	<1	<3	<0.05
Total Number of Samples							42	42	42	42	42	42	41	34	41	41	41	41	41	41	41	41	41
Maximum Value							17	92	100	160	110	150	<PQL	<PQL	<PQL	210	1600	1000	<PQL	<PQL	<PQL	<PQL	1.8

Concentration above the SAC

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs							
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	$>C_{16}$-C_{34} (F3)	$>C_{34}$-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0.2-0.3	Fill: silty sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH1	0.2-0.3	Laboratory duplicate	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH1	0.2-0.3	Laboratory triplicate	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	--	--	--	--	--	--	--	--	--	--	--
BH2	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH2	2.5-2.7	Sandstone	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH3	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH4	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH5	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH5	0.7-0.8	Clayey sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH6	0.1-0.2	Fill: silty gravelly sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH6	0.6-0.7	Sandy clay	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH7	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH8	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH8	0.3-0.4	Sandstone	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH9	0.1-0.2	Fill: silty sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH10	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH11	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH11	0.0-0.2	Laboratory duplicate	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH12	0.3-0.5	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH13	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH14	0.05-0.25	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH14	1.0-1.2	Fill: clayey sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH15	0.0-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH16	0.0-0.15	Fill: silty clayey sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH17	0.05-0.25	Fill: sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH18	0.05-0.25	Fill: sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH19	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH20	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH21	0.05-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH21	0.05-0.3	Laboratory duplicate	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH21	0.6-0.9	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH22	0.05-0.2	Fill: sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH23	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH23	0.3-0.4	Fill: silty clay	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	--	180	120	300	2800	50	85	70	105	20
BH24	0.0-0.3	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH25	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH26	0.0-0.1	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH27	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH28	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH29	0.0-0.2	Fill: silty sand	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH30	0.05-0.15	Fill: sandy gravel	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20
BH30	0.05-0.15	Laboratory duplicate	Coarse	8.3	22.7	8.7	100	413	248	1263	355	1082	170	180	180	120	300	2800	50	85	70	105	20

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TABLE D
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	Total VOCs*	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled			C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	0.2	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	4	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	7.2	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	16	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	28.8	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																										
BH1	0.2-0.3	Fill: silty sandy gravel	<4	<0.4	14	17	22	<0.1	24	34	0.71	0.1	<0.1	<0.1	<0.1	0.2	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH1	0.2-0.3	Laboratory duplicate	<4	<0.4	13	22	8	<0.1	**41**	26	0.1	<0.05	<0.1	<0.1	<0.1	0.2	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH1	0.2-0.3	Laboratory triplicate	<4	<0.4	15	24	16	<0.1	40	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0.0-0.1	Fill: silty sand	<4	<0.4	11	21	**160**	0.1	5	120	1.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH2	2.5-2.7	Sandstone	<4	<0.4	45	10	30	<0.1	4	150	24	**1.8**	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH3	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	45	46	4	<0.1	37	26	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH4	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	92	30	4	<0.1	**76**	41	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	140	140	<0.2	<0.5	<1	<3	Not Detected
BH4	0.5-0.7	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0.5-0.7	Laboratory duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	1.9-2.0	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	2.4-2.5	Clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH5	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	59	19	6	<0.1	**59**	33	0.4	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	310	670	980	<0.2	<0.5	<1	<3	Not Detected
BH5	0.7-0.8	Clayey sand	<4	<0.4	7	<1	5	<0.1	<1	<1	<0.05	<0.05	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH6	0.1-0.2	Fill: silty gravelly sand	<4	<0.4	17	58	2	<0.1	**110**	36	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH6	0.6-0.7	Sandy clay	<4	<0.4	10	<1	4	<0.1	3	3	<0.05	<0.05	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH7	0.0-0.1	Fill: silty sand	5	<0.4	23	13	24	<0.1	13	43	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH8	0.0-0.1	Fill: silty sand	<4	<0.4	11	17	95	0.2	3	89	4.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	180	180	<0.2	<0.5	<1	<3	NA
BH8	0.3-0.4	Sandstone	<4	<0.4	9	5	15	0.1	2	17	<0.05	<0.05	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH9	0.1-0.2	Fill: silty sandy gravel	<4	<0.4	37	15	8	<0.1	38	26	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH10	0.0-0.1	Fill: silty sand	<4	<0.4	7	7	26	<0.1	2	28	0.2	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH11	0.0-0.2	Fill: silty sand	<4	<0.4	5	11	30	<0.1	3	36	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH11	0.0-0.2	Laboratory duplicate	<4	<0.4	6	10	32	<0.1	3	37	1.6	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH12	0.3-0.5	Fill: silty sand	<4	<0.4	15	18	34	<0.1	9	43	4	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	120	240	360	<0.2	<0.5	<1	<3	Not Detected
BH13	0.0-0.2	Fill: silty sand	<4	<0.4	24	47	84	<0.1	19	120	1.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	140	260	400	<0.2	<0.5	<1	<3	NA
BH14	0.05-0.25	Fill: silty sand	<4	<0.4	23	51	5	<0.1	**47**	37	1.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	210	390	600	<0.2	<0.5	<1	<3	Not Detected
BH14	1.0-1.2	Fill: clayey sand	6	<0.4	14	23	**110**	0.2	7	120	5.4	0.4	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH15	0.0-0.3	Fill: silty sand	<4	<0.4	5	6	54	<0.1	2	35	2.7	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH16	0.0-0.15	Fill: silty clayey sand	<4	<0.4	8	31	17	<0.1	18	55	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH16	0.15-0.3	Fill: silty clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH17	0.05-0.25	Fill: sandy gravel	<4	<0.4	88	38	5	<0.1	**55**	34	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	380	380	<0.2	<0.5	<1	<3	Not Detected
BH17	0.7-0.75	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH17	0.75-0.85	Fill: sandy clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH18	0.05-0.25	Fill: sandy gravel	<4	<0.4	76	50	5	<0.1	**61**	43	0.4	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	200	200	<0.2	<0.5	<1	<3	Not Detected
BH19	0.0-0.1	Fill: silty sand	17	<0.4	27	100	32	0.2	9	100	0.72	0.09	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	98	170	270	538	<0.2	<0.5	<1	<3	Not Detected
BH20	0.0-0.2	Fill: silty sand	<4	<0.4	10	16	47	<0.1	4	63	0.2	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH21	0.05-0.3	Fill: silty sand	<4	<0.4	7	27	9	<0.1	23	23	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	220	650	870	<0.2	<0.5	<1	<3	Not Detected
BH21	0.05-0.3	Laboratory duplicate	<4	<0.4	8	36	12	<0.1	27	25	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	250	710	960	<0.2	<0.5	<1	<3	NA
BH21	0.6-0.9	Fill: silty sand	<4	<0.4	6	12	75	<0.1	2	110	0.4	0.09	NA	NA	NA	NA	NA	<0.2	<25	<50	<100	170	170	<0.2	<0.5	<1	<3	NA
BH21	0.9-1.1	Fill: clayey sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH22	0.05-0.2	Fill: sandy gravel	<4	<0.4	70	22	4	0.1	**69**	38	0.2	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH23	0.0-0.1	Fill: silty sand	<4	<0.4	12	25	**120**	<0.1	6	110	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	180	1000	900	2080	<0.2	<0.5	<1	<3	Not Detected
BH23	0.3-0.4	Fill: silty clay	<4	<0.4	17	5	28	<0.1	9	19	<0.05	<0.05	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH24	0.0-0.3	Fill: silty sand	<4	<0.4	15	25	54	<0.1	25	150	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	140	140	<0.2	<0.5	<1	<3	Not Detected
BH25	0.0-0.2	Fill: silty sand	<4	<0.4	11	14	37	<0.1	5	60	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	180	180	<0.2	<0.5	<1	<3	Not Detected
BH26	0.0-0.1	Fill: silty sand	4	<0.4	15	10	34	<0.1	5	34	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH27	0.0-0.2	Fill: silty sand	<4	<0.4	9	12	44	0.1	7	39	0.3	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH28	0.0-0.2	Fill: silty sand	4	<0.4	15	11	41	<0.1	3	40	0.84	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH29	0.0-0.2	Fill: silty sand	<4	<0.4	6	5	13	<0.1	3	21	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH30	0.05-0.15	Fill: sandy gravel	<4	<0.4	82	28	5	<0.1	**78**	44	0.2	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH30	0.05-0.15	Laboratory duplicate	<4	<0.4	70	22	4	<0.1	**69**	39	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	100	100	<0.2	<0.5	<1	<3	NA
Total Number of samples			42	42	42	42	42	42	42	42	41	41	34	34	34	34	34	9	41	41	41	41	41	41	41	41	41	26
Maximum Value			17	<PQL	92	100	160	0.2	110	150	24	1.8	<PQL	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	180	1000	900	2080	<PQL	<PQL	<PQL	<PQL	NC

*The VOC vinyl chloride has the lowest classification criteria for waste, therefore it has been adopted it as the criteria for total VOCs

Concentration above the CT1 **VALUE**
Concentration above SCC1 **VALUE**
Concentration above the SCC2 **VALUE**

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TABLE E
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Lead	Nickel
PQL - Envirolab Services			0.03	0.02
TCLP1 - General Solid Waste			5	2
TCLP2 - Restricted Solid Waste			20	8
TCLP3 - Hazardous Waste			>20	>8
Sample Reference	**Sample Depth**	**Sample Description**		
BH2	0.0-0.1	Fill: silty sand	0.03	NA
BH4	0.1-0.2	Fill: silty gravelly sand	NA	0.06
BH6	0.1-0.2	Fill: silty gravelly sand	NA	0.1
BH18	0.05-0.25	Fill: sandy gravel	NA	0.02
BH22	0.05-0.2	Fill: sandy gravel	NA	0.04
BH23	0.0-0.1	Fill: silty sand	<0.03	NA
BH30	0.05-0.15	Fill: sandy gravel	NA	0.1
BH30	0.05-0.15	Laboratory duplicate	NA	0.09
Total Number of samples			2	6
Maximum Value			0.03	0.1

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

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TABLE F
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.2-0.3	Coarse	<25	<50	<100	<100
BH1	0.2-0.3	Coarse	<25	<50	<100	<100
BH1	0.2-0.3	Coarse	NA	NA	NA	NA
BH2	0.0-0.1	Coarse	<25	<50	<100	<100
BH2	2.5-2.7	Coarse	<25	<50	<100	<100
BH3	0.1-0.2	Coarse	<25	<50	<100	<100
BH4	0.1-0.2	Coarse	<25	<50	120	180
BH5	0.1-0.2	Coarse	<25	<50	860	310
BH5	0.7-0.8	Coarse	<25	<50	<100	<100
BH6	0.1-0.2	Coarse	<25	<50	<100	<100
BH6	0.6-0.7	Coarse	<25	<50	<100	<100
BH7	0.0-0.1	Coarse	<25	<50	<100	<100
BH8	0.0-0.1	Coarse	<25	<50	200	150
BH8	0.3-0.4	Coarse	<25	<50	<100	<100
BH9	0.1-0.2	Coarse	<25	<50	<100	<100
BH10	0.0-0.1	Coarse	<25	<50	<100	<100
BH11	0.0-0.2	Coarse	<25	<50	<100	<100
BH11	0.0-0.2	Coarse	<25	<50	110	<100
BH12	0.3-0.5	Coarse	<25	<50	270	270
BH13	0.0-0.2	Coarse	<25	<50	310	240
BH14	0.05-0.25	Coarse	<25	<50	480	370
BH14	1.0-1.2	Coarse	<25	<50	<100	<100
BH15	0.0-0.3	Coarse	<25	<50	<100	<100
BH16	0.0-0.15	Coarse	<25	<50	<100	<100
BH17	0.05-0.25	Coarse	<25	<50	310	470
BH18	0.05-0.25	Coarse	<25	<50	200	250
BH19	0.0-0.1	Coarse	<25	100	340	240
BH20	0.0-0.2	Coarse	<25	<50	<100	<100
BH21	0.05-0.3	Coarse	<25	<50	610	850
BH21	0.05-0.3	Coarse	<25	<50	690	1000
BH21	0.6-0.9	Coarse	<25	<50	150	<100
BH22	0.05-0.2	Coarse	<25	<50	130	<100
BH23	0.0-0.1	Coarse	<25	210	1600	610
BH23	0.3-0.4	Coarse	<25	<50	<100	<100
BH24	0.0-0.3	Coarse	<25	<50	180	150
BH25	0.0-0.2	Coarse	<25	<50	170	180
BH26	0.0-0.1	Coarse	<25	<50	<100	<100
BH27	0.0-0.2	Coarse	<25	<50	<100	<100
BH28	0.0-0.2	Coarse	<25	<50	<100	<100
BH29	0.0-0.2	Coarse	<25	<50	<100	<100
BH30	0.05-0.15	Coarse	<25	<50	<100	120
BH30	0.05-0.15	Coarse	<25	<50	110	140
Total Number of Samples			41	41	41	41
Maximum Value			<PQL	210	1600	1000
Concentration above the SAC			**VALUE**			

MANAGEMENT LIMIT ASSESSMENT CRITERIA

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.2-0.3	Coarse	700	1000	2500	10000
BH1	0.2-0.3	Coarse	700	1000	2500	10000
BH1	0.2-0.3	Coarse	--	--	--	--
BH2	0.0-0.1	Coarse	700	1000	2500	10000
BH2	2.5-2.7	Coarse	700	1000	2500	10000
BH3	0.1-0.2	Coarse	700	1000	2500	10000
BH4	0.1-0.2	Coarse	700	1000	2500	10000
BH5	0.1-0.2	Coarse	700	1000	2500	10000
BH5	0.7-0.8	Coarse	700	1000	2500	10000
BH6	0.1-0.2	Coarse	700	1000	2500	10000
BH6	0.6-0.7	Coarse	700	1000	2500	10000
BH7	0.0-0.1	Coarse	700	1000	2500	10000
BH8	0.0-0.1	Coarse	700	1000	2500	10000
BH8	0.3-0.4	Coarse	700	1000	2500	10000
BH9	0.1-0.2	Coarse	700	1000	2500	10000
BH10	0.0-0.1	Coarse	700	1000	2500	10000
BH11	0.0-0.2	Coarse	700	1000	2500	10000
BH11	0.0-0.2	Coarse	700	1000	2500	10000
BH12	0.3-0.5	Coarse	700	1000	2500	10000
BH13	0.0-0.2	Coarse	700	1000	2500	10000
BH14	0.05-0.25	Coarse	700	1000	2500	10000
BH14	1.0-1.2	Coarse	700	1000	2500	10000
BH15	0.0-0.3	Coarse	700	1000	2500	10000
BH16	0.0-0.15	Coarse	700	1000	2500	10000
BH17	0.05-0.25	Coarse	700	1000	2500	10000
BH18	0.05-0.25	Coarse	700	1000	2500	10000
BH19	0.0-0.1	Coarse	700	1000	2500	10000
BH20	0.0-0.2	Coarse	700	1000	2500	10000
BH21	0.05-0.3	Coarse	700	1000	2500	10000
BH21	0.05-0.3	Coarse	700	1000	2500	10000
BH21	0.6-0.9	Coarse	700	1000	2500	10000
BH22	0.05-0.2	Coarse	700	1000	2500	10000
BH23	0.0-0.1	Coarse	700	1000	2500	10000
BH23	0.3-0.4	Coarse	700	1000	2500	10000
BH24	0.0-0.3	Coarse	700	1000	2500	10000
BH25	0.0-0.2	Coarse	700	1000	2500	10000
BH26	0.0-0.1	Coarse	700	1000	2500	10000
BH27	0.0-0.2	Coarse	700	1000	2500	10000
BH28	0.0-0.2	Coarse	700	1000	2500	10000
BH29	0.0-0.2	Coarse	700	1000	2500	10000
BH30	0.05-0.15	Coarse	700	1000	2500	10000
BH30	0.05-0.15	Coarse	700	1000	2500	10000

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TABLE G
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		82,000	62,000	85,000	120,000	1,100	120,000	85,000	130,000	29,000	
Site Use		**Intrusive Maintenance Worker - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0.2-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH1	0.2-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH1	0.2-0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BH2	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	2.5-2.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH3	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH4	0.1-0.2	<25	<50	120	180	<0.2	<0.5	<1	<3	<1	0
BH5	0.1-0.2	<25	<50	860	310	<0.2	<0.5	<1	<3	<1	0
BH5	0.7-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH6	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH6	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH7	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	<25	<50	200	150	<0.2	<0.5	<1	<3	<1	0
BH8	0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH9	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH10	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH11	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH11	0.0-0.2	<25	<50	110	<100	<0.2	<0.5	<1	<3	<1	0
BH12	0.3-0.5	<25	<50	270	270	<0.2	<0.5	<1	<3	<1	0
BH13	0.0-0.2	<25	<50	310	240	<0.2	<0.5	<1	<3	<1	0
BH14	0.05-0.25	<25	<50	480	370	<0.2	<0.5	<1	<3	<1	0
BH14	1.0-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH15	0.0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH16	0.0-0.15	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH17	0.05-0.25	<25	<50	310	470	<0.2	<0.5	<1	<3	<1	0
BH18	0.05-0.25	<25	<50	200	250	<0.2	<0.5	<1	<3	<1	0
BH19	0.0-0.1	<25	100	340	240	<0.2	<0.5	<1	<3	<1	0
BH20	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH21	0.05-0.3	<25	<50	610	850	<0.2	<0.5	<1	<3	<1	0
BH21	0.05-0.3	<25	<50	690	1000	<0.2	<0.5	<1	<3	<1	0
BH21	0.6-0.9	<25	<50	150	<100	<0.2	<0.5	<1	<3	<1	0
BH22	0.05-0.2	<25	<50	130	<100	<0.2	<0.5	<1	<3	<1	0
BH23	0.0-0.1	<25	210	1600	610	<0.2	<0.5	<1	<3	<1	0
BH23	0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH24	0.0-0.3	<25	<50	180	150	<0.2	<0.5	<1	<3	<1	0
BH25	0.0-0.2	<25	<50	170	180	<0.2	<0.5	<1	<3	<1	0
BH26	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH27	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH28	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH29	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH30	0.05-0.15	<25	<50	<100	120	<0.2	<0.5	<1	<3	<1	0
BH30	0.05-0.15	<25	<50	110	140	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples		41	41	41	41	41	41	41	41	41	42
Maximum Value		<PQL	210	1600	1000	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

TABLE H
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

						FIELD DATA									LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0.001**											**0.01**	**0.001**
22/07/2019	BH1	0.2-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/07/2019	BH1	0.5-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/07/2019	BH1	0.75-0.95	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/07/2019	BH1	1.6-1.8	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/07/2019	BH1	2.8-3.0	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH2	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	222520	BH2	0.0-0.1	538.87	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
23/07/2019	BH2	0.6-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH2	1.0-1.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH3	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH3	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH3	0.5-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH4	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH4	0.2-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH4	0.5-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH4	1.3-1.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH4	1.9-2.0	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH5	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH5	0.2-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH6	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH6	0.3-0.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23/07/2019	BH7	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	222520	BH7	0.0-0.1	413.74	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
24/07/2019	BH8	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	222520	BH8	0.0-0.1	381.85	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
24/07/2019	BH9	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH9	0.4-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH9	0.6-0.9	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH10	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH11	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH11	0.2-0.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH11	0.4-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	1.0-1.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	2.0-2.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	2.5-2.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	2.8-3.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH12	3.8-4.0	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH13	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	222520	BH13	0.0-0.2	661.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
25/07/2019	BH13	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	0.05-0.25	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	0.4-.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	0.65-0.8	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	1.0-1.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	1.4-1.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH14	2.3-2.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH15	0.0-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH15	0.4-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH15	0.5-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH15	0.9-1.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH16	0.0-0.15	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH16	0.15-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH16	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH17	0.05-0.25	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH17	0.25-0.45	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH17	0.7-0.75	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH17	0.75-0.85	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH18	0.05-0.25	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH18	0.25-0.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH18	0.4-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH18	0.6-0.8	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH18	0.9-1.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH19	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH19	0.1-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH20	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH21	0.05-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH21	0.3-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH21	0.6-0.9	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH22	0.05-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH22	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH23	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/07/2019	BH23	0.3-0.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH24	0.0-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH24	0.3-0.5	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH24	0.5-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH25	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH26	0.0-0.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH26	0.1-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH27	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH27	0.25-0.45	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH28	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH28	0.2-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH29	0.0-0.2	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH29	0.3-0.4	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH29	0.5-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH29	0.8-0.9	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH29	0.9-1.1	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH30	0.05-0.15	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH30	0.15-0.3	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH30	0.3-0.45	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH30	0.45-0.6	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24/07/2019	BH30	0.6-0.7	No	NA	NA	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

TABLE I
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services				10	50	1	1	1	3	1	
NEPM 2013 - Land Use Category				**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW7	6.35	4m to <8m	Sand	19	300	<1	4	<1	15	<1	24.1
Total Number of Samples				1	1	1	1	1	1	1	1
Maximum Value				19	300	<PQL	4	<PQL	15	<PQL	24.1

Concentration above the SAC — VALUE
Site specific assesment (SSA) required — VALUE

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

HSL GROUNDWATER ASSESSMENT CRITERIA

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services				10	50	1	1	1	3	1
NEPM 2013 - Land Use Category				**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**						
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**							
MW7	6.35	4m to <8m	Sand	1000	1000	800	NL	NL	NL	NL

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TABLE J

SUMMARY OF GROUNDAWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC

All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES MW7 1/08/2019
Inorganic Compounds and Parameters			
pH	0.1	6.5 - 8.5	6.7
Electrical Conductivity (µS/cm)	1	NSL	270
Metals and Metalloids			
Arsenic (As III)	1	24	<1
Cadmium	0.1	0.2	<0.1
Chromium (VI)	1	1	<1
Copper	1	1.4	**2**
Lead	1	3.4	<1
Total Mercury (inorganic)	0.05	0.06	<0.05
Nickel	1	11	2
Zinc	1	8	4
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)			
Benzene	1	950	<1
Toluene	1	180	4
Ethylbenzene	1	80	<1
m+p-xylene	2	75	8
o-xylene	1	350	7
Total xylenes	2	NSL	15
Volatile Organic Compounds (VOCs), including chlorinated VOCs			
Dichlorodifluoromethane	10	NSL	<10
Chloromethane	10	NSL	<10
Vinyl Chloride	10	100	<10
Bromomethane	10	NSL	<10
Chloroethane	10	NSL	<10
Trichlorofluoromethane	10	NSL	<10
1,1-Dichloroethene	1	700	<1
Trans-1,2-dichloroethene	1	NSL	<1
1,1-dichloroethane	1	90	<1
Cis-1,2-dichloroethene	1	NSL	<1
Bromochloromethane	1	NSL	<1
Chloroform	1	370	18
2,2-dichloropropane	1	NSL	<1
1,2-dichloroethane	1	1900	<1
1,1,1-trichloroethane	1	270	<1
1,1-dichloropropene	1	NSL	<1
Cyclohexane	1	NSL	<1
Carbon tetrachloride	1	240	<1
Benzene	1	see BTEX	<1
Dibromomethane	1	NSL	<1
1,2-dichloropropane	1	900	<1
Trichloroethene	1	NSL	<1
Bromodichloromethane	1	NSL	14
trans-1,3-dichloropropene	1	NSL	<1
cis-1,3-dichloropropene	1	NSL	<1
1,1,2-trichloroethane	1	6500	<1
Toluene	1	see BTEX	4
1,3-dichloropropane	1	1100	<1
Dibromochloromethane	1	NSL	6
1,2-dibromoethane	1	NSL	<1
Tetrachloroethene	1	70	<1
1,1,1,2-tetrachloroethane	1	NSL	<1
Chlorobenzene	1	55	<1
Ethylbenzene	1	see BTEX	<1
Bromoform	1	NSL	<1
m+p-xylene	2	see BTEX	8
Styrene	1	NSL	<1
1,1,2,2-tetrachloroethane	1	400	<1
o-xylene	1	see BTEX	7
1,2,3-trichloropropane	1	NSL	<1
Isopropylbenzene	1	30	<1
Bromobenzene	1	NSL	<1
n-propyl benzene	1	NSL	<1
2-chlorotoluene	1	NSL	<1
4-chlorotoluene	1	NSL	<1
1,3,5-trimethyl benzene	1	NSL	3
Tert-butyl benzene	1	NSL	<1
1,2,4-trimethyl benzene	1	NSL	9
1,3-dichlorobenzene	1	260	<1
Sec-butyl benzene	1	NSL	<1
1,4-dichlorobenzene	1	60	<1
4-isopropyl toluene	1	NSL	1
1,2-dichlorobenzene	1	160	<1
n-butyl benzene	1	NSL	<1
1,2-dibromo-3-chloropropane	1	NSL	<1
1,2,4-trichlorobenzene	1	85	<1
Hexachlorobutadiene	1	NSL	<1
1,2,3-trichlorobenzene	1	3	<1
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	0.2	16	<0.2
Acenaphthylene	0.1	NSL	<0.1
Acenaphthene	0.1	NSL	<0.1
Fluorene	0.1	NSL	<0.1
Phenanthrene	0.1	0.6	<0.1
Anthracene	**0.1**	0.01	<0.1
Fluoranthene	0.1	1	<0.1
Pyrene	0.1	NSL	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1
Chrysene	0.1	NSL	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1

Concentration above the GIL — VALUE
PQL exceeds GIL — **BOLD/RED**

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TABLE K

SUMMARY OF GROUNDAWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs

All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2000 Recreational	NHMRC ADWG 2011	SAMPLES MW7 1/08/2019
Inorganic Compounds and Parameters				
pH	0.1	6.5 - 8.5	6.5 - 8.5	6.7
Electrical Conductivity (µS/cm)	1	NSL	NSL	270
Metals and Metalloids				
Arsenic (As III)	1	50	10	<1
Cadmium	0.1	5	2	<0.1
Chromium (total)	1	50	50	<1
Copper	1	1000	2000	2
Lead	1	50	10	<1
Total Mercury (inorganic)	0.05	1	1	<0.05
Nickel	1	100	20	2
Zinc	1	5000	3000	4
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)				
Benzene	1	10	1	<1
Toluene	1	NSL	800	4
Ethylbenzene	1	NSL	300	<1
m+p-xylene	2	NSL	NSL	8
o-xylene	1	NSL	NSL	7
Total xylenes	2	NSL	600	15
Volatile Organic Compounds (VOCs), including chlorinated VOCs				
Dichlorodifluoromethane	10	NSL	NSL	<10
Chloromethane	10	NSL	NSL	<10
Vinyl Chloride	10	NSL	0.3	<10
Bromomethane	10	NSL	NSL	<10
Chloroethane	10	NSL	NSL	<10
Trichlorofluoromethane	10	NSL	NSL	<10
1,1-Dichloroethene	**1**	0.3	30	<1
Trans-1,2-dichloroethene	1	NSL	NSL	<1
1,1-dichloroethane	1	NSL	NSL	<1
Cis-1,2-dichloroethene	1	NSL	NSL	<1
Bromochloromethane	1	NSL	250	<1
Chloroform	1	NSL		18
2,2-dichloropropane	1	NSL	NSL	<1
1,2-dichloroethane	1	10	3	<1
1,1,1-trichloroethane	1	NSL	NSL	<1
1,1-dichloropropene	1	NSL	NSL	<1
Cyclohexane	1	NSL	NSL	<1
Carbon tetrachloride	1	3	NSL	<1
Benzene	1	NSL	see BTEX	<1
Dibromomethane	1	NSL	NSL	<1
1,2-dichloropropane	1	NSL	NSL	<1
Trichloroethene	1	30	NSL	<1
Bromodichloromethane	1	NSL	NSL	14
trans-1,3-dichloropropene	1	NSL	NSL	<1
cis-1,3-dichloropropene	1	NSL	NSL	<1
1,1,2-trichloroethane	1	NSL	NSL	<1
Toluene	1	NSL	see BTEX	4
1,3-dichloropropane	1	NSL	NSL	<1
Dibromochloromethane	1	NSL	NSL	6
1,2-dibromoethane	1	NSL	NSL	<1
Tetrachloroethene	1	10	NSL	<1
1,1,1,2-tetrachloroethane	1	NSL	NSL	<1
Chlorobenzene	1	NSL	300	<1
Ethylbenzene	1	NSL	see BTEX	<1
Bromoform	1	NSL	NSL	<1
m+p-xylene	2	NSL	see BTEX	8
Styrene	1	NSL	NSL	<1
1,1,2,2-tetrachloroethane	1	NSL	NSL	<1
o-xylene	1	NSL	see BTEX	7
1,2,3-trichloropropane	1	NSL	NSL	<1
Isopropylbenzene	1	NSL	NSL	<1
Bromobenzene	1	NSL	NSL	<1
n-propyl benzene	1	NSL	NSL	<1
2-chlorotoluene	1	NSL	NSL	<1
4-chlorotoluene	1	NSL	NSL	<1
1,3,5-trimethyl benzene	1	NSL	NSL	3
Tert-butyl benzene	1	NSL	NSL	<1
1,2,4-trimethyl benzene	1	NSL	NSL	9
1,3-dichlorobenzene	1	NSL	300	<1
Sec-butyl benzene	1	NSL	NSL	<1
1,4-dichlorobenzene	1	NSL	40	<1
4-isopropyl toluene	1	NSL	NSL	1
1,2-dichlorobenzene	1	NSL	1500	<1
n-butyl benzene	1	NSL	NSL	<1
1,2-dibromo-3-chloropropane	1	NSL	NSL	<1
1,2,4-trichlorobenzene	1	NSL	NSL	<1
Hexachlorobutadiene	1	NSL	NSL	<1
1,2,3-trichlorobenzene	1	NSL	NSL	<1
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	0.2	NSL	NSL	<0.2
Acenaphthylene	0.1	NSL	NSL	<0.1
Acenaphthene	0.1	NSL	NSL	<0.1
Fluorene	0.1	NSL	NSL	<0.1
Phenanthrene	0.1	NSL	NSL	<0.1
Anthracene	0.1	NSL	NSL	<0.1
Fluoranthene	0.1	NSL	NSL	<0.1
Pyrene	0.1	NSL	NSL	<0.1
Benzo(a)anthracene	0.1	NSL	NSL	<0.1
Chrysene	0.1	NSL	NSL	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	NSL	<0.2
Benzo(a)pyrene	**0.1**	0.01	0.01	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	NSL	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	NSL	<0.1
Benzo(g,h,i)perylene	0.1	NSL	NSL	<0.1

Concentration above the GIL — VALUE
PQL exceeds GIL — **BOLD/RED**

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TABLE L-1
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH1 (0.2-0.3)	Arsenic	4	<4	<4	NC	NC
Dup Ref = DUPKT1	Cadmium	0.4	<0.4	<0.4	NC	NC
	Chromium	1	14	12	13.0	15
Envirolab Report: 222520	Copper	1	22	32	27.0	37
	Lead	1	22	17	19.5	26
	Mercury	0.1	<0.1	<0.1	NC	NC
	Nickel	1	41	46	43.5	11
	Zinc	1	34	33	33.5	3
	Naphthalene	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	<0.1	<0.1	NC	NC
	Anthracene	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.2	<0.1	0.1	120
	Pyrene	0.1	0.2	0.1	0.2	67
	Benzo(a)anthracene	0.1	<0.1	<0.1	NC	NC
	Chrysene	0.1	0.2	<0.1	0.1	120
	Benzo(b,j+k)fluoranthene	0.2	<0.2	<0.2	NC	NC
	Benzo(a)pyrene	0.05	0.1	0.05	0.1	67
	Indeno(123-cd)pyrene	0.1	<0.1	<0.1	NC	NC
	Dibenzo(ah)anthracene	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	<0.1	<0.1	NC	NC
	TRH C_6-C_{10} (F1)	25	<25	<25	NC	NC
	TRH >C_{10}-C_{16} (F2)	50	<50	<50	NC	NC
	TRH >C_{16}-C_{34} (F3)	100	<100	<100	NC	NC
	TRH >C_{34}-C_{40} (F4)	100	<100	<100	NC	NC
	Benzene	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	<1	<1	NC	NC
	m+p-xylene	2	<2	<2	NC	NC
	o-xylene	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

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TABLE L-2
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH26 (0.0-0.1)	Arsenic	4	4	<4	3.0	67
Dup Ref = DUPMP1	Cadmium	0.4	<0.4	<0.4	NC	NC
	Chromium	1	15	12	13.5	22
Envirolab Report: 222520	Copper	1	10	10	10.0	0
	Lead	1	34	32	33.0	6
	Mercury	0.1	<0.1	<0.1	NC	NC
	Nickel	1	5	4	4.5	22
	Zinc	1	34	34	34.0	0
	Naphthalene	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	<0.1	<0.1	NC	NC
	Anthracene	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	<0.1	<0.1	NC	NC
	Pyrene	0.1	<0.1	<0.1	NC	NC
	Benzo(a)anthracene	0.1	<0.1	<0.1	NC	NC
	Chrysene	0.1	<0.1	<0.1	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	<0.2	<0.2	NC	NC
	Benzo(a)pyrene	0.05	<0.05	<0.05	NC	NC
	Indeno(123-cd)pyrene	0.1	<0.1	<0.1	NC	NC
	Dibenzo(ah)anthracene	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	<0.1	<0.1	NC	NC
	TRH C6-C10 (F1)	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	<50	<50	NC	NC
	TRH >C16-C34 (F3)	100	<100	180	115.0	113
	TRH >C34-C40 (F4)	100	<100	110	80.0	75
	Benzene	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	<1	<1	NC	NC
	m+p-xylene	2	<2	<2	NC	NC
	o-xylene	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

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TABLE M-1
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH10 (0.0-0.1)	Arsenic	4	4	<4	4	3.0	67
Dup Ref = DUPKT2	Cadmium	0.4	0.4	<0.4	<0.4	NC	NC
	Chromium	1	1	7	13	10.0	60
Envirolab Report: 222520	Copper	1	1	7	16	11.5	78
Envirolab VIC Report: 17565	Lead	1	1	26	88	57.0	109
	Mercury	0.1	0.1	<0.1	0.2	0.1	120
	Nickel	1	1	2	2	2.0	0
	Zinc	1	1	28	78	53.0	94
	Naphthalene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	0.1	<0.1	0.3	0.2	143
	Anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.1	0.1	0.8	0.5	156
	Pyrene	0.1	0.1	0.1	0.8	0.5	156
	Benzo(a)anthracene	0.1	0.1	<0.1	0.4	0.2	156
	Chrysene	0.1	0.1	<0.1	0.4	0.2	156
	Benzo(b,j+k)fluoranthene	0.2	0.2	<0.2	0.8	0.5	156
	Benzo(a)pyrene	0.05	0.05	<0.05	0.45	0.2	179
	Indeno(123-cd)pyrene	0.1	0.1	<0.1	0.3	0.2	143
	Dibenzo(ah)anthracene	0.1	0.1	<0.1	0.1	0.1	67
	Benzo(ghi)perylene	0.1	0.1	<0.1	0.3	0.2	143
	TRH C6-C10 (F1)	25	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	50	<50	<50	NC	NC
	TRH >C16-C34 (F3)	100	100	<100	160	105.0	105
	TRH >C34-C40 (F4)	100	100	<100	<100	NC	NC
	Benzene	0.2	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	1	<1	<1	NC	NC
	m+p-xylene	2	2	<2	<2	NC	NC
	o-xylene	1	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

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TABLE M-2
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH24 (0.0-0.3)	Arsenic	4	4	<4	<4	NC	NC
Dup Ref = DUPMP2	Cadmium	0.4	0.4	<0.4	<0.4	NC	NC
	Chromium	1	1	15	16	15.5	6
Envirolab Report: 222520	Copper	1	1	25	27	26.0	8
Envirolab VIC Report: 17565	Lead	1	1	54	57	55.5	5
	Mercury	0.1	0.1	<0.1	<0.1	NC	NC
	Nickel	1	1	25	29	27.0	15
	Zinc	1	1	150	150	150.0	0
	Naphthalene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	0.1	<0.1	<0.1	NC	NC
	Acenaphthene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	0.1	<0.1	<0.1	NC	NC
	Anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.1	<0.1	<0.1	NC	NC
	Pyrene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(a)anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Chrysene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	0.2	<0.2	<0.2	NC	NC
	Benzo(a)pyrene	0.05	0.05	<0.05	<0.05	NC	NC
	Indeno(123-cd)pyrene	0.1	0.1	<0.1	<0.1	NC	NC
	Dibenzo(ah)anthracene	0.1	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	0.1	<0.1	<0.1	NC	NC
	TRH C6-C10 (F1)	25	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	50	<50	<100	NC	NC
	TRH >C16-C34 (F3)	100	100	180	<100	115.0	113
	TRH >C34-C40 (F4)	100	100	150	<100	100.0	100
	Benzene	0.2	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	1	<1	<1	NC	NC
	m+p-xylene	2	2	<2	<2	NC	NC
	o-xylene	1	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

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TABLE N

SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB1[S]	TS[S]
			22/07/2019	1/08/2019
	mg/kg	µg/L	mg/kg	% Recovery
Benzene	0.2	0.2	<0.2	131%
Toluene	0.5	0.5	<0.5	120%
Ethylbenzene	1	1	<1	120%
m+p-xylene	2	2	<2	116%
o-xylene	1	1	<1	118%

Explanation:

[W] Sample type (water)

[S] Sample type (sand)

BTEX concentrations in trip spikes are presented as % recovery

Values above PQLs/Acceptance criteria **VALUE**

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Appendix D: Borehole Logs

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BOREHOLE LOG

Borehole No. 101 1 / 2

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~42.1 m

Date: 6/10/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						42			-	ASPHALTIC CONCRETE: 20mm.t	M			APPEARS MODERATELY COMPACTED
					N > 9 9,9/ 100mm REFUSAL					FILL: Silty gravelly sand, fine to medium grained, grey, fine to medium grained, igneous gravel, trace of brick fragments.				SCREEN: 5.2kg 0.02-0.4m NO FCF
						41	1			FILL: Silty sand, fine to medium grained, brown, trace of sandstone gravel, clay nodules, glass, plastic and earthenware fragments.				SCREEN: 6.7kg 0.4-1.4m NO FCF
					N = 11 3,5,6									SCREEN: 1.4-1.7m NO FCF
						40	2		-	Extremely Weathered sandstone: silty clayey SAND, fine to medium grained, yellow brown.	XW	(D - VD)		HAWKESBURY SANDSTONE
ON 20/10/21										SANDSTONE: fine to medium grained, yellow brown and orange brown.	DW	L - M		LOW TO MODERATE 'TC' BIT RESISTANCE
						39	3							
						38	4							
						37	5			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 7.5m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 1.2m TO 7.5m. CASING 0m TO 1.2m. 2mm SAND FILTER PACK 1.0m TO 7.5m. BENTONITE SEAL 0.25m TO 1.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						36	6							

JK 9.02.4 LIB GLB Log JK AUGERHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:46 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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CORED BOREHOLE LOG

Borehole No. 101

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~42.1 m

Date: 6/10/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		38			START CORING AT 4.37m					ROCK STRENGTH BASED ON TACTILE ASSESSMENT	
100% RETURN		37	5		SANDSTONE: medium grained, yellow brown and orange brown, bedded at 0-25°.	HW - MW	(L - M)			(4.95m) Be, 0°, P, R, Fe Ct	Hawkesbury Sandstone
		36	6		SANDSTONE: fine to medium grained, light grey.	FR	(M - H)			(5.77m) CS, 0°, 5 mm.t	
		35	7								
		34	8		END OF BOREHOLE AT 7.50 m						
		33	9								
		32	10								

JK 9.02.4 LIB GLB Log JK CORED BOREHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:46 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 102 1 / 2

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~37.7 m

Date: 6/10/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING									-	ASPHALTIC CONCRETE: 50mm.t FILL: Silty gravely sand, fine to medium grained, brown, fine to medium grained igneous gravel, trace of concrete fragments and slag.	M			APPEARS POORLY TO MODERATELY COMPACTED
					N = 7 2,4,3	37	1			FILL: Silty clay, low to medium plasticity, grey and brown, trace of igneous, ironstone and siltstone gravel, and slag.	w<PL			SCREEN: 7.60kg 0.05-0.5m NO FCF SCREEN: 9.5kg 0.5-1.2m NO FCF
						36	2		-	SANDSTONE: fine to medium grained, orange brown.	DW	(L - M)		HAWKESBURY SANDSTONE LOW TO MODERATE 'TC' BIT RESISTANCE
						35	3			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 6.1m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 1.2m TO 6.1m. CASING 0m TO 1.2m. 2mm SAND FILTER PACK 1.0m TO 6.1m. BENTONITE SEAL 0.25m TO 1.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						34	4							
						33	5							
						32	6							
						31								

JK 9.02.4 LIB.GLB Log JK AUGERHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:46 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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CORED BOREHOLE LOG

Borehole No. 102

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~37.7 m

Date: 6/10/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ VL 0.1 L 0.3 M 1 H 3 VH 10 EH	DEFECT DETAILS SPACING (mm) 600 200 60 20	DEFECT DETAILS DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
		36	2		START CORING AT 2.05m					ROCK STRENGTH BASED ON TACTILE ASSESSMENT	
100% RETURN ON 20/10/21		35 34 33 32	3 4 5 6		SANDSTONE: medium grained, light grey and yellow brown, bedded at 0-20°.	MW	(L - M)				Hawkesbury Sandstone
					SANDSTONE: fine to medium grained, light grey, trace of dark grey laminae, bedded at 0-30°.	FR	(M)			(4.58m) Be, 10°, P, R, Cn (5.27m) CS, 0 - 10°, 75 mm.t	
		31 30	7		END OF BOREHOLE AT 6.12 m						

JK 9.02.4 LIB GLB Log JK CORED BOREHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:46 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. 103 **1/1**

PFASDUP5: 0.03-0.4m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 38.8m

Date: 6/10/2021 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION	■		■	■	■		0		-	ASPHALTIC CONCRETE: 30mm.t	M			SCREEN: 7.4kg 0.03-0.05m NO FCF
	■			■		N = 16 3,3,13			CL-CI	FILL: Silty gravelly sand, fine to medium grained, brown, fine to medium grained, sub-angular, igneous gravel, trace of ironstone gravel, ceramic fragments and concrete.	w<PL			
	■			■			1		CI-CH	Sandy CLAY: low to medium plasticity, orange brown, fine to medium grained, trace of ironstone gravel.				
	■			■					CL-CI	Silty CLAY: medium to high plasticity, grey and brown, trace of ironstone gravel.				HYDROCARBON ODOUR
							2			Sandy CLAY: low to medium plasticity, grey and brown, fine to medium grained, trace of ironstone gravel.				REFUSAL ON INFERRED BEDROCK
										END OF BOREHOLE AT 1.5m				
							3							
							4							
							5							
							6							
							7							

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BOREHOLE LOG

Borehole No. 104 1 / 2

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~41.6 m

Date: 1/10/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING									-	ASPHALTIC CONCRETE: 40mm.t	M			APPEARS POORLY TO MODERATELY COMPACTED
										FILL: Sandy gravel, fine to medium grained, dark grey, fine to medium grained, sub-angular, igneous gravel, trace of ironstone and sandstone gravel, and slag.				SCREEN: 4.45kg 0.04-0.3m NO FCF
					N = 9 2,5,4	41	1			FILL: Silty gravelly sand, fine to medium grained, yellow brown, fine to medium grained sandstone gravel, trace of metal and glass fragments, slag and ash.				SCREEN: 4.7kg 0.3-1.3m NO FCF
					N = 10 3,3,7	40	2							SCREEN: 4.8kg 1.3-2.3m NO FCF
					N > 10 4,6,4/ 100mm REFUSAL	39	3							SCREEN: 5.45kg 2.3-3.2m NO FCF
										FILL: Silty sand, fine to medium grained, brown, trace of igneous, sandstone and siltstone gravel, glass fragments and ash.				
						38	4			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 5.97m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 1.2m TO 5.97m. CASING 0m TO 1.2m. 2mm SAND FILTER PACK 1.0m TO 5.97m. BENTONITE SEAL 0.25m TO 1.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						37	5							
						36	6							
						35								

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CORED BOREHOLE LOG

Borehole No. 104 **2 / 2**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~41.6 m

Date: 1/10/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS SPACING (mm)	DEFECT DETAILS DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
					START CORING AT 3.40m					ROCK STRENGTH BASED ON TACTILE ASSESSMENT	
		38	4		NO CORE 0.74m						
100% RETURN		37	5		Extremely weathered sandstone: sandy silty CLAY, low to medium plasticity, light grey mottled orange brown.	XW	(Hd)				Hawkesbury Sandstone
					SANDSTONE: medium grained, light grey and orange brown, bedded at 0-20°.	MW	(L - M)			(4.45m) J, 40 - 90°, C, R, Fe Sn (4.58m) Be, 20°, P, R, Fe Sn (4.95m) CS, 5°, 50 mm.t (5.77m) Cr, 0 - 5°, 10 mm.t (5.82m) Be, 5°, C, R, Fe Ct	
		36	6		END OF BOREHOLE AT 5.97 m						
		35	7								
		34	8								
		33	9								
		32									

POINT LOAD STRENGTH INDEX $I_s(50)$: VL -0.1, L -0.3, M -1, H -3, VH -10, EH

SPACING (mm): 600, 200, 60, 20

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BOREHOLE LOG

Borehole No. 105 1 / 2

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~44.8 m

Date: 27/9/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING					N = 8 4,4,4	44	1		-	ASPHALTIC CONCRETE: 25mm.t. FILL: Silty gravelly sand, fine to medium grained, grey, fine to coarse grained igneous gravel. FILL: Clayey silty sand, fine to medium grained, dark grey, with fine to coarse grained ironstone and igneous gravel, trace of slag.	M			SCREEN: 5.25kg 0.25-0.4m NO FCF APPEARS POORLY COMPACTED
									CL	Sandy CLAY: low plasticity, grey and brown, trace of fine to coarse grained ironstone gravel.	w>PL	(St)		RESIDUAL
					N > 14 18,14/ 100mm REFUSAL	43	2			Extremely Weathered sandstone: Sandy CLAY, low plasticity, orange brown and red brown, with occasional low strength sandstone bands and clay bands.	XW	(Hd)		HAWKESBURY SANDSTONE VERY LOW 'TC' BIT RESISTANCE WITH LOW RESISTANCE BANDS
						42	3			SANDSTONE: fine to medium grained, red brown. REFER TO CORED BOREHOLE LOG	MW	L		
						41	4							Groundwater monitoring well installed to 7.86m. Class 18 machine slotted 50mm dia. PVC standpipe 0.86m to 7.86m. Casing 0.1m to 0.86m. 2mm sand filter pack 1.6m to 7.86m. Bentonite seal 0.8m to 1.6m. Backfilled with sand to the surface. Completed with a concreted gatic cover. JKE SAMPLES WERE COLLECTED FROM THE CORED SAMPLES AT THE FOLLOWING DEPTHS: 3.9-4.0m 4.9-5.0m 5.9-6.0m 6.9-7.0m 7.7-7.83m
						40	5							
						39	6							
						38								

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CORED BOREHOLE LOG

Borehole No. 105 **2 / 2**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~44.8 m

Date: 27/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 3.13m						
80% RETURN		41	4		SANDSTONE: medium grained, red brown, orange brown and light grey, bedded at 0-30°.	MW	M	0.60, 0.50, 0.90, 0.70, 0.60, 0.90		(3.21m) Be, 25°, P, R, Fe Sn	Hawkesbury Sandstone
		40	5							(4.38m) Be, 30°, P, R, Fe Sn; (4.57m) Be, 10°, P, R, Fe Sn; (4.62m) Be, 0°, C, R, Fe Sn; (4.65m) Be, 0°, P, R, Clay Ct; (4.95m) Be, 0°, P, R, Fe Sn; (5.15m) Be, 0°, P, R, Fe Sn; (5.25m) J, 25°, P, R, Cn; (5.53m) Be, 20°, C, R, Fe Sn; (5.58m) Be, 20°, P, R, Fe Sn; (5.70m) Be, 20°, P, R, Fe Sn; (5.86m) Be, 0°, P, R, Fe Sn; (5.91m) Be, 0°, P, R, Fe Sn	
ON 20/10/21		39	6								
ON 22/10/21							M - H	1.1, 1.4, 0.70, 0.70, 1.6		(6.35m) Bex2, 0°, P, R, Fe Ct; (6.70m) Be, 0°, P, R, Fe Ct; (7.46m) Be, 0°, P, R, Clay Ct; (7.60m) CS, 0°, 12 mm.t; (7.65m) XWS, 0°, 25 mm.t	
60% RETURN		38	7								
		37			END OF BOREHOLE AT 7.83 m						
		36	8								
		35	9								

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BOREHOLE LOG

Borehole No. 106

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~49.1 m

Date: 28/9/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING	■					49			-	ASPHALTIC CONCRETE: 30mm.t	M			SCREEN: 3.8kg 0.03-0.3m NO FCF
									CL	FILL: Clayey gravelly sand, fine to medium grained, grey, medium to coarse grained igneous gravel.	w~PL	VSt - Hd		RESIDUAL
				■	N > 10 10,10/ 50mm REFUSAL					Silty CLAY: low plasticity, light grey with fine to medium grained sand and medium to coarse grained ironstone gravel.	XW	(Hd)	440 470 300	HAWKESBURY SANDSTONE
	■					48	1			Extremely Weathered sandstone: sandy CLAY, low to medium plasticity, fine to medium grained sand, light grey and red brown.	MW	H		LOW 'TC' BIT RESISTANCE WITH VERY LOW BANDS
				■						SANDSTONE: fine to medium grained, light grey and orange brown with occasional clay nodules.				Groundwater monitoring well installed to 12.52m. Class 18 machine slotted 50mm dia. PVC standpipe 1.52m to 12.52m. Casing 0.11m to 1.52m. 2mm sand filter pack 1.2m to 12.52m. Bentonite seal 0.4m to 1.2m. Backfilled with sand to the surface. Completed with a concreted gatic cover.
						47	2			REFER TO CORED BOREHOLE LOG				JKE SAMPLES WERE COLLECTED FROM THE CORED SAMPLES AT THE FOLLOWING DEPTHS: 1.4-1.5m 1.9-2.0m 2.4-2.5m 2.9-3.0m 3.9-4.0m 4.9-5.0m 5.9-6.0m 6.9-7.0m 7.9-8.0m 8.9-9.0m 9.9-10.0m 10.9-11.0m 11.9-12.0m 12.45-12.55m
						46	3							
						45	4							
						44	5							
						43	6							

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CORED BOREHOLE LOG

Borehole No. 106 **2 / 3**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~49.1 m

Date: 28/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		48			START CORING AT 1.24m						
100% RETURN		47	2		SANDSTONE: medium grained, light grey with grey laminations, and orange brown bands, bedded at 0-25°.	MW	H	1.4, 1.6, 1.6, 1.7, 1.8, 1.9, 1.6, 1.5		(1.43m) Be, 10°, P, R, Cn (2.04m) Be, 25°, P, R, Fe Sn	Hawkesbury Sandstone
		46	3							(3.03m) Bex2, P, R, Fe Sn (3.38m) Be, 15°, C, R, Fe Sn	
		45	4							(4.37m) Be, 0°, P, R, Fe Sn	
		44	5		SANDSTONE: medium grained, light grey with orange brown bands, bedded at 0-25°.	SW	M - H	1.0		(4.87m) Be, 20°, P, R, Clay Ct (5.18m) Be, 25°, P, R, Fe Sn (5.43m) CS, 0°, 20 mm.t	
		43	6					1.0, 1.0		(6.28m) Be, 25°, P, R, Clay Ct (6.40m) CS, 20°, 20 mm.t	
		42	7		SANDSTONE: medium grained, light grey with grey and dark grey laminations, and red brown bands, bedded at 0-25°.	FR	M	0.90			
					SANDSTONE: medium grained, light grey with grey and dark grey laminations, and occasional red brown bands, bedded at 0-25°.			0.70, 0.90		(7.11m) Be, 25°, P, R, Fe Sn (7.20m) Be, 25°, P, R, Fe Sn (7.30m) XWS, 0°, 40 mm.t (7.35m) CS, 0°, 5 mm.t	

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CORED BOREHOLE LOG

Borehole No. 106 3 / 3

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~49.1 m

Date: 28/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS SPACING (mm) DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
ON 20/10/21 OFF 22/10/21 100% RETURN		41 40 39 38 37 36 35	9 10 11 12 13 14		SANDSTONE: medium grained, light grey with grey and dark grey laminations, and occasional red brown bands, bedded at 0-25°. *(continued)* as above, but brown and red brown banded. as above, but light grey, with grey and dark grey laminations. END OF BOREHOLE AT 12.55 m	FR MW FR	M H	0.60 0.70 0.90 0.80 1.3 1.4 1.5 1.1 1.8 1.4	(8.05m) Be, 0°, P, R, Cn (8.52m) Be, 0°, P, R, Fe Sn (8.63m) CS, 0°, 35 mm.t (8.82m) CS, 10°, 5 mm.t (9.47m) Be, 20°, P, R, Fe Sn (9.90m) Be, 10°, P, R, Cb Ct (10.12m) Cr, 0°, 50 mm.t (10.19m) Be, 20°, P, R, Fe Ct (11.54m) CS, 15°, 3 mm.t (11.60m) Be, 20°, P, R, Clay Ct	Hawkesbury Sandstone

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BOREHOLE LOG

Borehole No. 107

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~51.6 m

Date: 27/9/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING	■			■						FILL: Silty clay, low plasticity, dark brown, trace of fine to coarse grained igneous, ironstone and sandstone gravel, fine grained sand, roots and root fibres.	w~PL			TOP 100mm ROOT AFFECTED
					N = 3 2,1,2	51			SM	FILL: Sandy clay, low plasticity, grey and brown, fine grained sand, medium to coarse grained ironstone gravel.	M			SCREEN: 11.05kg 0-0.2m NO FCF
	■			■			1							SCREEN: 4.55kg 0.2-0.4m NO FCF
	■								CI	Silty SAND: fine to medium grained, light grey brown mottled orange brown, with clay fines and clay nodules.	w>PL			RESIDUAL
	■			■		50			-	Silty CLAY: medium plasticity, orange brown, red brown and grey, with fine to medium grained sand.	MW	M		HAWKESBURY SANDSTONE
										SANDSTONE: fine to medium grained, light grey and orange brown, with occasional clay seams.				LOW 'TC' BIT RESISTANCE
							2			REFER TO CORED BOREHOLE LOG				Groundwater monitoring well installed to 14.93m. Class 18 machine slotted 50mm dia. PVC standpipe 1.93m to 14.93m. Casing 0.05m to 1.93m. 2mm sand filter pack 1.5m to 14.93m. Bentonite seal 0.3m to 1.5m. Backfilled with sand to the surface. Completed with a concreted gatic cover.
						49	3							JKE SAMPLES WERE COLLECTED FROM THE CORED SAMPLES AT THE FOLLOWING DEPTHS: 1.9-2.0m 2.4-2.5m 2.75-2.85m 3.9-4.0m 4.9-5.0m 5.9-6.0m 6.9-7.0m 7.9-8.0m 8.9-9.0m 9.9-10.0m 10.9-11.0m 11.9-12.0m 12.9-13.0m 13.9-14.0m 14.9-15.0m
						48	4							
						47	5							
						46	6							
						45								

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CORED BOREHOLE LOG

Borehole No. 107 **2 / 3**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~51.6 m

Date: 27/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness)	Formation
		50			START CORING AT 1.80m						
30% RETURN		49	2		SANDSTONE: fine to medium grained, light grey, red brown and orange brown, bedded at 0-20°.	MW	M	0.40, 0.60		(2.21m) Be, 10°, P, R, Clay Ct; (2.43m) XWS, 5°, 30 mm.t; (2.56m) CS, 0 - 5°, 145 mm.t	Hawkesbury Sandstone
							H	1.1		(2.85m) CS, 5°, 30 mm.t	
			3		NO CORE 0.13m						
90% RETURN		48			SANDSTONE: medium to coarse grained, light grey and orange brown, bedded at 0-25°.	MW	H	2.0		(3.16m) Be, 5°, P, R, Fe Sn	Hawkesbury Sandstone
								1.5			
			4							(4.05m) Be, 25°, P, R, Fe Sn	
								1.8		(4.30m) Be, 15°, P, R, Fe Sn	
		47						2.0			
			5							(4.94m) Bex2, 20°, P, R, Cn; (5.06m) Be, 20°, P, R, Fe Sn	
										(5.27m) Be, 0°, P, R, Fe Sn	
								1.9			
		46								(5.78m) Be, 15°, P, R, Clay Vn	
			6					1.9			
						SW				(6.18m) Be, 20°, P, R, Cn; (6.28m) Be, 20°, P, R, Cn	
								1.3			
		45			SANDSTONE: medium grained, light grey with grey laminations, bedded at 0-25°.	FR				(6.72m) Be, 20°, P, R, Fe Sn	
								1.7			
			7		SANDSTONE: medium grained, light grey with grey laminations, bedded at 0-25°.			1.8		(7.22m) Be, 20°, P, R, Fe Sn	
		44						1.2		(7.75m) CS, 0 - 20°, 60 mm.t	

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CORED BOREHOLE LOG

Borehole No. 107 3 / 3

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~51.6 m

Date: 27/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness) Specific / General	Formation
ON 22/10/21		43	9		SANDSTONE: medium grained, light grey with grey laminations, bedded at 0-25°. *(continued)*	FR	H	1.5, 1.2, 0.30, 1.7		(8.71m) CS, 10°, 25 mm.t	Hawkesbury Sandstone
					SANDSTONE: medium grained, light grey, with grey laminations and trace of carbonaceous lenses, bedded at 0-25°.					(9.00m) Be, 0°, P, R, Cb Vn	
		42	10					1.2, 1.7		(10.31m) Be, 25°, C, R, Cb Sn; (10.40m) Be, 0°, P, R, Cb Sn	
		41			Extremely Weathered siltstone band:	XW		1.1		(10.72m) Be, 10°, P, R, Cn	
			11		NO CORE 0.22m						
90% RETURN					Extremely Weathered siltstone band.	XW	H			(11.27m) Be, 10°, P, R, Cb Vn; (11.31m) Be, 0°, P, R, Fe FILLED; (11.33m) Be, 0°, P, R, Fe Ct	
		40			SANDSTONE: medium grained, light grey and orange brown, bedded at 0-25°.	FR / MW		1.3	200, 60, 20	(11.65m) Be, 0°, C, R, Fe Sn	
			12					1.7, 1.5		(12.15m) CS, 10°, 10 mm.t	
		39						1.8			
			13			FR		1.9			
		38			SANDSTONE: medium grained, light grey, with grey lamination, bedded at 0-25°.			1.4		(13.47m) Be, 25°, P, R, Cn; (13.71m) Be, 15°, P, R, Clay FILLED	
			14					1.5		(14.28m) Be, 0°, P, R, Clay Ct	
		37						1.7	200, 60, 20	(14.78m) Be, 10°, C, R, Cb Vn	

END OF BOREHOLE AT 15.00 m

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BOREHOLE LOG

Borehole No. 108 **1 / 3**

SDUP7: 0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~50.5 m

Date: 30/9/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						50.5				FILL: Sandy silty clay, low plasticity, orange brown, fine grained sand, trace of fine to medium grained ironstone gravel.	w<PL			GRASS COVER TOP 100mm ROOT AFFECTED
					N=SPT 10/ 50mm REFUSAL	50			-	SANDSTONE: fine to medium grained, light grey and red brown, with high strength iron indurated bands.	DW	L		HAWKESBURY SANDSTONE LOW 'TC' BIT RESISTANCE
						49	1					L - M		
										REFER TO CORED BOREHOLE LOG				JKE SAMPLES WERE COLLECTED FROM THE CORED SAMPLES AT THE FOLLOWING DEPTHS: 1.9-2.0m 2.4-2.5m 2.9-3.0m 3.9-4.0m 4.9-5.0m 5.9-6.0m 6.9-7.0m 7.9-8.0m 8.9-9.0m 9.9-10.0m 10.9-11.0m 11.9-12.0m 12.9-13.0m 13.85-13.95m
						48	2							
						47	3							
						46	4							
						45	5							
						44	6							

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CORED BOREHOLE LOG

Borehole No. 108 **2 / 3**

SDUP7: 0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~50.5 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 1.49m						
100% RETURN		49	1		SANDSTONE: fine to medium grained, red brown orange brown and light grey, bedded at 0-25°.	MW	H	1.8		(1.58m) Be, 5°, P, R, Fe Sn	Hawkesbury Sandstone
										(1.81m) Be, 25°, P, R, Fe Sn	
		48	2					1.1			
								1.0		(2.35m) Be, 0°, P, R, Fe Sn	
		47	3					1.1		(3.05m) Bex2, P, R, Fe Sn	
								1.7			
		46	4					1.6			
					SANDSTONE: medium to coarse grained, light grey, with grey laminations, bedded at 0-25°.	SW	M - H	0.70		(4.77m) Be, 20°, P, R, Fe Sn	
		45	5					1.5			
								1.1			
		44	6			FR		0.90		(6.07m) Be, 10°, P, R, Fe Sn	
								1.0		(6.56m) Be, 0°, P, R, Cn	
		43	7				H	1.4		(7.07m) CS, 0°, 5 mm.t	
										(7.25m) Be, 20°, P, R, Clay Ct	
								1.3			

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CORED BOREHOLE LOG

Borehole No. 108 **3 / 3**

SDUP7: 0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~50.5 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
100% RETURN		42	9		SANDSTONE: medium to coarse grained, light grey, with grey laminations, bedded at 0-25°. *(continued)*	FR	H	2.0			Hawkesbury Sandstone
		41	10					1.3		(8.67m) Bex2, P, R, Clay Ct	
		40	11					1.1			
		39	12					1.3		(10.21m) CS, 10°, 10 mm.t	
		38	13					1.4			
		37						1.5			
								2.4			
								1.9	600 200 60 20	(11.50m) Be, 20°, P, Cb Vn	
								1.5			
								1.7			
								1.4			
								1.7			
		36	14		END OF BOREHOLE AT 13.95 m				600 200 60 20		

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BOREHOLE LOG

Borehole No. 109 1 / 3

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~49.1 m

Date: 30/9/21 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						49				ASPHALTIC CONCRETE: 100mm.t				
									-	FILL: Clayey gravelly sand, fine to medium grained, dark grey and brown, fine to coarse grained igneous gravel, with clay nodules.	M			SCREEN: 4.7kg 0.1-0.4m NO FCF
					N = 28 14,16,12						w<PL		280 140 180	APPEARS MODERATELY COMPACTED
									CL	FILL: Sandy clay, low plasticity, grey brown and orange brown, with medium to coarse grained ironstone sandstone and igneous gravel, trace of slag.	w~PL	VSt - Hd	560 500	SCREEN: 7.4kg 0.4-0.8m NO FCF
						48	1		-	Sandy CLAY: low plasticity, orange brown, fine to medium grained sand, trace of fine to medium grained sandstone.	MW	M - H	340	RESIDUAL
										SANDSTONE: fine to medium grained, light grey and orange brown.				HAWKESBURY SANDSTONE
										REFER TO CORED BOREHOLE LOG				LOW TO MODERATE 'TC' BIT RESISTANCE
						47	2							Groundwater monitoring well installed to 12.54m. Class 18 machine slotted 50mm dia. PVC standpipe 1.54m to 12.54m. Casing 0.1m to 1.54m. 2mm sand filter pack 1.4m to 12.54m. Bentonite seal 0.3m to 1.4m. Backfilled with sand to the surface. Completed with a concreted gatic cover.
						46	3							JKE SAMPLES WERE COLLECTED FROM THE CORED SAMPLES AT THE FOLLOWING DEPTHS: 1.42-1.5m 1.9-2.0m 2.4-2.5m 2.9-3.0m 3.9-4.0m 4.9-5.0m 5.9-6.0m 6.9-7.0m 7.9-8.0m 8.9-9.0m 9.9-10.0m 10.96-11.0m 11.35-11.45m 11.9-12.0m 12.45-12.56m
						45	4							
						44	5							
						43	6							

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CORED BOREHOLE LOG

Borehole No. 109 **2 / 3**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~49.1 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
		48			START CORING AT 1.42m						
100% RETURN		47	2		SANDSTONE: fine to medium grained, light grey with red brown bands, bedded at 0-25°. JKE sample 1.42-1.5m	MW	M - H	1.2 1.7 0.80		(2.15m) Cr, 20 mm.t (2.25m) Be, P, R, Fe Sn	Hawkesbury Sandstone
		46	3		SANDSTONE: medium grained, light grey with grey lamination, and orange brown bands, bedded at 0-25°.	SW		0.90 0.80		(3.04m) Be, P, R, Fe Sn (3.24m) XWS, 15 mm.t (3.53m) J, P, R, Clay FILLED	
		45	4					0.80 0.70		(4.66m) CS, 35 mm.t (4.80m) CS, 150 mm.t	
		44	5					1.1 0.80		(5.31m) Be, P, R, Cb Ct (5.40m) Be, P, R, Clay Ct	
		43	6					1.5		(6.14m) CS, 15 mm.t (6.29m) CS, 5 mm.t (6.46m) Cr, 20 mm.t	
ON 22/10/21		42	7					1.1 0.70 0.80		(6.86m) CS, 5 mm.t (7.83m) Be, P, R, Cb Ct (7.91m) CS, 3 mm.t	

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CORED BOREHOLE LOG

Borehole No. 109 3 / 3

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~49.1 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
ON 20/10/21		41			SANDSTONE: medium grained, light grey with grey lamination, and orange brown bands, bedded at 0-25°.	SW	M - H	1.0		(8.27m) Be, 15°, P, R, Cb Ct	
		40	9					1.3		(8.88m) Be, 25°, P, R, Fe Sn	
								1.2		(9.37m) Be, 25°, P, R, Cb Ct	
										(9.57m) XWS, 15°, 15 mm.t	
								0.60		(9.85m) CS, 10°, 20 mm.t	
100% RETURN		39	10					1.5			
								1.1		(10.76m) Be, 0°, P, R, Clay Ct	
		38	11		SILTSTONE: dark grey, bedded sub horizontally.	MW	L			(10.96m) Be, 0 - 20°, C, R, Cn	
								0.30		(11.45m) CS, 0°, 30 mm.t	
					SANDSTONE: medium grained, light gey with grey lamination, trace of siltstone, bedded at 0-20°.	FR	H			(11.48m) Cr, 0°, 25 mm.t	
		37	12					1.0			
								1.3			
								1.4		(12.50m) CS, 0°, 15 mm.t	
					END OF BOREHOLE AT 12.56 m						
		36	13								
		35	14								

Hawkesbury Sandstone

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BOREHOLE LOG

Borehole No. 110

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** ~48.5 m

Date: 30/9/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING				■	N = 9 4,5,4	48				FILL: Clayey silt, low plasticity, dark brown, trace of fine grained igneous and ironstone gravel.	w<PL			MULCH COVER
											D			APPEARS MODERATELY COMPACTED
										FILL: Clayey sand, fine to medium grained, orange brown, trace of fine to medium grained sandstone and ironstone gravel, and clay nodules.	w<PL			
				■			1			FILL: Silty clay, low plasticity, brown, grey and orange brown, with fine to medium grained sand, trace of medium to coarse grained ironstone and sandstone gravel.	w~PL	(St - VSt)		RESIDUAL
						47			CI	Silty CLAY: medium plasticity, orange brown, trace of fine to medium grained sand.				
							2			REFER TO CORED BOREHOLE LOG				
						46								
							3							
						45								
							4							
						44								
							5							
						43								
							6							
						42								

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CORED BOREHOLE LOG

Borehole No. 110

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~48.5 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS SPACING (mm) DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
					START CORING AT 1.36m					
100% RETURN		47	1		SANDSTONE: medium to coarse grained, brown orange, bedded at 0-25°.	MW	M - H	0.80	(1.58m) J, 80°, P, Fe Sn	Hawkesbury Sandstone
			2					0.90		
								0.40		
		46			SANDSTONE: medium to coarse grained, light grey with red brown bands.	SW		1.1		
			3						(3.03m) Bex2, 25°, P, R, Fe Sn	
						MW	L - M	0.30		
		45						0.40	(3.64m) CS, 15°, 40 mm.t	
						SW	M - H			
80% RETURN			4						(4.28m) CS, 10°, 30 mm.t	
		44						0.60		
			5					1.1		
								0.90		
		43						0.90		
			6						(6.04m) CS, 5°, 10 mm.t	
								1.0	(6.26m) CS, 5°, 15 mm.t (6.34m) Be, 0°, P, R, Fe Sn	
		42			as above, but bedded at 30°.					
			7					1.6		
								1.0		
		41						1.1		

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CORED BOREHOLE LOG

Borehole No. 110

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** ~48.5 m

Date: 30/9/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
80% RETURN		40	9		SANDSTONE: medium to coarse grained, light grey with red brown bands, bedded at 30°.	FR	M - H	1.0, 1.4			Hawkesbury Sandstone
		39			SILTSTONE: dark grey, bedded at 20-30°.	MW	L	0.30, 0.30		(8.97m) CS, 10°	
100% RETURN		38	10		SANDSTONE: medium grained, light grey with grey lamination, trace of siltstone clasts, bedded at 0-20°.	FR	M - H	0.90, 1.1, 1.4		(10.63m) Be, 5°, P, R, Fe Sn	
		37	11								
		36	12					1.4, 1.3, 1.7		(11.91m) CS, 0°, 10 mm.t	
		35	13		END OF BOREHOLE AT 12.85 m						
		34	14								

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ENVIRONMENTAL LOG

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Log No. 110A 1/1

SDUP6: 0.0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 48.5m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty gravelly sand, fine to medium grained, dark brown, fine to medium grained igneous gravel, trace of ash, slag and root fibres.	M			GRASS COVER
											w<PL			SCREEN: 10.0kg 0.0-0.1m NO FCF
										FILL: Sandy gravel, fine to medium grained igneous gravel, grey, fine to medium grained, trace of ash, asphaltic concrete fragments and root fibres.				SCREEN: 4.2kg 0.1-0.2m NO FCF
							1		CL-CI		w<PL			SCREEN: 5.8kg 0.2-1.1m NO FCF
										FILL: Sandy clay, low to medium plasticity, yellow brown mottled red brown, trace of sandstone cobble and ironstone gravel, terracotta and root fibres.				RESIDUAL
										Sandy CLAY: low to medium plasticity, yellow brown, trace of ironstone gravel, ash and root fibres.				REFUSAL ON INFERRED BEDROCK
							2			END OF BOREHOLE AT 1.3m				
							3							
							4							
							5							
							6							
							7							

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ENVIRONMENTAL LOG

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Log No. 111 **1/1**

SDUP3: 0.0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** HAND AUGER **R.L. Surface:** ≈ 48.6m

Date: 28/9/2021 **Datum:** AHD

Plant Type: - **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■		■		0			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone, siltstone and sandstone gravel, tile fragments and root fibres.	D			GRASS COVER
											w<PL			SCREEN: 10.8kg 0.0-0.1m NO FCF
										FILL: Silty clay, medium to high plasticity, brown, trace of sand, ironstone and igneous gravel and ash.	D			SCREEN: 4.8kg 0.1-0.3m NO FCF
							1			FILL: Silty clayey sand, fine to medium grained, brown, trace of ironstone and igneous gravel and ash.				SCREEN: 5.2kg 0.3-0.6m NO FCF
										END OF BOREHOLE AT 0.8m				SCREEN: 4.9kg 0.6-0.8m NO FCF
							2							HAND AUGER REFUSAL ON INFERRED BEDROCK
							3							
							4							
							5							
							6							
							7							

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Log No. 112 **1/1**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 48.6m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** H.W./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■		■		0			CONCRETE: 220mm.t				STEEL REINFORCEMENT AT 150mm
									-	FILL: Silty gravelly sand, fine to medium grained, brown, fine to medium grained sandstone gravel, trace of clay nodules, igneous and ironstone gravel and asphaltic concrete fragments.	M			SCREEN: 6.90kg 0.22-0.65m
									-	Extremely Weathered sandstone: silty SAND, fine to medium grained, yellow brown.	XW			NO FCF
							1			END OF BOREHOLE AT 0.8m				HAWKESBURY SANDSTONE
														REFUSAL
							2							
							3							
							4							
							5							
							6							
							7							

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Log No. 113 **1/1**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 52.0m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel, glass and root fibres.	D M			GRASS COVER
									CL-CI	FILL: Silty clayey sand, fine to medium grained, light brown, trace of ironstone and igneous gravel, ash and root fibres.	w<PL			SCREEN: 10.1kg 0.0-0.1m NO FCF
							1			Sandy CLAY: low to medium plasticity, dark brown mottled yellow, trace of ironstone gravel, ash and root fibres.				SCREEN: 9.6kg 0.1-0.35m NO FCF
										Sandy CLAY: low to medium plasticity, yellow brown, trace of ironstone gravel and root fibres.				RESIDUAL
							2			END OF BOREHOLE AT 0.65m				REFUSAL ON INFERRED BEDROCK
							3							
							4							
							5							
							6							
							7							

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Log No. 114 **1/1**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 50.7m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■		■		0		-	ASPHALTIC CONCRETE: 50mm.t	D			SCREEN: 9.61kg
	■		■						SC	FILL: Silty sandy gravel, fine to medium grained, igneous gravel, sub angular, light grey, fine to medium grained sand, trace of ironstone gravel and asphaltic concrete fragments.	M			0.05-0.2m NO FCF
	■		■						CL-CI	Silty clayey SAND: fine to medium grained, light brown, trace of ironstone and sandstone gravel and root fibres.	w<PL			RESIDUAL
							1			Sandy CLAY: low to medium plasticity, yellow brown with ironstone gravel.				REFUSAL ON INFERRED BEDROCK
										END OF BOREHOLE AT 0.5m				
							2							
							3							
							4							
							5							
							6							
							7							

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Log No. 115 **1/1**

SDUP4: 0.0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 50.1m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			FILL: Silty clayey sand, fine to medium grained, brown, trace of ironstone and sandstone gravel, and root fibres.	D			GRASS COVER SCREEN: 11.8kg 0.0-0.1m NO FCF
	■		■		■				CL-CI	Silty CLAY: low to medium plasticity, light grey, with ironstone banding, trace of root fibres.	w<PL			RESIDUAL
							1			END OF BORHEOLE AT 1.1m				REFUSAL ON INFERRED BEDROCK
							2							
							3							
							4							
							5							
							6							
							7							

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Log No. 116 **1/1**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 50.1m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0		-	ASPHALTIC CONCRETE: 20mm.t	D			SCREEN: 11.9kg 0.02-0.1m
	■								SC	FILL: Silty sandy gravel, fine to medium grained, igneous gravel, sub angular, light grey, fine to medium grained sand, trace of ironstone gravel and asphaltic concrete fragments.	M			NO FCF
	■								CL-CI	Silty clayey SAND: light brown mottled yellow brown, trace of ironstone gravel, ash and root fibres.	w<PL			RESIDUAL
									-	Sandy CLAY: low to medium plasticity, yellow brown, with ironstone banding.	XW			HAWKESBURY SANDSTONE
							1			Extremely Weathered sandstone: silty SAND, fine to medium grained, yellow brown.				REFUSAL
										END OF BOREHOLE AT 0.6m				
							2							
							3							
							4							
							5							
							6							
							7							

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Log No. 117 **1/1**

SDUP10: 0.0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 49.3m

Date: 6/10/2021 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** A.D./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			FILL: Silty sand, fine to medium grained, brown, trace of tile fragments and root fibres.	M			GRASS COVER SCREEN: 10.0kg 0-0.1m NO FCF
	■		■			N = 25 8,13,12				FILL: Silty sand, fine to medium grained, grey and brown, trace of igneous gravel and sandstone gravel.	D			
							1							
										END OF BOREHOLE AT 1.5m				
							2							
							3							
							4							
							5							
							6							
							7							

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Log No. 118 **1/1**

SDUP5: 0.0-0.1m

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BR **Method:** PUSH TUBE **R.L. Surface:** ≈ 40.0m

Date: 29/9/2021 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.E./V.B.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sandy clay, low to medium plasticity, light brown mottled red and yellow, trace of siltstone, ironstone and sandstone gravel, ash, tile fragments and root fibres.	D			GRASS COVER SCREEN: 10.6kg 0.0-0.1m NO FCF SCREEN: 9.85kg 0.1-1.1m NO FCF SCREEN: 8.1kg 1.1-1.6m NO FCF
							1							
							2		CL-CI	Sandy CLAY: low to medium plasticity, yellow brown mottled red, trace of ironstone gravel.	w<PL			RESIDUAL
									CI-CH	Sandy CLAY: medium to high plasticity, light brown mottled yellow and red, with ironstone banding.				
										END OF BOREHOLE AT 2.5m				REFUSAL
							3							
							4							
							5							
							6							
							7							

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BOREHOLE LOG

Borehole No. 119

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Method:** SPIRAL AUGER **R.L. Surface:** 42.5 m

Date: 1/10/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** J.L./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING									-	ASPHALTIC CONCRETE: 50mm.t	D			SCREEN: 3.2kg 0.05-0.3m NO FCF
									-	FILL: Silty sand, fine to medium grained, yellow brown, trace of igneous and sandstone gravel, and ceramic tile fragments.	DW	MD / M		HAWKESBURY SANDSTONE
						42				SANDSTONE: fine to medium grained, yellow brown.				MODERATE 'TC' BIT RESISTANCE
							1							
						41								
							2					L - M		LOW TO MODERATE RESISTANCE
						40						H		HIGH RESISTANCE
							3			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 5.75m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 1.2m TO 5.75m. CASING 0m TO 1.2m. 2mm SAND FILTER PACK 1.0m TO 5.75m. BENTONITE SEAL 0.25m TO 1.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						39								
							4							
						38								
							5							
						37								
							6							
						36								

JK 9.02.4 LIB GLB Log JK AUGERHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:47 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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CORED BOREHOLE LOG

Borehole No. 119

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R2 **Core Size:** NMLC **R.L. Surface:** 42.5 m

Date: 1/10/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** J.L./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ VL 0.1 L 0.3 M 1 H 3 VH 10 EH	DEFECT DETAILS SPACING (mm) 600 200 60 20	DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
		40			START CORING AT 2.94m					ROCK STRENGTH BASED ON TACTILE ASSESSMENT	
100% RETURN		39	3		SANDSTONE: medium grained, light grey, orange brown and red brown, bedded at 0-25°.	MW	(L - M)				Hawkesbury Sandstone
		38	4							(4.10m) CS, 5°, 10 mm.t (4.61m) J, 45°, P, R, Fe Ct	
		37	5		SANDSTONE: fine to medium grained, light grey, bedded at 0-20°.	FR	(M)			(5.15m) Be, 20°, C, R, Fe Sn (5.16m) CS, 5°, 10 mm.t (5.32m) Be x 2, 0°, C, R, Fe Ct (5.49m) Cr, 0°, 15 mm.t	
		36	6		END OF BOREHOLE AT 5.75 m						
		35	7								
		34	8								

JK 9.02.4 LIB GLB Log JK CORED BOREHOLE - MASTER 32507R2 GREENWICH.GPJ <<DrawingFile>> 21/01/2022 12:48 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL

FILL

TOPSOIL

CLAY (CL, CI, CH)

SILT (ML, MH)

SAND (SP, SW)

GRAVEL (GP, GW)

SANDY CLAY (CL, CI, CH)

SILTY CLAY (CL, CI, CH)

CLAYEY SAND (SC)

SILTY SAND (SM)

GRAVELLY CLAY (CL, CI, CH)

CLAYEY GRAVEL (GC)

SANDY SILT (ML, MH)

PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK

CONGLOMERATE

SANDSTONE

SHALE/MUDSTONE

SILTSTONE

CLAYSTONE

COAL

LAMINITE

LIMESTONE

PHYLLITE, SCHIST

TUFF

GRANITE, GABBRO

DOLERITE, DIORITE

BASALT, ANDESITE

QUARTZITE

OTHER MATERIALS

BRICKS OR PAVERS

CONCRETE

ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
ine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \qquad and \qquad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

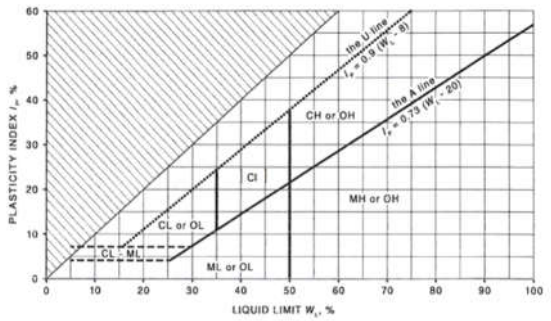
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
	PFAS	Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25	Vane shear reading in kPa of undrained shear strength.
	PID = 100	Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL	Moisture content estimated to be greater than plastic limit.
	$w \approx$ PL	Moisture content estimated to be approximately equal to plastic limit.
	w < PL	Moisture content estimated to be less than plastic limit.
	$w \approx$ LL	Moisture content estimated to be near liquid limit.
	w > LL	Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D	DRY – runs freely through fingers.
	M	MOIST – does not run freely but no free water visible on soil surface.
	W	WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – unconfined compressive strength ≤ 25kPa.
	S	SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa.
	F	FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa.
	St	STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa.
	VSt	VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa.
	Hd	HARD – unconfined compressive strength > 400kPa.
	Fr	FRIABLE – strength not attainable, soil crumbles.
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL	VERY LOOSE – Density Index (I_D) Range (%) ≤ 15 – SPT 'N' Value Range (Blows/300mm) 0 – 4
	L	LOOSE – > 15 and ≤ 35 – 4 – 10
	MD	MEDIUM DENSE – > 35 and ≤ 65 – 10 – 30
	D	DENSE – > 65 and ≤ 85 – 30 – 50
	VD	VERY DENSE – > 85 – > 50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other assessment.

Log Column	Symbol	Definition
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

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BOREHOLE LOG

Borehole No. 1

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 37.3 m

Date: 22/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF CORING										CONCRETE: 170mm.t				8mm DIA. REINFORCEMENT, 12mm & 35mm BOTTOM COVER
						37			-	FILL: Silty sandy gravel, fine to medium grained, igneous, angular, dark grey, fine to coarse grained sand.	M D			
					N = 11 4,7,4					FILL: Clayey sand, medium to coarse grained, yellow brown and orange brown, with sub-angular fine to medium grained sandstone gravel.	w>PL		490 390 360	60mm VOID UNDERNEATH SLAB APPEARS MODERATELY COMPACTED
							1			FILL: Silty clay, medium to high plasticity, light grey mottled brown and dark grey, trace of ash, slag, and angular fine to medium grained igneous gravel.				
					N = 8 3,4,4	36				FILL: Silty clay, medium plasticity, light grey, with angular medium to coarse grained ironstone gravel.			250 270 190	APPEARS MODERATELY COMPACTED
							2							
						35								
ON COMPLETION					N = 2 1,1,1		3						200 180 140	
						34				FILL: Sand, medium to coarse grained, light grey and brown.	M			
											W			
							4		-	SANDSTONE: fine to medium grained, light grey.	DW SW	L M - H		HAWKESBURY SANDSTONE LOW TO MODERATE 'TC' BIT RESISTANCE
						33				REFER TO CORED BOREHOLE LOG				HIGH RESISTANCE
							5							
						32								
							6							
						31								

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CORED BOREHOLE LOG

Borehole No. 1

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R | **Core Size:** NMLC | **R.L. Surface:** 37.3 m

Date: 22/7/19 | **Inclination:** VERTICAL | **Datum:** AHD

Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** S.M./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	DEFECT DETAILS: SPACING (mm) (600, 200, 60, 20)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 4.24m						
50% RETURN		33	5		SANDSTONE: fine to medium grained, light grey, with shale clasts, bedded at 0-10°.	SW	M				Hawkesbury Sandstone
		32					M - H			(5.15m) J, 15°, P, S, Cn (5.27m) Be, 5°, P, S, Cn	
0% RETURN		31	6							(5.55m) XWS, 0°, 4 mm.t	
			7		as above, but bedded at 0-20°.						
		30			END OF BOREHOLE AT 7.29 m						
		29	8								
		28	9								
		27	10								

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BOREHOLE LOG

Borehole No. 2

1 / 1

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 39 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION										FILL: Silty sand, fine to medium grained, dark brown, with root fibres.	M			GRASS COVER APPEARS WELL COMPACTED
					N = 21 2,12,9					FILL: Silty sand, medium to coarse grained, brown, with clay fines an sub-angular medium to coarse grained sandstone gravel, trace of ash.				
						38	1			FILL: Silty sandy clay, low to medium plasticity, brown mottled orange brown, medium to coarse grained sand, with sub-angular medium to coarse grained ironstone and sandstone gravel, trace of slag and ash.				APPEARS MODERATELY COMPACTED
					N = 4 2,2,2									
						37	2							
									-	SANDSTONE: fine to medium grained, light grey.	SW	M - H		HAWKESBURY SANDSTONE HIGH 'TC' BIT RESISTANCE WITH VERY LOW RESISTANCE BANDS
						36	3				DW	VL		
										as above, but yellow brown.	SW	M		
											DW	VL		
										as above, but orange brown.				
						35	4			as above, but light grey.	SW	M		MODERATE RESISTANCE WITH VERY LOW RESISTANCE BANDS
											DW	VL		
											SW	M		
						34	5							GROUNDWATER MONITORING WELL INSTALLED TO 2.3m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 0.4m TO 2.3m. CASING 0.11m TO 0.4m. 2mm SAND FILTER PACK 0.4m TO 2.3m. BENTONITE SEAL 0.11m TO 0.4m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						33	6							
										END OF BOREHOLE AT 6.30 m				

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BOREHOLE LOG

Borehole No. 3

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 42.8 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF CORING									-	ASPHALTIC CONCRETE: 45mm.t	D			APPEARS MODERATELY COMPACTED
					N = 11 8,4,7	42	1			FILL: Silty gravelly sand, medium to coarse grained, dark grey, angular medium to coarse grained igneous gravel. FILL: Sand, medium to coarse grained, light grey, with dark grey silty clay nodules, trace of ash.				
										FILL: Silty sand, medium to coarse grained, brown and light grey, with sub-angular medium to coarse grained sandstone gravel, trace of clay fines, slag and ash.	SW	M - H		HAWKESBURY SANDSTONE
									-	FILL: Clayey sand, medium to coarse grained, light brown.				HIGH 'TC' BIT RESISTANCE
						41	2			SANDSTONE: fine to medium grained, light grey. REFER TO CORED BOREHOLE LOG				
						40	3							
						39	4							
						38	5							
						37	6							
						36								

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CORED BOREHOLE LOG

Borehole No. 3 **2 / 2**

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Core Size:** NMLC **R.L. Surface:** 42.8 m

Date: 23/7/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** S.M./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS SPACING (mm)	DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
					START CORING AT 1.22m						
ON COMPLETION		41	2		SANDSTONE: fine to medium grained, dark red brown, light grey and orange brown, bedded at 0-20°.	MW	H L			(1.87m) XWS, 20°, 3 mm.t (2.13m) XWS, 10°, 8 mm.t ~~(2.21m) XWS, 10°, 15 mm.t~~	Hawkesbury Sandstone
					NO CORE 0.42m						
100% RETURN		40	3		SANDSTONE: fine to medium grained, light grey and dark red brown, bedded at 0-10°.	MW	L M			~~(2.65m) XWS, 0°, 25 mm.t~~ (2.92m) Cb, 0°, 5mm.t (3.14m) XWS, 0°, 3-8mm.t (3.21m) Be, 0°, P, S, Cb Sn (3.22m) J, 30°, P, S, Cb Sn, 5 mm.t (3.67m) Be, 0°, P, S, Cb Sn, 5 mm.t (3.84m) XWS, 0°, 75 mm.t	Hawkesbury Sandstone
		39	4								
		38	5		as above, but light grey and orange brown.	SW	H				
		37	6								
		36	7		as above, but light grey, red brown and yellow brown, with slump bedding structure.					(6.57m) XWS, 0°, 65 mm.t	
		35			END OF BOREHOLE AT 7.20 m						

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BOREHOLE LOG

Borehole No. 4

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 41.5 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF CORING										ASPHALTIC CONCRETE:				
									-	FILL: Silty gravelly sand, medium to coarse grained, dark grey, angular fine to coarse grained igneous gravel.	M W			APPEARS POORLY COMPACTED
					N = 3 4,2,1	41				FILL: Silty sand, medium to coarse grained, brown and dark yellow brown, with sub-angular medium to coarse grained sandstone gravel.	M			
							1			as above, but orange brown and yellow brown.				
					N = 4 3,2,2	40								
							2			as above, but brown, with clay fines.				
									SC	Clayey SAND: fine to medium grained, red brown and orange brown.	M	(L)		RESIDUAL
						39			-	SANDSTONE: fine to medium grained, light grey.	DW	VL - L		HAWKESBURY SANDSTONE LOW 'TC' BIT RESISTANCE
							3			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 2.2m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 0.1m TO 2.2m. 2mm SAND FILTER PACK 0.3m TO 2.2m. BENTONITE SEAL 0.1m TO 0.3m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						38								
							4							
						37								
							5							
						36								
							6							
						35								

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CORED BOREHOLE LOG

Borehole No. 4

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R | **Core Size:** NMLC | **R.L. Surface:** 41.5 m

Date: 23/7/19 | **Inclination:** VERTICAL | **Datum:** AHD

Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** S.M./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ VL 0.1 L 0.3 M 1 H 3 VH 10 EH	DEFECT DETAILS SPACING (mm) 600 200 60 20 DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
		39	3		START CORING AT 3.03m					
ON COMPLETION 0% RETURN		38	4		SANDSTONE: fine to medium grained, light grey and orange brown, bedded at 0-10°.	DW	L		(3.11m) XWS, 0°, 5mm.t, HP: 150, 330, 410 kPa	Hawkesbury Sandstone
					Extremely Weathered sandstone: sandy CLAY: low to medium plasticity, light grey mottled orange brown, fine to medium grained sand.	XW	Hd			
		37	5		SANDSTONE: fine to medium grained, light grey, yellow brown and red brown, bedded at 0-20°.	SW	M		(4.36m) Be, 0°, P, S, Cn	
		36	6				M - H		(5.66m) CS, 0°, 3 mm.t	
		35	7		as above, but light grey and yellow brown, with slump bedding structure.		H			
		34	8		END OF BOREHOLE AT 7.25 m					
		33								

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BOREHOLE LOG

Borehole No. 5

1 / 1

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 44.5 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION									-	ASPHALTIC CONCRETE: 65mm.t				
									-	FILL: Silty gravelly sand, medium to coarse grained igneous, angular, dark grey, medium to coarse grained sand.	D			
						44			CL-CI	FILL: Sand, medium to coarse grained, orange brown, with clay fines, and sub-angular medium to coarse grained sandstone gravel.	w<PL	Hd	460 600 570	RESIDUAL
					N = 14 5,5,9		1		-	Sandy CLAY: low to medium plasticity, orange brown and yellow brown, fine to medium grained.	DW	L		HAWKESBURY SANDSTONE
						43				as above, but light grey, with low strength iron indurated bands.	SW	M		LOW 'TC' BIT RESISTANCE
										SANDSTONE: fine to medium grained, light grey and orange brown.				HIGH RESISTANCE
							2				DW	VL		VERY LOW RESISTANCE
										as above, but red brown and light grey.	SW	M		HIGH RESISTANCE
						42				END OF BOREHOLE AT 2.30 m				
							3							
						41								
							4							
						40								
							5							
						39								
							6							
						38								

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BOREHOLE LOG

Borehole No. 6

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 49.5 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF CORING									-	ASPHALTIC CONCRETE: 60mm.t FILL: Silty gravelly sand, medium to coarse grained, dark grey, sub-angular medium to coarse grained igneous gravel.	D			
					N=SPT 2/ 20mm REFUSAL	49			CI-CH	FILL: Clayey sand, medium to coarse grained, with sub-angular medium to coarse grained sandstone gravel.	w<PL	(VSt)		RESIDUAL
							1		-	Sandy CLAY: low plasticity, light grey, fine to medium grained, with low strength iron indurated bands.	SW	L		HAWKESBURY SANDSTONE
										SANDSTONE: fine to medium grained, light grey.		M - H		LOW 'TC' BIT RESISTANCE
						48				REFER TO CORED BOREHOLE LOG				HIGH RESISTANCE
							2							
						47								
							3							
						46								
							4							
						45								
							5							
						44								
							6							
						43								

JK 9.02.4 LIB:GLB Log JK AUGERHOLE - MASTER 32507R GREENWICH.GPJ <<DrawingFile>> 30/08/2019 10:47 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

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CORED BOREHOLE LOG

Borehole No. 6

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R | **Core Size:** NMLC | **R.L. Surface:** 49.5 m

Date: 23/7/19 | **Inclination:** VERTICAL | **Datum:** AHD

Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** S.M./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ VL -0.1 / L -0.3 / M -1 / H -3 / VH -10 / EH	DEFECT DETAILS SPACING (mm) 600 / 200 / 60 / 20	DEFECT DETAILS DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness Specific / General	Formation
					START CORING AT 1.24m						
ON COMPLETION 100% RETURN		48 47 46 45 44 43 42	2 3 4 5 6 7		SANDSTONE: fine to medium grained, light grey and orange brown, bedded at 0-20°. as above, but orange brown and grey. as above, but light grey. END OF BOREHOLE AT 7.26 m	SW FR	H M H M			(1.68m) XWS, 0°, 3 mm.t (3.52m) Be, 0°, P, S, Fe Sn (4.39m) Be, 0°, P, S, Cn (5.36m) XWS, 0°, 25 mm.t (5.45m) XWS, 0°, 70 mm.t	Hawkesbury Sandstone

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BOREHOLE LOG

Borehole No. 7

Client: HAMMOND CARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: 32507R **Method:** SPIRAL AUGER **R.L. Surface:** 52 m

Date: 23/7/19 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** S.M./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF CORING										FILL: Silty sand, fine to medium grained, dark brown, with root fibres.	D			
									-	SANDSTONE: fine to medium grained, yellow brown and brown, with extremely weathered bands.	DW	L		HAWKESBURY SANDSTONE LOW 'TC' BIT RESISTANCE
						51	1					VL		VERY LOW RESISTANCE
												L		LOW RESISTANCE
						50	2			as above, but red brown and light grey.	SW	M		MODERATE RESISTANCE
										as above, but light grey.				
										REFER TO CORED BOREHOLE LOG				
						49	3							
						48	4							
						47	5							
						46	6							

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Log No. **BH11** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 38.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of root fibres.	D			GRASS COVER
										FILL: Sandy clay, low to medium plasticity, light grey and red brown, trace of ironstone, sandstone and igneous gravel and ash.	w<PL			
							0.5			FILL: Silty sand, fine to medium grained, light brown, trace of ironstone, igneous and sandstone gravel, ash and slag.	D			
										END OF BOREHOLE AT 0.7m				REFUSAL
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH12** **1/2**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 37.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			MULCH: 300mm.t.				MULCH COVER
							0.5			FILL: Silty sand, fine to medium grained, light brown, trace of blue metal, igneous, ironstone and sandstone gravel and ash.	D			
							1			FILL: Sandy clay, low to medium plasticity, dark brown, trace of igneous and sandstone gravel and ash.	w<PL			
							1.5							
							2			FILL: Sandy clay, low to medium plasticity, yellow brown and brown, trace of sandstone, igneous and ironstone gravel, ash and slag.	w<PL			
							2.5			FILL: Silty clay, low to medium plasticity, light grey, trace of igneous gravel.	w<PL			
							3			FILL: Sand, fine to medium grained, yellow brown, trace of sandstone gravel.	D			
							3.5							

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Log No. **BH12** **2/2**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 37.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
										FILL: Sand, fine to medium grained, yellow brown, trace of sandstone gravel.	D			
	■									FILL: Silty sand, fine to medium grained, brown, trace of sandstone and quartz gravel.	M			
							4			END OF BOREHOLE AT 4.1m				REFUSAL
							4.5							
							5							
							5.5							
							6							
							6.5							
							7							

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Log No. **BH13** 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 37.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone and sandstone gravel, brick, terracotta pipe and concrete fragments.	D			
							0.5			FILL: Silty clayey sand, fine to medium grained, brown and red brown, trace of ironstone, igneous and sandstone gravel, brick, concrete and terracotta fragments.	D			
							1			END OF BOREHOLE AT 0.9m				REFUSAL
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH14** 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 38.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC CONCRETE: 50mm.t.				
										FILL: Silty sand, fine to medium grained, dark brown, trace of blue metal gravel.	D			
							0.5			FILL: Sandy clay, low to medium plasticity, light grey and light red brown, trace of ironstone gravel.	w<PL			
										FILL: Sandy clay, low to medium plasticity, dark brown and yellow brown, trace of ironstone, igneous and sandstone gravel and brick fragments.	w<PL			
							1			FILL: Clayey sand, fine to medium grained, yellow brown, trace of ironstone gravel and brick fragments.	D			
							1.5			FILL: Silty sandy clay, low to medium plasticity, yellow brown mottled grey, trace of ironstone gravel.	w<PL			
							2							
										FILL: Silty sand, fine to medium grained, dark brown, trace of sandstone gravel.	D			
							2.5			END OF BOREHOLE AT 2.4m				REFUSAL
							3							
							3.5							

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Log No. **BH15** 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 37.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, brown, trace of root fibres, ironstone and igneous gravel.	D			GRASS COVER
							0.5			FILL: Silty clay, low to medium plasticity, grey and red brown, trace of ironstone gravel.	w<PL			
										FILL: Clayey sand, fine to medium grained, yellow brown and brown, trace of ironstone, igneous and sandstone gravel and ash.	D			
							1			FILL: Clayey sand, fine to medium grained, brown, trace of sandstone gravel.	D			
										END OF BOREHOLE AT 1.1m				REFUSAL ON INFERRED SANDSTONE BEDROCK
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH16** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 38.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC COVER: 50mm.t.				
										FILL: Silty clayey sand, fine to medium grained, dark grey, trace of blue metal gravel.	D			
										FILL: Silty clayey sand, fine to medium grained, grey, trace of ironstone and igneous gravel.	D			
							0.5			FILL: Silty sandy clay, low to medium plasticity, grey mottled orange brown, trace of ironstone gravel.	w<PL			
										FILL: Sandstone, medium to coarse grained, light grey and brown.	D			REFUSAL
										END OF BOREHOLE AT 0.75m				
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH17** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 41.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC COVER: 50mm.t.				
										FILL: Sandy gravel, medium to coarse grained, dark grey, fine to medium grained, blue metal gravel.	D			ROADBASE
										FILL: Silty sand, fine to medium grained, brown, trace of ironstone, igneous and sandstone gravel and ash.	D			
							0.5							
										FILL: Sandy clay, low to medium plasticity, grey, trace of sandstone gravel.	w≈PL D			
							1			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone, igneous and sandstone gravel and ash.				REFUSAL ON INFERRED ROCK
										END OF BOREHOLE AT 0.9m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. BH18 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 41.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC CONCRETE: 50mm.t.				
										FILL: Sandy gravel, medium to coarse grained, dark grey, blue metal gravel.	D			
										FILL: Silty sand, fine to medium grained, light brown and orange brown, trace of ironstone and sandstone gravel.	D			
							0.5			FILL: Sand, fine to medium grained, yellow brown.	D			
										FILL: Silty sand, medium to coarse grained, orange brown, trace of ironstone gravel.				
							1			FILL: Silty sand, fine to medium grained, brown, trace of ironstone and igneous gravel.	W			
										END OF BOREHOLE AT 1.1m				REFUSAL
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH19** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** HAND AUGER **R.L. Surface:** 43.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: N/A **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■				0			FILL: Silty sand, fine to medium grained, dark brown, trace of mulch.	D			MULCH COVER
										FILL: Silty sand, fine to medium grained, dark brown, trace of blue metal gravel.	D			
										END OF BOREHOLE AT 0.3m				HAND AUGER REFUSAL
							0.5							
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH20** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** HAND AUGER **R.L. Surface:** 45.5m

Date: 24/7/19 **Datum:** AHD

Plant Type: N/A **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■				0			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone, igneous and sandstone gravel, concrete fragments and mulch.	D			
										END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL ON INFERRED BURRIED SLAB
							0.5							
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH21** 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 44.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC COVER: 50mm.t.				
										FILL: Silty sand, fine to medium grained, dark grey, with fine to medium grained blue metal gravel.	D			
							0.5			FILL: Silty sand, fine to medium grained, grey, with fine to medium grained blue metal gravel, trace of ironstone, igneous and sandstone gravel.	D			
										FILL: Clayey sand, fine to medium grained, dark brown, trace of ironstone and sandstone gravel and ash.	D			
							1		CL-CI	Sandy CLAY: low to medium plasticity, yellow brown, fine to medium grained, trace of ironstone gravel.	w<PL			
										END OF BOREHOLE AT 1.4m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH22** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 43.0m

Date: 25/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC COVER: 50mm.t.				
	■		■						-	FILL: Sandy gravel, medium to coarse grained, dark grey, blue metal gravel, fine to medium grained.	D			ROADBASE
	■		■				0.5			FILL: Silty sand, fine to medium grained, brown, trace of ironstone, igneous and sandstone gravel and ash.	D			
	■								SP	SAND: fine to medium grained, yellow brown, trace of ironstone gravel.	D			
									CL-CI	Sandy CLAY: low to medium plasticity, grey, fine to medium grained.	w≈PL			
							1			END OF BOREHOLE AT 0.9m				REFUSAL
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH23** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** HAND AUGER **R.L. Surface:** 40.5m

Date: 25/7/19 **Datum:** AHD

Plant Type: N/A **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■				0			FILL: Silty sand, fine to medium grained, dark brown, trace of organic material, mulch, igneous gravel and ash.	D			
	■									FILL: Silty clay, low to medium plasticity, red brown mottled grey, trace of ironstone gravel.	w<PL			
							0.5			END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH24** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** HAND AUGER **R.L. Surface:** 48.8m

Date: 24/7/19 **Datum:** AHD

Plant Type: N/A **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION			■				0			FILL: Silty sand, fine to medium grained, dark brown, trace of root fibres and mulch.	D			MULCH COVER
										FILL: Silty sand, fine to medium grained, dark brown and yellow brown, trace of ironstone and igneous gravel and root fibres.	D			
							0.5			FILL: Silty sand, fine to medium grained, yellow brown and dark brown, trace of ironstone gravel.	D			
										END OF BOREHOLE AT 0.7m				HAND AUGER REFUSAL ON INFERRED SANDSTONE BEDROCK
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH25** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** HAND AUGER **R.L. Surface:** 48.5m

Date: 24/7/19 **Datum:** AHD

Plant Type: N/A **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■				0			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone, igneous and sandstone gravel and root fibres.	D			GRASS COVER
							0.5			END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL ON INFERRED SANDSTONE BEDROCK
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH26** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 50.7m

Date: 24/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of root fibres.	D			GRASS COVER
										FILL: Clayey sand, fine to medium grained, dark yellow brown, trace of ironstone, igneous and sandstone gravel and root fibres.	D			
									CL-CI	Sandy CLAY: low to medium plasticity, yellow brown, trace of ironstone gravel.	w<PL			
							0.5			Sandy CLAY: low to medium plasticity, red brown and light grey, trace of ironstone gravel.	w<PL			
							1							
										END OF BOREHOLE AT 1.2m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH27** 1/1

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Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 49.7m

Date: 24/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of root fibres and sandstone gravel.	D			GRASS COVER
										FILL: Sandy clay, low to medium plasticity, dark grey, fine to medium grained, trace of ironstone and sandstone gravel and root fibres.	w<PL			
							0.5		CL-CI	Sandy CLAY: low to medium plasticity, yellow brown, fine to medium grained sand.	w<PL			
										Sandy CLAY: low to medium plasticity, yellow brown and grey, fine to medium grained sand, trace of ironstone gravel.	w<PL			
							1			END OF BOREHOLE AT 0.9m				REFUSAL ON IRONSTONE GRAVEL
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH28** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 40.8m

Date: 24/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of ironstone gravel and root fibres.	D			GRASS COVER
										FILL: Silty sand, fine to medium grained, light yellow brown, trace of ironstone and igneous gravel, ash and root fibres.	D			
									SC		D			
							0.5		CL-CI	Clayey SAND: fine to medium grained, yellow brown.	w<PL			
										Sandy CLAY: low to medium plasticity, fine to medium grained, yellow brown, with ironstone gravel.				REFUSAL ON IRONSTONE GRAVEL
										END OF BOREHOLE AT 0.6m				
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Log No. **BH29** **1/1**

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 52.0m

Date: 24/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			FILL: Silty sand, fine to medium grained, dark brown, trace of root fibres.	D			GRASS COVER
										FILL: Silty sand, fine to medium grained, light brown, trace of ironstone, sandstone, igneous and blue metal gravel.	D			
							0.5			FILL: Sandy gravel, fine to medium grained, dark brown, blue metal gravel and fine to medium grained sand.	D			
										FILL: Sand, fine to medium grained, yellow brown.	D			
							1			FILL: Clayey sand, fine to medium grained, dark grey, trace of ironstone gravel.	D			
									CL-CI	Sandy CLAY: low to medium plasticity, yellow brown, trace of ironstone gravel.	w<PL			
							1.5			END OF BOREHOLE AT 1.5m				
							2							
							2.5							
							3							
							3.5							

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Log No. **BH30** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HAMMONDCARE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: 97-115 RIVER ROAD, GREENWICH, NSW

Job No.: E32507BT **Method:** SPIRAL AUGER/PUSHTUBE **R.L. Surface:** 49.5m

Date: 24/7/19 **Datum:** AHD

Plant Type: EZIPROBE **Logged/Checked by:** M.M.P./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■				0			ASPHALTIC COVER: 50mm.t.				
	■									FILL: Sandy gravel, medium to coarse grained, dark grey, trace of metal fragments and ironstone gravel.	D			
	■									FILL: Silty sand, fine to medium grained, dark grey, with ash, trace of rounded igneous and sandstone gravel and slag.	D			
	■						0.5			FILL: Silty sand, fine to medium grained, light brown, trace of ironstone, sandstone and igneous gravel.	D			
	■									FILL: Sand, fine to medium grained, yellow brown.	D			POSSIBLY NATURAL
							1			FILL: Sand, fine to medium grained, yellow brown, trace of ironstone gravel.				REFUSAL
										END OF BOREHOLE AT 0.7m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL

FILL

TOPSOIL

CLAY (CL, CI, CH)

SILT (ML, MH)

SAND (SP, SW)

GRAVEL (GP, GW)

SANDY CLAY (CL, CI, CH)

SILTY CLAY (CL, CI, CH)

CLAYEY SAND (SC)

SILTY SAND (SM)

GRAVELLY CLAY (CL, CI, CH)

CLAYEY GRAVEL (GC)

SANDY SILT (ML, MH)

PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK

CONGLOMERATE

SANDSTONE

SHALE/MUDSTONE

SILTSTONE

CLAYSTONE

COAL

LAMINITE

LIMESTONE

PHYLLITE, SCHIST

TUFF

GRANITE, GABBRO

DOLERITE, DIORITE

BASALT, ANDESITE

QUARTZITE

OTHER MATERIALS

BRICKS OR PAVERS

CONCRETE

ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
Fine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \qquad and \qquad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

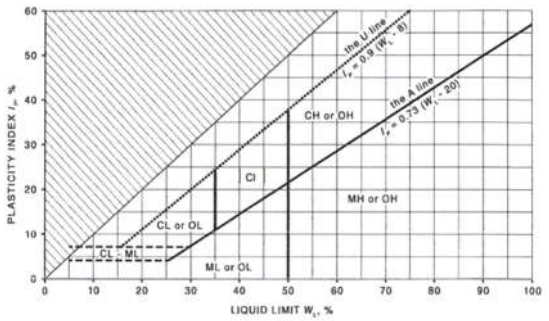
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

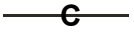
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL $w \approx$ PL w < PL $w \approx$ LL w > LL	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D M W	DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt Hd Fr ( )	VERY SOFT – unconfined compressive strength ≤ 25kPa. SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa. FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa. STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa. VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa. HARD – unconfined compressive strength > 400kPa. FRIABLE – strength not attainable, soil crumbles. Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)** VERY LOOSE ≤ 15 / 0 – 4 LOOSE > 15 and ≤ 35 / 4 – 10 MEDIUM DENSE > 35 and ≤ 65 / 10 – 30 DENSE > 65 and ≤ 85 / 30 – 50 VERY DENSE > 85 / > 50 Bracketed symbol indicates estimated density based on ease of drilling or other assessment.
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.

Log Column	Symbol	Definition
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix E: Laboratory Reports & COC Documents

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 279440

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	131 Soil
Date samples received	30/09/2021
Date completed instructions received	01/10/2021

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	11/10/2021
Date of Issue	11/10/2021

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Jeremy Faircloth, Operations Manager, Sydney
Josh Williams, LC Supervisor
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-1	279440-2	279440-3	279440-5	279440-6
Your Reference	UNITS	BH105	BH105	BH105	BH106	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	0.03-0.3	0.6-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	120	118	118	121	116

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-7	279440-8	279440-10	279440-11	279440-12
Your Reference	UNITS	BH107	BH107	BH109	BH109	BH109
Depth		0-0.2	0.2-0.4	0.01-0.4	0.5-0.8	0.8-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	119	127	124	123	124

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-14	279440-15	279440-16	279440-18	279440-20
Your Reference	UNITS	BH110A	BH110A	BH110A	BH111	BH111
Depth		0-0.1	0.1-0.2	0.5-0.8	0-0.1	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	120	117	108	106	107

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-21	279440-22	279440-23	279440-24	279440-25
Your Reference	UNITS	BH111	BH112	BH112	BH113	BH113
Depth		0.6-0.8	0.22-0.65	0.65-0.8	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	104	105	108	106	116

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-26	279440-29	279440-32	279440-34	279440-36
Your Reference	UNITS	BH113	BH114	BH115	BH115	BH116
Depth		0.35-0.45	0.05-0.2	0-0.1	0.6-0.8	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	11/10/2021	11/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	114	116	106	91	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		279440-37	279440-39	279440-41	279440-42	279440-46
Your Reference	UNITS	BH116	BH118	BH118	BH118	SDUP3
Depth		0.1-0.3	0-0.1	1.4-1.5	1.6-1.8	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	28/09/2021
Date extracted	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	101	91	102	88	94

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		279440-47	279440-51	279440-52
Your Reference	UNITS	SDUP4	TS-S1	TB-S1
Depth		-	-	-
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	27/09/2021	27/09/2021
Date extracted	-	07/10/2021	06/10/2021	07/10/2021
Date analysed	-	11/10/2021	08/10/2021	11/10/2021
TRH C_6 - C_9	mg/kg	<25	[NT]	[NA]
TRH C_6 - C_{10}	mg/kg	<25	[NT]	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NT]	[NA]
Benzene	mg/kg	<0.2	105%	<0.2
Toluene	mg/kg	<0.5	104%	<0.5
Ethylbenzene	mg/kg	<1	103%	<1
m+p-xylene	mg/kg	<2	97%	<2
o-Xylene	mg/kg	<1	106%	<1
naphthalene	mg/kg	<1	[NT]	<1
Total +ve Xylenes	mg/kg	<3	[NT]	<3
Surrogate aaa-Trifluorotoluene	%	88	89	89

svTRH (C10-C40) in Soil						
Our Reference		279440-1	279440-2	279440-3	279440-5	279440-6
Your Reference	UNITS	BH105	BH105	BH105	BH106	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	0.03-0.3	0.6-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	220	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	220	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	160	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	290	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	460	<50
Surrogate o-Terphenyl	%	85	82	85	92	88

svTRH (C10-C40) in Soil						
Our Reference		279440-7	279440-8	279440-10	279440-11	279440-12
Your Reference	UNITS	BH107	BH107	BH109	BH109	BH109
Depth		0-0.2	0.2-0.4	0.01-0.4	0.5-0.8	0.8-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	190	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	190	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	110	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	370	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	480	<50	<50
Surrogate o-Terphenyl	%	87	85	85	83	83

svTRH (C10-C40) in Soil						
Our Reference		279440-14	279440-15	279440-16	279440-18	279440-20
Your Reference	UNITS	BH110A	BH110A	BH110A	BH111	BH111
Depth		0-0.1	0.1-0.2	0.5-0.8	0-0.1	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	110	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	290	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	400	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	290	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	280	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	570	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	86	89	87	85

svTRH (C10-C40) in Soil						
Our Reference		279440-21	279440-22	279440-23	279440-24	279440-25
Your Reference	UNITS	BH111	BH112	BH112	BH113	BH113
Depth		0.6-0.8	0.22-0.65	0.65-0.8	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	160	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	160	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	220	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	220	<50	<50
Surrogate o-Terphenyl	%	88	84	83	83	84

svTRH (C10-C40) in Soil						
Our Reference		279440-26	279440-29	279440-32	279440-34	279440-36
Your Reference	UNITS	BH113	BH114	BH115	BH115	BH116
Depth		0.35-0.45	0.05-0.2	0-0.1	0.6-0.8	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	120	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	120	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	120	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	120	<50	<50	<50	<50
Surrogate o-Terphenyl	%	86	87	84	88	85

svTRH (C10-C40) in Soil						
Our Reference		279440-37	279440-39	279440-41	279440-42	279440-46
Your Reference	UNITS	BH116	BH118	BH118	BH118	SDUP3
Depth		0.1-0.3	0-0.1	1.4-1.5	1.6-1.8	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	160
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	160
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	160
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	160
Surrogate o-Terphenyl	%	83	84	84	83	85

svTRH (C10-C40) in Soil		
Our Reference		279440-47
Your Reference	UNITS	SDUP4
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	06/10/2021
Date analysed	-	08/10/2021
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	110
Total +ve TRH (C10-C36)	mg/kg	110
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	120
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	120
Surrogate o-Terphenyl	%	84

PAHs in Soil						
Our Reference		279440-1	279440-2	279440-3	279440-5	279440-6
Your Reference	UNITS	BH105	BH105	BH105	BH106	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	0.03-0.3	0.6-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	07/10/2021	07/10/2021	08/10/2021	07/10/2021
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.4	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	82	92	91	94	98

PAHs in Soil						
Our Reference		279440-7	279440-8	279440-10	279440-11	279440-12
Your Reference	UNITS	BH107	BH107	BH109	BH109	BH109
Depth		0-0.2	0.2-0.4	0.01-0.4	0.5-0.8	0.8-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	08/10/2021	07/10/2021	07/10/2021
Naphthalene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.06	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.3	0.3	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	96	97	87	103	93

PAHs in Soil						
Our Reference		279440-14	279440-15	279440-16	279440-18	279440-20
Your Reference	UNITS	BH110A	BH110A	BH110A	BH111	BH111
Depth		0-0.1	0.1-0.2	0.5-0.8	0-0.1	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	08/10/2021	07/10/2021	07/10/2021	08/10/2021	07/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	0.5	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.6	0.4
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.6	0.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.4	0.4
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.4	0.4
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.3	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Total +ve PAH's	mg/kg	<0.05	0.2	<0.05	3.5	2.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	105	94	96	87	99

PAHs in Soil						
Our Reference		279440-21	279440-22	279440-23	279440-24	279440-25
Your Reference	UNITS	BH111	BH112	BH112	BH113	BH113
Depth		0.6-0.8	0.22-0.65	0.65-0.8	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	<0.1	<0.1	<0.1	0.1
Pyrene	mg/kg	0.4	<0.1	<0.1	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.8	<0.05	<0.05	<0.05	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	96	99	98	94	88

PAHs in Soil						
Our Reference		279440-26	279440-29	279440-32	279440-34	279440-36
Your Reference	UNITS	BH113	BH114	BH115	BH115	BH116
Depth		0.35-0.45	0.05-0.2	0-0.1	0.6-0.8	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.6	<0.1	0.2	<0.1	<0.1
Pyrene	mg/kg	0.6	<0.1	0.2	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.3	<0.1	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.5	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.3	<0.05	0.1	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	3.0	<0.05	0.64	<0.05	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	96	92	93	99

PAHs in Soil						
Our Reference		279440-37	279440-39	279440-41	279440-42	279440-46
Your Reference	UNITS	BH116	BH118	BH118	BH118	SDUP3
Depth		0.1-0.3	0-0.1	1.4-1.5	1.6-1.8	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	28/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.5	<0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Fluoranthene	mg/kg	0.2	0.2	1.2	<0.1	0.4
Pyrene	mg/kg	0.2	0.2	1.2	<0.1	0.4
Benzo(a)anthracene	mg/kg	<0.1	0.2	1.2	<0.1	0.3
Chrysene	mg/kg	<0.1	0.1	0.8	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	1	<0.2	0.4
Benzo(a)pyrene	mg/kg	0.1	0.2	0.89	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.4	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.5	<0.1	0.2
Total +ve PAH's	mg/kg	0.4	1.3	8.5	<0.05	2.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.3	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.3	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.3	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	92	92	92	91

PAHs in Soil		
Our Reference		279440-47
Your Reference	UNITS	SDUP4
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	06/10/2021
Date analysed	-	07/10/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.1
Pyrene	mg/kg	0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	88

Organochlorine Pesticides in soil						
Our Reference		279440-1	279440-5	279440-7	279440-10	279440-14
Your Reference	UNITS	BH105	BH106	BH107	BH109	BH110A
Depth		0.25-0.4	0.03-0.3	0-0.2	0.01-0.4	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	27/09/2021	28/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	08/10/2021	07/10/2021	08/10/2021	08/10/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	93	104	96	103

Organochlorine Pesticides in soil						
Our Reference		279440-18	279440-22	279440-24	279440-29	279440-32
Your Reference	UNITS	BH111	BH112	BH113	BH114	BH115
Depth		0-0.1	0.22-0.65	0-0.1	0.05-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	102	102	94	93

Organochlorine Pesticides in soil				
Our Reference		279440-36	279440-39	279440-47
Your Reference	UNITS	BH116	BH118	SDUP4
Depth		0-0.1	0-0.1	-
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	93	95

Organophosphorus Pesticides in Soil						
Our Reference		279440-1	279440-5	279440-7	279440-10	279440-14
Your Reference	UNITS	BH105	BH106	BH107	BH109	BH110A
Depth		0.25-0.4	0.03-0.3	0-0.2	0.01-0.4	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	27/09/2021	28/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	08/10/2021	07/10/2021	08/10/2021	08/10/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<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
Surrogate TCMX	%	97	93	104	96	103

Organophosphorus Pesticides in Soil						
Our Reference		279440-18	279440-22	279440-24	279440-29	279440-32
Your Reference	UNITS	BH111	BH112	BH113	BH114	BH115
Depth		0-0.1	0.22-0.65	0-0.1	0.05-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<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
Surrogate TCMX	%	96	102	102	94	93

Organophosphorus Pesticides in Soil				
Our Reference		279440-36	279440-39	279440-47
Your Reference	UNITS	BH116	BH118	SDUP4
Depth		0-0.1	0-0.1	-
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	93	95

PCBs in Soil						
Our Reference		279440-1	279440-5	279440-7	279440-10	279440-14
Your Reference	UNITS	BH105	BH106	BH107	BH109	BH110A
Depth		0.25-0.4	0.03-0.3	0-0.2	0.01-0.4	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	27/09/2021	28/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	08/10/2021	07/10/2021	08/10/2021	08/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	93	104	96	103

PCBs in Soil						
Our Reference		279440-18	279440-22	279440-24	279440-29	279440-32
Your Reference	UNITS	BH111	BH112	BH113	BH114	BH115
Depth		0-0.1	0.22-0.65	0-0.1	0.05-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	102	102	94	93

PCBs in Soil				
Our Reference		279440-36	279440-39	279440-47
Your Reference	UNITS	BH116	BH118	SDUP4
Depth		0-0.1	0-0.1	-
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021
Date extracted	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	93	95

Acid Extractable metals in soil						
Our Reference		279440-1	279440-2	279440-3	279440-5	279440-6
Your Reference	UNITS	BH105	BH105	BH105	BH106	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	0.03-0.3	0.6-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	74	13	9	30	12
Copper	mg/kg	27	6	2	49	<1
Lead	mg/kg	13	32	12	2	7
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	76	9	1	110	<1
Zinc	mg/kg	45	30	14	38	2

Acid Extractable metals in soil						
Our Reference		279440-7	279440-8	279440-10	279440-11	279440-12
Your Reference	UNITS	BH107	BH107	BH109	BH109	BH109
Depth		0-0.2	0.2-0.4	0.01-0.4	0.5-0.8	0.8-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	8	63	22	15
Copper	mg/kg	18	4	27	7	2
Lead	mg/kg	14	14	8	10	5
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	2	63	16	4
Zinc	mg/kg	22	21	37	16	6

Acid Extractable metals in soil						
Our Reference		279440-14	279440-15	279440-16	279440-18	279440-20
Your Reference	UNITS	BH110A	BH110A	BH110A	BH111	BH111
Depth		0-0.1	0.1-0.2	0.5-0.8	0-0.1	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	<4	7	<4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	63	71	18	9	9
Copper	mg/kg	26	24	2	12	52
Lead	mg/kg	6	6	16	54	49
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	69	73	1	4	6
Zinc	mg/kg	52	39	10	50	79

Acid Extractable metals in soil						
Our Reference		279440-21	279440-22	279440-23	279440-24	279440-25
Your Reference	UNITS	BH111	BH112	BH112	BH113	BH113
Depth		0.6-0.8	0.22-0.65	0.65-0.8	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	12	8	10	11
Copper	mg/kg	13	11	9	9	4
Lead	mg/kg	58	44	6	25	22
Mercury	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	4	1	3	2
Zinc	mg/kg	120	57	12	27	21

Acid Extractable metals in soil						
Our Reference		279440-26	279440-29	279440-32	279440-34	279440-36
Your Reference	UNITS	BH113	BH114	BH115	BH115	BH116
Depth		0.35-0.45	0.05-0.2	0-0.1	0.6-0.8	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	<4	4	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	77	11	15	59
Copper	mg/kg	7	31	11	<1	22
Lead	mg/kg	28	4	40	6	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	85	3	<1	54
Zinc	mg/kg	29	36	42	1	42

Acid Extractable metals in soil						
Our Reference		279440-37	279440-39	279440-41	279440-42	279440-46
Your Reference	UNITS	BH116	BH118	BH118	BH118	SDUP3
Depth		0.1-0.3	0-0.1	1.4-1.5	1.6-1.8	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	17	11	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	8	7	11	11
Copper	mg/kg	7	26	35	1	13
Lead	mg/kg	29	220	99	6	54
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	5	3	2	4
Zinc	mg/kg	29	45	62	14	51

Acid Extractable metals in soil			
Our Reference		279440-47	279440-132
Your Reference	UNITS	SDUP4	BH118 - [TRIPLICATE]
Depth		-	0-0.1
Type of sample		Soil	Soil
Date Sampled		29/09/2021	29/09/2021
Date prepared	-	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021
Arsenic	mg/kg	<4	5
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	9	9
Copper	mg/kg	5	22
Lead	mg/kg	20	380
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	2	5
Zinc	mg/kg	25	82

Moisture						
Our Reference		279440-1	279440-2	279440-3	279440-5	279440-6
Your Reference	UNITS	BH105	BH105	BH105	BH106	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	0.03-0.3	0.6-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	9.3	10	13	7.9	8.2

Moisture						
Our Reference		279440-7	279440-8	279440-10	279440-11	279440-12
Your Reference	UNITS	BH107	BH107	BH109	BH109	BH109
Depth		0-0.2	0.2-0.4	0.01-0.4	0.5-0.8	0.8-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	11	12	8.7	11	11

Moisture						
Our Reference		279440-14	279440-15	279440-16	279440-18	279440-20
Your Reference	UNITS	BH110A	BH110A	BH110A	BH111	BH111
Depth		0-0.1	0.1-0.2	0.5-0.8	0-0.1	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	32	6.3	6.3	11	16

Moisture						
Our Reference		279440-21	279440-22	279440-23	279440-24	279440-25
Your Reference	UNITS	BH111	BH112	BH112	BH113	BH113
Depth		0.6-0.8	0.22-0.65	0.65-0.8	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	9.5	18	7.8	15	11

Moisture						
Our Reference		279440-26	279440-29	279440-32	279440-34	279440-36
Your Reference	UNITS	BH113	BH114	BH115	BH115	BH116
Depth		0.35-0.45	0.05-0.2	0-0.1	0.6-0.8	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	11	7.7	12	14	10

Moisture						
Our Reference		279440-37	279440-39	279440-41	279440-42	279440-46
Your Reference	UNITS	BH116	BH118	BH118	BH118	SDUP3
Depth		0.1-0.3	0-0.1	1.4-1.5	1.6-1.8	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021	28/09/2021
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Moisture	%	11	15	12	8.7	8.8

Moisture				
Our Reference		279440-47	279440-50	279440-118
Your Reference	UNITS	SDUP4	PFAS DUP1	PFAS Trip Blank
Depth		-	-	.
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	27/09/2021	.
Date prepared	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021
Moisture	%	13	7.3	0.3

PFAS in Soils Extended					
Our Reference		279440-1	279440-2	279440-50	279440-118
Your Reference	UNITS	BH105	BH105	PFAS DUP1	PFAS Trip Blank
Depth		0.25-0.4	0.5-0.95	-	.
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	.
Date prepared	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	06/10/2021	06/10/2021	06/10/2021	06/10/2021
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	98	98	97	97
Surrogate $^{13}C_2$ *PFOA*	%	102	99	98	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	97	96	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	110	105	108	115
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	102	104	109

PFAS in Soils Extended					
Our Reference		279440-1	279440-2	279440-50	279440-118
Your Reference	UNITS	BH105	BH105	PFAS DUP1	PFAS Trip Blank
Depth		0.25-0.4	0.5-0.95	-	.
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	.
Extracted ISTD $^{13}C_4$ *PFBA*	%	104	101	104	107
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	101	104	109
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	103	108	113
Extracted ISTD $^{13}C_4$ *PFHpA*	%	110	108	111	115
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	115	119	127
Extracted ISTD $^{13}C_5$ *PFNA*	%	123	123	123	138
Extracted ISTD $^{13}C_2$ *PFDA*	%	130	135	133	142
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	130	120	126	146
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	121	120	142	141
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	122	118	124	133
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	109	103	104	114
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	125	126	123	147
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	121	137	137	159
Extracted ISTD $^{13}C_8$ *FOSA*	%	113	113	116	122
Extracted ISTD d_3 *N MeFOSA*	%	107	106	104	114
Extracted ISTD d_5 *N EtFOSA*	%	111	105	111	119
Extracted ISTD d_7 *N MeFOSE*	%	115	110	128	125
Extracted ISTD d_9 *N EtFOSE*	%	119	114	119	127
Extracted ISTD d_3 *N MeFOSAA*	%	86	136	93	170
Extracted ISTD d_5 *N EtFOSAA*	%	101	112	111	125
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	<0.1	<0.1

Asbestos ID - soils NEPM - ASB-001						
Our Reference		279440-1	279440-5	279440-7	279440-10	279440-14
Your Reference	UNITS	BH105	BH106	BH107	BH109	BH110A
Depth		0.25-0.4	0.03-0.3	0-0.2	0.01-0.4	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	27/09/2021	28/09/2021	29/09/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
Sample mass tested	g	155.24	876.86	834.55	907.91	309.8
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & mulch
Asbestos ID in soil (AS4964) >0.1g/kg	-	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 fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres 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
Asbestos ID in soil <0.1g/kg*	-	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
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		279440-16	279440-18	279440-22	279440-24	279440-29
Your Reference	UNITS	BH110A	BH111	BH112	BH113	BH114
Depth		0.5-0.8	0-0.1	0.22-0.65	0-0.1	0.05-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	28/09/2021	29/09/2021	29/09/2021	29/09/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
Sample mass tested	g	546.92	714.5	808.15	644.18	869.03
Sample Description	-	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Beige coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	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 fibres 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
Asbestos ID in soil <0.1g/kg*	-	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
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		279440-32	279440-36	279440-39	279440-46	279440-47
Your Reference	UNITS	BH115	BH116	BH118	SDUP3	SDUP4
Depth		0-0.1	0-0.1	0-0.1	-	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	28/09/2021	29/09/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
Sample mass tested	g	691.37	844.36	691.91	737.45	793
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	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 fibres 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
Asbestos ID in soil <0.1g/kg*	-	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
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			08/10/2021	1	08/10/2021	08/10/2021		08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	110	105
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	110	105
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	124	112
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	122	110
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	102	102
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	101	100
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	102	102
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	98	1	120	99	19	124	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	08/10/2021	08/10/2021		08/10/2021	08/10/2021
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	18	<25	<25	0	103	96
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	18	<25	<25	0	103	96
Benzene	mg/kg	0.2	Org-023	[NT]	18	<0.2	<0.2	0	105	105
Toluene	mg/kg	0.5	Org-023	[NT]	18	<0.5	<0.5	0	104	104
Ethylbenzene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	103	91
m+p-xylene	mg/kg	2	Org-023	[NT]	18	<2	<2	0	102	89
o-Xylene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	103	91
naphthalene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	18	106	106	0	104	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	08/10/2021	08/10/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	29	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	29	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	29	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	29	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	29	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	29	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	29	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	29	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	29	116	115	1	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	11/10/2021	11/10/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	39	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	39	91	89	2	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	07/10/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	106
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	98	93
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	119	#
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	106
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	98	93
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	119	#
Surrogate o-Terphenyl	%		Org-020	93	1	85	85	0	96	92

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	07/10/2021	07/10/2021		08/10/2021	07/10/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	119	115
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	101	106
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	106	109
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	119	115
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	101	106
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	106	109
Surrogate o-Terphenyl	%		Org-020	[NT]	18	87	88	1	104	84

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	08/10/2021	08/10/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	29	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	29	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	29	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	29	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	29	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	29	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	29	87	87	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	08/10/2021	08/10/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	39	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	39	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	39	84	86	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	08/10/2021	08/10/2021		07/10/2021	08/10/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	111	111
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	107
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	116	114
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.3	40	126	113
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	123
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	121
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	95
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	118	128
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	1	82	88	7	106	97

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	08/10/2021	08/10/2021		07/10/2021	07/10/2021
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	113	111
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	115	113
Fluorene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	114	111
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	18	0.5	0.2	86	126	118
Anthracene	mg/kg	0.1	Org-022/025	[NT]	18	0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	18	0.6	0.5	18	114	116
Pyrene	mg/kg	0.1	Org-022/025	[NT]	18	0.6	0.5	18	113	121
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	0.4	0.3	29	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	18	0.2	0.2	0	85	99
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	18	0.4	0.3	29	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	18	0.3	0.2	40	122	128
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	18	0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	18	0.2	0.1	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	18	87	89	2	107	110

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	07/10/2021	07/10/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	29	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	29	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	29	96	99	3	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	0.2	67	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	39	0.2	0.6	100	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	39	0.2	0.6	100	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	0.2	0.4	67	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	39	0.1	0.5	133	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	39	0.3	0.6	67	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	39	0.2	0.4	67	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	0.2	67	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	39	92	93	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	08/10/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	108
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	103
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	95
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	116
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	110
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	111
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	114
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	124
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	110
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	96
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	1	97	99	2	108	101

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	07/10/2021	07/10/2021		07/10/2021	07/10/2021
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	116	110
HCB	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	114	117
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	119	105
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	120	122
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	116	108
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	111	117
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	124	118
Endrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	98	103
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	112	118
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	88	96
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	18	96	0.97	196	109	106

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	07/10/2021	07/10/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	29	94	97	3	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	39	93	99	6	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	08/10/2021
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	96
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	110
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	95
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	106
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	120
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	95
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	117
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	1	97	99	2	108	101

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	07/10/2021	07/10/2021		07/10/2021	07/10/2021
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	97	96
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	112	118
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	83	83
Malathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	89	87
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	116	122
Parathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	82	87
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	102	111
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	18	96	0.97	196	109	106

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	07/10/2021	07/10/2021		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	29	94	97	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	39	93	99	6	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date extracted	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	08/10/2021
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	118	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	92	1	97	99	2	108	101

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date extracted	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	07/10/2021	07/10/2021		07/10/2021	07/10/2021
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	120	118
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	18	96	0.97	196	109	106

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	07/10/2021	07/10/2021		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	29	94	97	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	39	93	99	6	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	279440-5
Date prepared	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	07/10/2021
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	83	#
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	91	77
Chromium	mg/kg	1	Metals-020	<1	1	74	72	3	95	70
Copper	mg/kg	1	Metals-020	<1	1	27	26	4	91	105
Lead	mg/kg	1	Metals-020	<1	1	13	10	26	96	##
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	95	89
Nickel	mg/kg	1	Metals-020	<1	1	76	72	5	94	##
Zinc	mg/kg	1	Metals-020	<1	1	45	42	7	94	##

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	279440-22
Date prepared	-			[NT]	18	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			[NT]	18	07/10/2021	07/10/2021		07/10/2021	07/10/2021
Arsenic	mg/kg	4	Metals-020	[NT]	18	<4	<4	0	86	83
Cadmium	mg/kg	0.4	Metals-020	[NT]	18	<0.4	<0.4	0	90	87
Chromium	mg/kg	1	Metals-020	[NT]	18	9	9	0	92	89
Copper	mg/kg	1	Metals-020	[NT]	18	12	12	0	89	96
Lead	mg/kg	1	Metals-020	[NT]	18	54	51	6	92	101
Mercury	mg/kg	0.1	Metals-021	[NT]	18	<0.1	<0.1	0	85	91
Nickel	mg/kg	1	Metals-020	[NT]	18	4	4	0	93	87
Zinc	mg/kg	1	Metals-020	[NT]	18	50	49	2	94	87

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	29	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	29	07/10/2021	07/10/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	29	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	29	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	29	77	93	19	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	29	31	34	9	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	29	4	5	22	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	29	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	29	85	91	7	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	29	36	41	13	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	39	06/10/2021	06/10/2021		[NT]	[NT]
Date analysed	-			[NT]	39	07/10/2021	07/10/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	39	17	<4	124	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	39	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	39	8	6	29	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	39	26	23	12	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	39	220	390	56	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	39	5	3	50	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	39	45	65	36	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	279440-2
Date prepared	-			06/10/2021	[NT]	[NT]	[NT]	[NT]	06/10/2021	06/10/2021
Date analysed	-			06/10/2021	[NT]	[NT]	[NT]	[NT]	06/10/2021	06/10/2021
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	108
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	91	91
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	96
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	99
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	93	95
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	101	91
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	101	97
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	101	101
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	103
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	111	112
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	98
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	104
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	104	97
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	98	92
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	103	101
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	104	106
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	106	106
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	103
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	101
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	105
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	92	102
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	108	106
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	102	98
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	95	97
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	98	109
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	101	101
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	95	94
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	105	93
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	112	98
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	91	99

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	279440-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	100	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	120	[NT]	[NT]	[NT]	[NT]	114	106
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	111	101
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	107	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	108	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	112	107
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	112	107
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	121	[NT]	[NT]	[NT]	[NT]	117	114
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	128	[NT]	[NT]	[NT]	[NT]	124	122
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	140	[NT]	[NT]	[NT]	[NT]	130	130
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	124	[NT]	[NT]	[NT]	[NT]	116	122
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	117	122
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	132	[NT]	[NT]	[NT]	[NT]	132	123
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	108	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	124	122
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	121	[NT]	[NT]	[NT]	[NT]	123	129
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	113	110
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	112	105
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	116	105
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	128	111

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	279440-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	126	[NT]	[NT]	[NT]	[NT]	128	117
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	116	135
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	109	118

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

TRH Soil C10-C40 NEPM - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 279440-2 have caused interference.

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 279440-39 for Pb. Therefore a triplicate result has been issued as laboratory sample number 279440-132.
- # Low spike recovery was obtained for this sample. Sample matrix interference is suspected. However, an acceptable recovery was obtained for the LCS
- ## Percent recovery is not possible to report due to the inhomogeneous nature of the elements in the sample. However an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	279440
Date Sample Received	30/09/2021
Date Instructions Received	01/10/2021
Date Results Expected to be Reported	11/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	131 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
Sampling Date Provided	YES

Comments

#80, 81, 114 incorrect ID on samples.

#118 Extra

Holding time exceedance.

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoice accordingly.

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 Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	On Hold
BH105-0.25-0.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH105-0.5-0.95	✓	✓	✓				✓	✓		
BH105-1.2-1.4	✓	✓	✓				✓			
BH105-1.5-1.7										✓
BH106-0.03-0.3	✓	✓	✓	✓	✓	✓	✓		✓	
BH106-0.6-0.8	✓	✓	✓				✓			
BH107-0-0.2	✓	✓	✓	✓	✓	✓	✓		✓	
BH107-0.2-0.4	✓	✓	✓				✓			
BH107-0.5-0.95										✓
BH109-0.01-0.4	✓	✓	✓	✓	✓	✓	✓		✓	
BH109-0.5-0.8	✓	✓	✓				✓			
BH109-0.8-0.95	✓	✓	✓				✓			
BH109-1.0-1.2										✓
BH110A-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	
BH110A-0.1-0.2	✓	✓	✓				✓			
BH110A-0.5-0.8	✓	✓	✓				✓		✓	
BH110A-1.1-1.3										✓
BH111-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	
BH111-0.2-0.3										✓
BH111-0.3-0.6	✓	✓	✓				✓			
BH111-0.6-0.8	✓	✓	✓				✓			
BH112-0.22-0.65	✓	✓	✓	✓	✓	✓	✓		✓	
BH112-0.65-0.8	✓	✓	✓				✓			
BH113-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	
BH113-0.1-0.2	✓	✓	✓				✓			
BH113-0.35-0.45	✓	✓	✓				✓			
BH113-0.45-0.6										✓
BH113-0.6-0.65										✓
BH114-0.05-0.2	✓	✓	✓	✓	✓	✓	✓		✓	
BH114-0.2-0.4										✓
BH114-0.4-0.5										✓
BH115-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	

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 Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	On Hold
BH115-0.3-0.5										✓
BH115-0.6-0.8	✓	✓	✓				✓			
BH115-0.9-1.1										✓
BH116-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	
BH116-0.1-0.3	✓	✓	✓				✓			
BH116-0.3-0.55										✓
BH118-0-0.1	✓	✓	✓	✓	✓	✓	✓		✓	
BH118-0.5-0.6										✓
BH118-1.4-1.5	✓	✓	✓				✓			
BH118-1.6-1.8	✓	✓	✓				✓			
BH118-2.3-2.5										✓
SDUP1										✓
SDUP2										✓
SDUP3	✓	✓	✓				✓		✓	
SDUP4	✓	✓	✓	✓	✓	✓	✓		✓	
SDUP5										✓
SDUP6										✓
PFAS DUP1								✓		
TS-S1	✓									
TB-S1	✓									
BH105-0.25-0.4										✓
BH105-0.5-0.95										✓
BH105-1.2-1.4										✓
BH105-2.4-2.5										✓
BH105-2.9-3.0										✓
BH105-3.9-4.0										✓
BH105-4.9-5.0										✓
BH105-5.9-6.0										✓
BH105-6.9-7.0										✓
BH105-7.7-7.83										✓
BH106-0.03-0.3										✓
BH106-0.6-0.8										✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	On Hold
BH106-0.9-1.1										✓
BH106-1.4-1.5										✓
BH106-1.9-2.0										✓
BH106-2.4-2.5										✓
BH106-2.9-3.0										✓
BH106-3.9-4.0										✓
BH106-4.9-5.0										✓
BH106-5.9-6.0										✓
BH106-6.9-7.0										✓
BH106-7.9-8.0										✓
BH106-8.9-9.0										✓
BH106-9.9-10.0										✓
BH106-10.9-11.0										✓
BH106-11.9-12.0										✓
BH106-12.45-12.55										✓
BH107-0-0.2										✓
BH107-0.2-0.4										✓
BH107-0.5-0.95										✓
BH107-1.3-1.5										✓
BH107-1.9-2.0										✓
BH107-2.4-2.5										✓
BH107-2.75-2.85										✓
BH107-3.9-4.0										✓
BH107-4.9-5.0										✓
BH107-5.9-6.0										✓
BH107-6.9-7.0										✓
BH107-7.9-8.0										✓
BH107-8.9-9.0										✓
BH107-9.9-10.0										✓
BH107-10.9-11.0										✓
BH107-11.9-12.0										✓
BH107-12.9-13.0										✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	On Hold
BH107-13.9-14.0										✓
BH107-14.9-15.0										✓
BH109-0.01-0.4										✓
BH109-0.5-0.8										✓
BH109-0.8-0.95										✓
BH109-1.0-1.2										✓
BH109-1.42-1.50										✓
BH109-1.9-2.0										✓
BH109-2.4-2.5										✓
BH109-2.9-3.0										✓
BH109-3.9-4.0										✓
BH109-4.9-5.0										✓
BH109-5.9-6.0										✓
BH109-6.9-7.0										✓
BH109-7.9-8.0										✓
BH109-8.9-9.0										✓
BH109-9.9-10.0										✓
BH109-10.96-11.0										✓
BH109-11.9-12.0										✓
BH109-12.45-12.56										✓
BH109-11.35-11.45										✓
PFAS Trip Blank -.								✓		
BH107-1.0-1.3										✓
BH105-0.25-0.4										✓
BH105-0.5-0.95										✓
BH105-1.2-1.4										✓
BH106-1.5-1.7										✓
BH106-0.03-0.3										✓
BH106-0.6-0.8										✓
BH107-0-0.1										✓
BH107-0.1-0.4										✓
BH107-0.5-0.95										✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	On Hold
BH109-0.01-0.4										✓
BH109-0.5-0.8										✓
BH109-0.8-0.95										✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location: Greenwich

Sampler: HW

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos (ID)
27/09/2021	1	BH105	0.25-0.4	G, A, PFAS	0	Fill: Silty Gravelly Sand			X						X	X	
27/09/2021	2	BH105	0.5-0.95	G, A, PFAS	0	Fill: Clayey silty sand		X								X	
27/09/2021	3	BH105	1.2-1.4	G, A, PFAS	0	Sandy Clay		X									
27/09/2021	4	BH105	1.5-1.7	G, A, PFAS	0	XW Sandstone											
28/09/2021	5	BH106	0.03-0.3	G, A	0	Fill: Clayey gravelly sand			X						X		
28/09/2021	6	BH106	0.6-0.8	G, A	0	Silty Clay		X									
27/09/2021	7	BH107	0-0.2	G, A	0	Fill: Silty clay			X						X		
27/09/2021	8	BH107	0.2-0.4	G, A	0	Fill: Sandy clay		X									
27/09/2021	9	BH107	0.5-0.95	G, A	0	Silty Sand											
28/09/2021	10	BH109	0.01-0.4	G, A	0	Fill: Clayey gravelly sand			X						X		
28/09/2021	11	BH109	0.5-0.8	G, A	5	Fill: Sandy clay		X									
28/09/2021	12	BH109	0.8-0.95	G, A	1.5	Sandy Clay		X									
28/09/2021	13	BH109	1.0-1.2	G, A	0	Sandstone											
29/09/2021	14	BH110A	0-0.1	G, A	0.3	Fill: Silty gravelly sand			X						X		
29/09/2021	15	BH110A	0.1-0.2	G, A	0	Fill: Sandy gravel		X									
29/09/2021	16	BH110A	0.5-0.8	G, A	0	Fill: Sandy clay		X							X		
29/09/2021	17	BH110A	1.1-1.3	G, A	0	Sandy clay											
28/09/2021	18	BH111	0-0.1	G, A	0	Fill: Silty sand			X						X		
28/09/2021	19	BH111	0.2-0.3	G, A	0	Fill: Silty sand											
28/09/2021	20	BH111	0.3-0.6	G, A	0	Fill: Silty clay		X									
28/09/2021	21	BH111	0.6-0.8	G, A	0	Fill: Silty clayey Sand		X									
29/09/2021	22	BH112	0.22-0.65	G, A	0	F: Silty gravelly sand			X						X		
29/09/2021	23	BH112	0.65-0.8	G, A	0	XW Sandstone		X									
29/09/2021	24	BH113	0-0.1	G, A	0	Fill: Silty sand			X						X		
29/09/2021	25	BH113	0.1-0.2	G, A	0	Fill: Silty clayey sand		X									
29/09/2021	26	BH113	0.35-0.45	G, A	0	Sandy Clay		X									

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag
PFAS - Pfas Jar

Relinquished By:	Date:	Time:	Received By:	Date:
				30/09/2021 COC 01/10/2021

279440
updated
COC

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
ENVIROLAB SERVICES PTY LTD
12 ASHLEY STREET
CHATSWOOD NSW 2067
P: (02) 99106200
F: (02) 99106201

Attention: Aileen

JKE Job Number: E32507BR

Date Results Required: STANDARD

Page: 2 of 2

FROM:
JKEnvironments
REAR OF 115 WICKS ROAD
MACQUARIE PARK, NSW 2113
P: 02-9888 5000 F: 02-9888 5001
Attention: Craig Ridley
cridley@jkenvironments.com.au

Location: Greenwich
Sampler: HW

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos (ID)	
29/09/2021	27	BH113	0.45-0.6	G	0	Sandy clay												
29/09/2021	28	BH113	0.6-0.65	G	0	Sandstone												
29/09/2021	29	BH114	0.05-0.2	G, A	0	Fill: Silty sandy gravel			X						X			
29/09/2021	30	BH114	0.2-0.4	G, A	0	Silty clayey sand												
29/09/2021	31	BH114	0.4-0.5	G, A	0	Sandy clay												
29/09/2021	32	BH115	0-0.1	G, A	0	Fill: Silty clayey sand			X						X			
29/09/2021	33	BH115	0.3-0.5	G, A	0	Fill: silty clayey sand												
29/09/2021	34	BH115	0.6-0.8	G, A	0	Sandy clay		X										
29/09/2021	35	BH115	0.9-1.1	G, A	0	Sandy clay												
29/09/2021	36	BH116	0-0.1	G, A	0	Fill: Silty sandy gravel			X						X			
29/09/2021	37	BH116	0.1-0.3	G, A	0	Silty clayey sand		X										
29/09/2021	38	BH116	0.3-0.55	G	0	Sandy clay												
29/09/2021	39	BH118	0-0.1	G, A	0	Fill: Silty sandy clay			X						X			
29/09/2021	40	BH118	0.5-0.6	G, A	0	Fill: Silty sandy clay												
29/09/2021	41	BH118	1.4-1.5	G, A	0	Fill: Silty sandy clay		X										
29/09/2021	42	BH118	1.6-1.8	G, A	0	Sandy clay		X										
29/09/2021	43	BH118	2.3-2.5	G, A	0	Sandy clay												
28/09/2021	44	SDUP1	-	G, A	-	Duplicate												
28/09/2021	45	SDUP2	-	G	-	Duplicate												
28/09/2021	46	SDUP3	-	G, A	-	Duplicate		X							X			
29/09/2021	47	SDUP4	-	G, A	-	Duplicate			X						X			
29/09/2021	48	SDUP5	-	G, A	-	Duplicate												
29/09/2021	49	SDUP6	-	G, A	-	Duplicate			X						X			
27/09/2021	50	PFAS DUP1	-	PFAS	-	Duplicate								X				
27/09/2021	51	TS-S1	-	V	-	Spike							X					
27/09/2021	52	TB-S1	-	G, PFAS	-	Blank								X				

Remarks (comments/detection limits required):
PLEASE SEND SDUP6 TO VIC

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag PFAS - PFAS Jar
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
27/09/2021	S3	BH105	0.25-0.4	G	Fill: Silty Gravelly Sand	X	X	X	X	X	X	X					
27/09/2021	S4	BH105	0.5-0.95	G	Fill: Clayey silty sand	X	X	X	X	X	X	X					
27/09/2021	S5	BH105	1.2-1.4	G	Sandy Clay	X	X	X	X	X	X	X					
27/09/2021	S6	BH105	2.4-2.5	G	XW Sandstone												
27/09/2021	S7	BH105	2.9-3.0	G	XW Sandstone	X	X	X	X	X	X	X					
27/09/2021	S8	BH105	3.9-4.0	G	Sandstone												
27/09/2021	S9	BH105	4.9-5.0	G	Sandstone												
27/09/2021	60	BH105	5.9-6.0	G	Sandstone												
27/09/2021	61	BH105	6.9-7.0	G	Sandstone												
27/09/2021	62	BH105	7.7-7.83	G	Sandstone												
28/09/2021	63	BH106	0.03-0.3	G	Fill: Clayey gravelly sand												
28/09/2021	64	BH106	0.6-0.8	G	Silty Clay												
28/09/2021	65	BH106	0.9-1.1	G	Sandstone												
28/09/2021	66	BH106	1.4-1.5	G	Sandstone												
28/09/2021	67	BH106	1.9-2.0	G	Sandstone												
28/09/2021	68	BH106	2.4-2.5	G	Sandstone												
28/09/2021	69	BH106	2.9-3.0	G	Sandstone												
28/09/2021	70	BH106	3.9-4.0	G	Sandstone												
28/09/2021	71	BH106	4.9-5.0	G	Sandstone												
28/09/2021	72	BH106	5.9-6.0	G	Sandstone												
28/09/2021	73	BH106	6.9-7.0	G	Sandstone												
28/09/2021	74	BH106	7.9-8.0	G	Sandstone	X	X	X	X	X	X	X					
28/09/2021	75	BH106	8.9-9.0	G	Sandstone												
28/09/2021	76	BH106	9.9-10.0	G	Sandstone												
28/09/2021	77	BH106	10.9-11.0	G	Sandstone	X		X	X	X	X						

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 2 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
28/09/2021	78	BH106	11.9-12.0	G	Sandstone												
28/09/2021	79	BH106	12.45-12.55	G	Sandstone	X	X		X	X	X						
27/09/2021	80	BH107	0-0.2	G	Fill: Silty clay	X	X	X	X	X	X	X					
27/09/2021	81	BH107	0.2-0.4	G	Fill: Sandy clay												
27/09/2021	82	BH107	0.5-0.95	G	Silty Sand												
27/09/2021	119	BH107	1.0-1.3	G	Silty Clay												
27/09/2021	83	BH107	1.3-1.5	G	Sandstone	X	X		X	X	X						
27/09/2021	84	BH107	1.9-2.0	G	Sandstone												
27/09/2021	85	BH107	2.4-2.5	G	Sandstone												
27/09/2021	86	BH107	2.75-2.85	G	Sandstone												
27/09/2021	87	BH107	3.9-4.0	G	Sandstone	X	X		X	X	X						
27/09/2021	88	BH107	4.9-5.0	G	Sandstone												
27/09/2021	89	BH107	5.9-6.0	G	Sandstone	X	X		X	X	X						
27/09/2021	90	BH107	6.9-7.0	G	Sandstone												
27/09/2021	91	BH107	7.9-8.0	G	Sandstone												
27/09/2021	92	BH107	8.9-9.0	G	Sandstone												
27/09/2021	93	BH107	9.9-10.0	G	Sandstone												
27/09/2021	94	BH107	10.9-11.0	G	Sandstone												
27/09/2021	95	BH107	11.9-12.0	G	Sandstone												
27/09/2021	96	BH107	12.9-13.0	G	Sandstone												
27/09/2021	97	BH107	13.9-14.0	G	Sandstone	X	X		X	X	X						
27/09/2021	98	BH107	14.9-15.0	G	Sandstone	X	X		X	X	X						
28/09/2021	99	BH109	0.01-0.4	G	Fill: Clayey gravelly sand	X	X	X	X	X	X	X					
28/09/2021	100	BH109	0.5-0.8	G	Fill: Sandy clay	X	X	X	X	X	X	X					
28/09/2021	101	BH109	0.8-0.95	G	Sandy Clay												

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 3 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
28/09/2021	102	BH109	1.0-1.2	G	Sandstone												
28/09/2021	103	BH109	1.42-1.50	G	Sandstone												
28/09/2021	104	BH109	1.9-2.0	G	Sandstone												
28/09/2021	105	BH109	2.4-2.5	G	Sandstone												
28/09/2021	106	BH109	2.9-3.0	G	Sandstone												
28/09/2021	107	BH109	3.9-4.0	G	Sandstone												
28/09/2021	108	BH109	4.9-5.0	G	Sandstone												
28/09/2021	109	BH109	5.9-6.0	G	Sandstone												
28/09/2021	110	BH109	6.9-7.0	G	Sandstone												
28/09/2021	111	BH109	7.9-8.0	G	Sandstone												
28/09/2021	112	BH109	8.9-9.0	G	Sandstone												
28/09/2021	113	BH109	9.9-10.0	G	Sandstone												
28/09/2021	114	BH109	10.96-11.0	G	Sandstone												
28/09/2021	115	BH109	11.9-12.0	G	Sandstone												
28/09/2021	116	BH109	12.45-12.56	G	Sandstone												
28/09/2021	117	BH109	11.35-11.45	G	Sandstone												
27/09/21	118	AEAS Trip Blank	—														

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

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SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	SCr extended	pH field test (pHF apHFOX)										
27/09/2021	120	BH105	0.25-0.4	P	Fill: Sandy Gravelly Sand		X										
27/09/2021	121	BH105	0.5-0.95	P	Fill: Clayey silty sand		X										
27/09/2021	122	BH105	1.2-1.4	P	Sandy Clay		X										
28/09/2021	123	BH106	1.5-1.7	P	Fill: Clayey gravelly sand		X										
28/09/2021	124	BH106	0.03-0.3	P	Silty Clay		X										
27/09/2021	125	BH106	0.6-0.8	P	Silty Clay		X										
27/09/2021	126	BH107	0-0.1	P	Fill: Silty clay		X										
27/09/2021	127	BH107	0.1-0.4	P	Fill: Sandy clay		X										
27/09/2021	128	BH107	0.5-0.95	P	Silty Sand		X										
28/09/2021	129	BH109	0.01-0.4	P	Fill: Clayey gravelly sand		X										
28/09/2021	130	BH109	0.5-0.8	P	Fill: Clayey gravelly sand		X										
28/09/2021	131	BH109	0.8-0.95	P	Sandy Clay		X										
27/09/2021	119	BH107	1-1.3	P	Silty Clay		X										

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
			Tony	

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Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 28076

Client Details

Client	JK Environments
Attention	Craig Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR**
Number of Samples	3 Soil
Date samples received	12/10/2021
Date completed instructions received	12/10/2021

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	18/10/2021
Date of Issue	18/10/2021

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Results Approved By
Chris De Luca, Operations Manager
Phalak Inthakesone, Group Organics Manager

Authorised By

Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		28076-1	28076-2
Your Reference	UNITS	SDup8	SDup10
Date Sampled		01/10/2021	06/10/2021
Type of sample		Soil	Soil
Date extracted	-	13/10/2021	13/10/2021
Date analysed	-	14/10/2021	14/10/2021
vTRH C_6 - C_9	mg/kg	<25	<25
vTRH C_6 - C_{10}	mg/kg	<25	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total BTEX	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	115	107

TRH Soil C10-C40 NEPM			
Our Reference		28076-1	28076-2
Your Reference	UNITS	SDup8	SDup10
Date Sampled		01/10/2021	06/10/2021
Type of sample		Soil	Soil
Date extracted	-	13/10/2021	13/10/2021
Date analysed	-	15/10/2021	15/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	150	100
TRH C_{29} - C_{36}	mg/kg	390	190
Total +ve TRH (C10-C36)	mg/kg	540	300
TRH >C_{10} -C_{16}	mg/kg	<50	63
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	63
TRH >C_{16} -C_{34}	mg/kg	450	200
TRH >C_{34} -C_{40}	mg/kg	210	120
Total +ve TRH (>C10-C40)	mg/kg	660	380
Surrogate o-Terphenyl	%	90	90

PAHs in Soil			
Our Reference		28076-1	28076-2
Your Reference	UNITS	SDup8	SDup10
Date Sampled		01/10/2021	06/10/2021
Type of sample		Soil	Soil
Date extracted	-	13/10/2021	13/10/2021
Date analysed	-	15/10/2021	15/10/2021
Naphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Total +ve PAH's	mg/kg	0.4	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d_{14}	%	122	128

Acid Extractable metals in soil			
Our Reference		28076-1	28076-2
Your Reference	UNITS	SDup8	SDup10
Date Sampled		01/10/2021	06/10/2021
Type of sample		Soil	Soil
Date digested	-	13/10/2021	13/10/2021
Date analysed	-	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	82	11
Copper	mg/kg	31	17
Lead	mg/kg	5	27
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	79	12
Zinc	mg/kg	45	60

PFAS in Soil Extended		
Our Reference		28076-3
Your Reference	UNITS	PFAS Dup3
Date Sampled		01/10/2021
Type of sample		Soil
Date prepared	-	13/10/2021
Date analysed	-	13/10/2021
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid PFHxS	µg/kg	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	<0.2
Perfluoropentanoic acid	µg/kg	<0.2
Perfluorohexanoic acid	µg/kg	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1
Perfluorononanoic acid	µg/kg	<0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	<0.1
8:2 FTS	µg/kg	<0.2
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfon -amide	µg/kg	<1
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
Surrogate $^{13}C_8$ PFOS	%	104
Surrogate $^{13}C_2$ PFOA	%	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	100

PFAS in Soil Extended		
Our Reference		28076-3
Your Reference	UNITS	PFAS Dup3
Date Sampled		01/10/2021
Type of sample		Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97
Extracted ISTD $^{13}C_4$ *PFOA*	%	99
Extracted ISTD $^{13}C_5$ *PFNA*	%	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	101
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	92
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	93
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	99
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	107
Extracted ISTD $^{13}C_8$ *FOSA*	%	97
Extracted ISTD d_3 *N MeFOSA*	%	94
Extracted ISTD d_5 *NEtFOSA*	%	98
Extracted ISTD d_7 *N MeFOSE*	%	94
Extracted ISTD d_9 *N EtFOSE*	%	87
Extracted ISTD d_3 *N MeFOSAA*	%	150
Extracted ISTD d_5 *N EtFOSAA*	%	104
Total Positive PFHxS & PFOS	µg/kg	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1
Total Positive PFAS	µg/kg	<0.1

Moisture				
Our Reference		28076-1	28076-2	28076-3
Your Reference	UNITS	SDup8	SDup10	PFAS Dup3
Date Sampled		01/10/2021	06/10/2021	01/10/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	13/10/2021	13/10/2021	13/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021
Moisture	%	5.3	11	6.4

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105°C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. 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-022	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. 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.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLP/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER

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	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Date analysed	-			14/10/2021	[NT]	[NT]	[NT]	[NT]	14/10/2021	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	91	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	91	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	99	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	91	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	112	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Date analysed	-			15/10/2021	[NT]	[NT]	[NT]	[NT]	15/10/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-020	86	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Date analysed	-			15/10/2021	[NT]	[NT]	[NT]	[NT]	15/10/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Acenaphthylene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Fluorene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Phenanthrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Pyrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-022	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022	<0.05	[NT]	[NT]	[NT]	[NT]	110	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022	112	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Date analysed	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soil Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorohexanesulfonic acid PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	99	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon -amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	103	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	99	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_3$ PFBS	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soil Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD d_5 *NEtFOSA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: PFAS in Soil Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	127	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	80	[NT]	[NT]	[NT]	[NT]	90	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Craig Ridley

Sample Login Details

Your reference	E32507BR
Envirolab Reference	28076
Date Sample Received	12/10/2021
Date Instructions Received	12/10/2021
Date Results Expected to be Reported	18/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	3 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	9.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	Acid Extractable metalsin soil	PFAS in Soil Extended
SDup8	✓	✓	✓	✓	
SDup10	✓	✓	✓	✓	
PFAS Dup3					✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 2 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location: Greenwich — Sample Preserved in Esky on Ice

Sampler: HW — Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos ID
01/10/2021	27	BH119	1.0-1.3	PFAS	-	Sandstone											
01/10/2021	28	BH119	1.8-2.0	PFAS	-	Sandstone											
01/10/2021	29	BH119	2.4-2.5	PFAS	-	Sandstone											
30/09/2021	30	SDup7	-	G, A	-	Duplicate		X									
(1) 01/10/2021	—	SDup8	-	G, A	-	Duplicate		X			Send to VIC						
06/10/2021	31	SDup9	-	G, A	-	Duplicate			X								
(2) 06/10/2021	—	SDup10	-	G, A	-	Duplicate		X			Send to Vic						
01/10/2021	32	PFAS Dup 2	-	PFAS	-	Duplicate											
(3) 01/10/2021	—	PFAS Dup 3	-	PFAS	-	Duplicate					Send to Vic					X	
06/10/2021	33	PFASDup4	-	PFAS	-	Duplicate											
06/10/2021	34	PFASDup5	-	PFAS	-	Duplicate											
06/10/2021	35	FRI-SPT	-	V	-	Rinsate								X			
06/10/2021	36	PFAS Soil	-	PFAS	-	PFAS Blank											
	37	~~BH117 (material)~~ Extra PA (0.5-1.5)															

Envirolab Services
25 Research Drive
Croydon South VIC 3136
P: (03) 9763 2500

Job No: 280076

Date Received: 12/10/21

Time Received: 12:00PM

Received by: SS

Temp: Cool / Ambient 9.0°C

Cooling: Ice / Ice Brick

Security: Intact / Broken / None

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar V- Vial
A - Ziplock Asbestos Bag S PFAS - Pfas Jar
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
Emailed to ELS	11/10/21 1200.	1840	[illegible]	8/10/2021

280027

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 279440-D

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	additional analysis
Date samples received	30/09/2021
Date completed instructions received	13/10/2021

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	14/10/2021
Date of Issue	14/10/2021

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	94

svTRH (C10-C40) in Soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	120
Total +ve TRH (C10-C36)	mg/kg	120
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	120
TRH >C_{34} -C_{40}	mg/kg	110
Total +ve TRH (>C10-C40)	mg/kg	240
Surrogate o-Terphenyl	%	105

PAHs in Soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	96

Organochlorine Pesticides in soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	98

Organophosphorus Pesticides in Soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Parathion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1
Surrogate TCMX	%	98

PCBs in Soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	13/10/2021
Date analysed	-	14/10/2021
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	98

Acid Extractable metals in soil		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date prepared	-	14/10/2021
Date analysed	-	14/10/2021
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	41
Copper	mg/kg	22
Lead	mg/kg	5
Mercury	mg/kg	<0.1
Nickel	mg/kg	54
Zinc	mg/kg	39

Moisture		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date prepared	-	13/10/2021
Date analysed	-	14/10/2021
Moisture	%	23

Asbestos ID - soils NEPM - ASB-001		
Our Reference		279440-D-49
Your Reference	UNITS	SDUP6
Depth		-
Type of sample		Soil
Date Sampled		29/09/2021
Date analysed	-	14/10/2021
Sample mass tested	g	165.65
Sample Description	-	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	49	<25	<25	0	102	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	49	<25	<25	0	102	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	49	<0.2	<0.2	0	125	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	49	<0.5	<0.5	0	117	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	49	<1	<1	0	90	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	49	<2	<2	0	90	[NT]
o-Xylene	mg/kg	1	Org-023	<1	49	<1	<1	0	96	[NT]
naphthalene	mg/kg	1	Org-023	<1	49	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	108	49	94	99	5	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	49	<50	<50	0	89	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	49	<100	110	10	72	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	49	120	120	0	73	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	49	<50	<50	0	89	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	49	120	190	45	72	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	49	110	110	0	73	[NT]
Surrogate o-Terphenyl	%		Org-020	100	49	105	108	3	116	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	107	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	105	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	109	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	108	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	112	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	111	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	87	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	49	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	49	<0.05	<0.05	0	118	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	103	49	96	98	2	107	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	106	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	110	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	107	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	111	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	124	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	105	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	110	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	98	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	108	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	100	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	91	49	98	96	2	107	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	91	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	110	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	85	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	116	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	114	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	87	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	94	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	91	49	98	96	2	107	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			13/10/2021	49	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	120	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	49	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	91	49	98	96	2	107	[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	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
Date analysed	-			14/10/2021	49	14/10/2021	14/10/2021		14/10/2021	[NT]
Arsenic	mg/kg	4	Metals-020	<4	49	<4	<4	0	94	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	49	<0.4	<0.4	0	95	[NT]
Chromium	mg/kg	1	Metals-020	<1	49	41	37	10	98	[NT]
Copper	mg/kg	1	Metals-020	<1	49	22	18	20	99	[NT]
Lead	mg/kg	1	Metals-020	<1	49	5	5	0	104	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	49	<0.1	<0.1	0	105	[NT]
Nickel	mg/kg	1	Metals-020	<1	49	54	49	10	101	[NT]
Zinc	mg/kg	1	Metals-020	<1	49	39	37	5	96	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, sample 279440-D-49 is below the minimum recommended 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	279440-D
Date Sample Received	30/09/2021
Date Instructions Received	13/10/2021
Date Results Expected to be Reported	14/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
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 Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	On Hold
BH105-0.25-0.4									✓
BH105-0.5-0.95									✓
BH105-1.2-1.4									✓
BH105-1.5-1.7									✓
BH106-0.03-0.3									✓
BH106-0.6-0.8									✓
BH107-0-0.2									✓
BH107-0.2-0.4									✓
BH107-0.5-0.95									✓
BH109-0.01-0.4									✓
BH109-0.5-0.8									✓
BH109-0.8-0.95									✓
BH109-1.0-1.2									✓
BH110A-0-0.1									✓
BH110A-0.1-0.2									✓
BH110A-0.5-0.8									✓
BH110A-1.1-1.3									✓
BH111-0-0.1									✓
BH111-0.2-0.3									✓
BH111-0.3-0.6									✓
BH111-0.6-0.8									✓
BH112-0.22-0.65									✓
BH112-0.65-0.8									✓
BH113-0-0.1									✓
BH113-0.1-0.2									✓
BH113-0.35-0.45									✓
BH113-0.45-0.6									✓
BH113-0.6-0.65									✓
BH114-0.05-0.2									✓
BH114-0.2-0.4									✓
BH114-0.4-0.5									✓
BH115-0-0.1									✓

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 Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	On Hold
BH115-0.3-0.5									✓
BH115-0.6-0.8									✓
BH115-0.9-1.1									✓
BH116-0-0.1									✓
BH116-0.1-0.3									✓
BH116-0.3-0.55									✓
BH118-0-0.1									✓
BH118-0.5-0.6									✓
BH118-1.4-1.5									✓
BH118-1.6-1.8									✓
BH118-2.3-2.5									✓
SDUP1									✓
SDUP2									✓
SDUP3									✓
SDUP4									✓
SDUP5									✓
SDUP6	✓	✓	✓	✓	✓	✓	✓	✓	
PFAS DUP1									✓
TS-S1									✓
TB-S1									✓
BH105-0.25-0.4									✓
BH105-0.5-0.95									✓
BH105-1.2-1.4									✓
BH105-2.4-2.5									✓
BH105-2.9-3.0									✓
BH105-3.9-4.0									✓
BH105-4.9-5.0									✓
BH105-5.9-6.0									✓
BH105-6.9-7.0									✓
BH105-7.7-7.83									✓
BH106-0.03-0.3									✓
BH106-0.6-0.8									✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	On Hold
BH106-0.9-1.1									✓
BH106-1.4-1.5									✓
BH106-1.9-2.0									✓
BH106-2.4-2.5									✓
BH106-2.9-3.0									✓
BH106-3.9-4.0									✓
BH106-4.9-5.0									✓
BH106-5.9-6.0									✓
BH106-6.9-7.0									✓
BH106-7.9-8.0									✓
BH106-8.9-9.0									✓
BH106-9.9-10.0									✓
BH106-10.9-11.0									✓
BH106-11.9-12.0									✓
BH106-12.45-12.55									✓
BH107-0-0.2									✓
BH107-0.2-0.4									✓
BH107-0.5-0.95									✓
BH107-1.3-1.5									✓
BH107-1.9-2.0									✓
BH107-2.4-2.5									✓
BH107-2.75-2.85									✓
BH107-3.9-4.0									✓
BH107-4.9-5.0									✓
BH107-5.9-6.0									✓
BH107-6.9-7.0									✓
BH107-7.9-8.0									✓
BH107-8.9-9.0									✓
BH107-9.9-10.0									✓
BH107-10.9-11.0									✓
BH107-11.9-12.0									✓
BH107-12.9-13.0									✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	On Hold
BH107-13.9-14.0									✓
BH107-14.9-15.0									✓
BH109-0.01-0.4									✓
BH109-0.5-0.8									✓
BH109-0.8-0.95									✓
BH109-1.0-1.2									✓
BH109-1.42-1.50									✓
BH109-1.9-2.0									✓
BH109-2.4-2.5									✓
BH109-2.9-3.0									✓
BH109-3.9-4.0									✓
BH109-4.9-5.0									✓
BH109-5.9-6.0									✓
BH109-6.9-7.0									✓
BH109-7.9-8.0									✓
BH109-8.9-9.0									✓
BH109-9.9-10.0									✓
BH109-10.96-11.0									✓
BH109-11.9-12.0									✓
BH109-12.45-12.56									✓
BH109-11.35-11.45									✓
PFAS Trip Blank -.									✓
BH107-1.0-1.3									✓
BH105-0.25-0.4									✓
BH105-0.5-0.95									✓
BH105-1.2-1.4									✓
BH106-1.5-1.7									✓
BH106-0.03-0.3									✓
BH106-0.6-0.8									✓
BH107-0-0.1									✓
BH107-0.1-0.4									✓
BH107-0.5-0.95									✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	On Hold
BH109-0.01-0.4									✓
BH109-0.5-0.8									✓
BH109-0.8-0.95									✓
BH118 - [TRIPLICATE]-0-0.1									✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Ming To

Subject: FW: Results for Registration 279440 E32507BR, Greenwich

Ref: 279440-D.
~~TAT~~
Due: 14/10/2021
MT

279440-D

From: Craig Ridley <CRidley@jkenvironments.com.au>
Sent: Wednesday, 13 October 2021 5:05 PM
To: Greta Petzold <GPetzold@envirolab.com.au>
Cc: Samplereceipt <Samplereceipt@envirolabservices.com.au>
Subject: Re: Results for Registration 279440 E32507BR, Greenwich

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Greta,

Can we please analyse this sample in Sydney laboratory as a matter of urgency as it was missed?

I'm aware this will be slightly outside the recommended holding time so analysing this sample in Sydney will avoid the transport delay.

Any issues, please call.

Regards
Craig Ridley
Senior Environmental Scientist

In accordance with the current NSW Government health orders, we are mostly working from home. When phoning, please contact staff on their mobile first.

T: +612 9888 5000
D: 0421 856 992
E: cridley@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

This email and any attachments are confidential and may be privileged in which case neither is intended to be waived. If you have received this message in error, please notify us and remove it from your system. It is your responsibility to check any attachments for viruses and defects before opening or sending them on. At the Company's discretion we may send a paper copy for confirmation. In the event of any discrepancy between paper and electronic versions the paper version is to take precedence.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 2 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location: Greenwich
Sampler: HW

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos (ID)	
29/09/2021	27	BH113	0.45-0.6	G	0	Sandy clay												
29/09/2021	28	BH113	0.6-0.65	G	0	Sandstone												
29/09/2021	29	BH114	0.05-0.2	G, A	0	Fill: Silty sandy gravel			X									
29/09/2021	30	BH114	0.2-0.4	G, A	0	Silty clayey sand												
29/09/2021	31	BH114	0.4-0.5	G, A	0	Sandy clay												
29/09/2021	32	BH115	0-0.1	G, A	0	Fill: Silty clayey sand			X						X			
29/09/2021	33	BH115	0.3-0.5	G, A	0	Fill: silty clayey sand												
29/09/2021	34	BH115	0.6-0.8	G, A	0	Sandy clay		X										
29/09/2021	35	BH115	0.9-1.1	G, A	0	Sandy clay												
29/09/2021	36	BH116	0-0.1	G, A	0	Fill: Silty sandy gravel			X						X			
29/09/2021	37	BH116	0.1-0.3	G, A	0	Silty clayey sand		X										
29/09/2021	38	BH116	0.3-0.55	G	0	Sandy clay												
29/09/2021	39	BH118	0-0.1	G, A	0	Fill: Silty sandy clay			X						X			
29/09/2021	40	BH118	0.5-0.6	G, A	0	Fill: Silty sandy clay												
29/09/2021	41	BH118	1.4-1.5	G, A	0	Fill: Silty sandy clay		X										
29/09/2021	42	BH118	1.6-1.8	G, A	0	Sandy clay		X										
29/09/2021	43	BH118	2.3-2.5	G, A	0	Sandy clay												
28/09/2021	44	SDUP1	-	G, A	-	Duplicate												
28/09/2021	45	SDUP2	-	G	-	Duplicate												
28/09/2021	46	SDUP3	-	G, A	-	Duplicate		X							X			
29/09/2021	47	SDUP4	-	G, A	-	Duplicate			X						X			
29/09/2021	48	SDUP5	-	G, A	-	Duplicate												
29/09/2021	49	SDUP6	-	G, A	-	Duplicate			X						X			
27/09/2021	50	PFAS DUP1	-	PFAS	-	Duplicate								X				
27/09/2021	51	TS-S1	-	V	-	Spike							X					
27/09/2021	52	TB-S1	-	G, PFAS	-	Blank								X				

Remarks (comments/detection limits required):
PLEASE SEND SDUP6 TO VIC

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag PFAS - PFAS Jar
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440-D

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 279440-E

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	additional analysis
Date samples received	30/09/2021
Date completed instructions received	20/10/2021

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	27/10/2021
Date of Issue	27/10/2021

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Hannah Nguyen, Metals Supervisor
Josh Williams, LC Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

TCLP Preparation - Acid						
Our Reference		279440-E-1	279440-E-5	279440-E-10	279440-E-14	279440-E-15
Your Reference	UNITS	BH105	BH106	BH109	BH110A	BH110A
Depth		0.25-0.4	0.03-0.3	0.01-0.4	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	28/09/2021	29/09/2021	29/09/2021
pH of soil for fluid# determ.	pH units	9.4	9.6	9.1	8.6	8.7
pH of soil TCLP (after HCl)	pH units	1.8	1.8	1.7	1.7	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.3	5.0	5.1	5.1	5.1

TCLP Preparation - Acid					
Our Reference		279440-E-29	279440-E-36	279440-E-39	279440-E-41
Your Reference	UNITS	BH114	BH116	BH118	BH118
Depth		0.05-0.2	0-0.1	0-0.1	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021	29/09/2021
pH of soil for fluid# determ.	pH units	10.1	8.5	8.5	8.4
pH of soil TCLP (after HCl)	pH units	1.7	1.7	1.8	1.7
Extraction fluid used	-	1	1	1	1
pH of final Leachate	pH units	5.2	4.9	5.0	4.9

Metals from Leaching Fluid pH 2.9 or 5						
Our Reference		279440-E-1	279440-E-5	279440-E-10	279440-E-14	279440-E-15
Your Reference	UNITS	BH105	BH106	BH109	BH110A	BH110A
Depth		0.25-0.4	0.03-0.3	0.01-0.4	0-0.1	0.1-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	28/09/2021	29/09/2021	29/09/2021
Date extracted	-	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
Date analysed	-	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
Nickel	mg/L	0.08	0.1	0.09	<0.02	0.03

Metals from Leaching Fluid pH 2.9 or 5				
Our Reference		279440-E-29	279440-E-36	279440-E-39
Your Reference	UNITS	BH114	BH116	BH118
Depth		0.05-0.2	0-0.1	0-0.1
Type of sample		Soil	Soil	Soil
Date Sampled		29/09/2021	29/09/2021	29/09/2021
Date extracted	-	25/10/2021	25/10/2021	25/10/2021
Date analysed	-	25/10/2021	25/10/2021	25/10/2021
Lead	mg/L	[NA]	[NA]	0.72
Nickel	mg/L	0.05	<0.02	[NA]

PAHs in TCLP (USEPA 1311)		
Our Reference		279440-E-41
Your Reference	UNITS	BH118
Depth		1.4-1.5
Type of sample		Soil
Date Sampled		29/09/2021
Date extracted	-	26/10/2021
Date analysed	-	27/10/2021
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	90

CEC				
Our Reference		279440-E-5	279440-E-15	279440-E-29
Your Reference	UNITS	BH106	BH110A	BH114
Depth		0.03-0.3	0.1-0.2	0.05-0.2
Type of sample		Soil	Soil	Soil
Date Sampled		28/09/2021	29/09/2021	29/09/2021
Date prepared	-	27/10/2021	27/10/2021	27/10/2021
Date analysed	-	27/10/2021	27/10/2021	27/10/2021
Exchangeable Ca	meq/100g	18	14	23
Exchangeable K	meq/100g	0.4	1	0.3
Exchangeable Mg	meq/100g	5.2	3.3	2.5
Exchangeable Na	meq/100g	1.7	<0.1	9.7
Cation Exchange Capacity	meq/100g	25	18	36

Method ID	Methodology Summary
INORG-004	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/10/2021	1	25/10/2021	25/10/2021		25/10/2021	[NT]
Date analysed	-			25/10/2021	1	25/10/2021	25/10/2021		25/10/2021	[NT]
Lead	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	1	0.08	0.08	0	100	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			26/10/2021	[NT]	[NT]	[NT]	[NT]	26/10/2021	[NT]
Date analysed	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	85	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	89	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	83	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	78	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	77	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
Date analysed	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
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SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	279440-E
Date Sample Received	30/09/2021
Date Instructions Received	20/10/2021
Date Results Expected to be Reported	27/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
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:

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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	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(b)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH105-0.25-0.4	✓		✓																			
BH105-0.5-0.95																						✓
BH105-1.2-1.4																						✓
BH105-1.5-1.7																						✓
BH106-0.03-0.3	✓		✓																		✓	
BH106-0.6-0.8																						✓
BH107-0-0.2																						✓
BH107-0.2-0.4																						✓
BH107-0.5-0.95																						✓
BH109-0.01-0.4	✓		✓																			
BH109-0.5-0.8																						✓
BH109-0.8-0.95																						✓
BH109-1.0-1.2																						✓
BH110A-0-0.1	✓		✓																			
BH110A-0.1-0.2	✓		✓																		✓	
BH110A-0.5-0.8																						✓
BH110A-1.1-1.3																						✓
BH111-0-0.1																						✓
BH111-0.2-0.3																						✓
BH111-0.3-0.6																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH111-0.6-0.8																						✓
BH112-0.22-0.65																						✓
BH112-0.65-0.8																						✓
BH113-0-0.1																						✓
BH113-0.1-0.2																						✓
BH113-0.35-0.45																						✓
BH113-0.45-0.6																						✓
BH113-0.6-0.65																						✓
BH114-0.05-0.2	✓		✓																		✓	
BH114-0.2-0.4																						✓
BH114-0.4-0.5																						✓
BH115-0-0.1																						✓
BH115-0.3-0.5																						✓
BH115-0.6-0.8																						✓
BH115-0.9-1.1																						✓
BH116-0-0.1	✓		✓																			
BH116-0.1-0.3																						✓
BH116-0.3-0.55																						✓
BH118-0-0.1	✓	✓																				
BH118-0.5-0.6																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH118-1.4-1.5	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH118-1.6-1.8																						✓
BH118-2.3-2.5																						✓
SDUP1																						✓
SDUP2																						✓
SDUP3																						✓
SDUP4																						✓
SDUP5																						✓
SDUP6																						✓
PFAS DUP1																						✓
TS-S1																						✓
TB-S1																						✓
BH105-0.25-0.4																						✓
BH105-0.5-0.95																						✓
BH105-1.2-1.4																						✓
BH105-2.4-2.5																						✓
BH105-2.9-3.0																						✓
BH105-3.9-4.0																						✓
BH105-4.9-5.0																						✓
BH105-5.9-6.0																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH105-6.9-7.0																						✓
BH105-7.7-7.83																						✓
BH106-0.03-0.3																						✓
BH106-0.6-0.8																						✓
BH106-0.9-1.1																						✓
BH106-1.4-1.5																						✓
BH106-1.9-2.0																						✓
BH106-2.4-2.5																						✓
BH106-2.9-3.0																						✓
BH106-3.9-4.0																						✓
BH106-4.9-5.0																						✓
BH106-5.9-6.0																						✓
BH106-6.9-7.0																						✓
BH106-7.9-8.0																						✓
BH106-8.9-9.0																						✓
BH106-9.9-10.0																						✓
BH106-10.9-11.0																						✓
BH106-11.9-12.0																						✓
BH106-12.45-12.55																						✓
BH107-0-0.2																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH107-0.2-0.4																						✓
BH107-0.5-0.95																						✓
BH107-1.3-1.5																						✓
BH107-1.9-2.0																						✓
BH107-2.4-2.5																						✓
BH107-2.75-2.85																						✓
BH107-3.9-4.0																						✓
BH107-4.9-5.0																						✓
BH107-5.9-6.0																						✓
BH107-6.9-7.0																						✓
BH107-7.9-8.0																						✓
BH107-8.9-9.0																						✓
BH107-9.9-10.0																						✓
BH107-10.9-11.0																						✓
BH107-11.9-12.0																						✓
BH107-12.9-13.0																						✓
BH107-13.9-14.0																						✓
BH107-14.9-15.0																						✓
BH109-0.01-0.4																						✓
BH109-0.5-0.8																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH109-0.8-0.95																						✓
BH109-1.0-1.2																						✓
BH109-1.42-1.50																						✓
BH109-1.9-2.0																						✓
BH109-2.4-2.5																						✓
BH109-2.9-3.0																						✓
BH109-3.9-4.0																						✓
BH109-4.9-5.0																						✓
BH109-5.9-6.0																						✓
BH109-6.9-7.0																						✓
BH109-7.9-8.0																						✓
BH109-8.9-9.0																						✓
BH109-9.9-10.0																						✓
BH109-10.96-11.0																						✓
BH109-11.9-12.0																						✓
BH109-12.45-12.56																						✓
BH109-11.35-11.45																						✓
PFAS Trip Blank -.																						✓
BH107-1.0-1.3																						✓
BH105-0.25-0.4																						✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	On Hold
BH105-0.5-0.95																						✓
BH105-1.2-1.4																						✓
BH106-1.5-1.7																						✓
BH106-0.03-0.3																						✓
BH106-0.6-0.8																						✓
BH107-0-0.1																						✓
BH107-0.1-0.4																						✓
BH107-0.5-0.95																						✓
BH109-0.01-0.4																						✓
BH109-0.5-0.8																						✓
BH109-0.8-0.95																						✓
BH118 - [TRIPLICATE]-0-0.1																						✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Ming To

Subject: FW: Results for Registration 279440 E32507BR, Greenwich

Ref: 279440-E
TAT: Standard
Due: 27/10/2021
MT

279440-E

From: Craig Ridley <CRidley@jkenvironments.com.au>
Sent: Wednesday, 20 October 2021 5:25 PM
To: Greta Petzold <GPetzold@envirolab.com.au>
Cc: Samplereceipt <Samplereceipt@envirolabservices.com.au>
Subject: Re: Results for Registration 279440 E32507BR, Greenwich

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Greta,

Can we please arrange for the following additional analysis for this sample batch (standard turnaround is fine):

Sample ID and Depth		Lab Reference	Test Required
BH105 (0.25-0.4m)	1	1	TCLP Nickel
BH106 (0.03-0.3m)	5	5	TCLP Nickel, CEC
BH109 (0.01-0.4m)	10	10	TCLP Nickel
BH110A (0-0.1m)	14	14	TCLP Nickel
BH110A (0.1-0.2m)	15	15	TCLP Nickel, CEC
BH114 (0.05-0.2m)	29	29	TCLP Nickel, CEC
BH116 (0-0.1m)	36	36	TCLP Nickel
BH118 (0-0.1m)	39	39	TCLP Lead
BH118 (1.4-1.5m)	41	41	TCLP PAH

Any issues, please call.

Thanks,

Craig

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 280027

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	35 Soil, 1 Water
Date samples received	08/10/2021
Date completed instructions received	08/10/2021

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	15/10/2021
Date of Issue	15/10/2021

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean, Wonnie Condos
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Josh Williams, LC Supervisor
Lucy Zhu, Asbestos Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		280027-1	280027-2	280027-4	280027-5	280027-6
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	91	78	95	82	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		280027-7	280027-8	280027-9	280027-10	280027-11
Your Reference	UNITS	BH102	BH103	BH103	BH103	BH103
Depth		1.4-1.6	0.03-0.4	0.5-0.7	0.7-0.95	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	34
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	68
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	68
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	101	100	98	101	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		280027-12	280027-13	280027-14	280027-15	280027-17
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		0.04-0.3	0.5-0.95	1.5-1.95	3.0-3.2	3.8-4.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	1/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	101	89	92	76	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		280027-18	280027-21	280027-22	280027-25	280027-26
Your Reference	UNITS	BH108	BH117	BH117	BH119	BH119
Depth		0-0.1	0-0.1	0.5-0.95	0.05-0.3	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	103	99	84	95	102

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		280027-30	280027-31
Your Reference	UNITS	SDup7	SDup9
Depth		-	-
Type of sample		Soil	Soil
Date Sampled		30/09/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<3	<3
Surrogate aaa-Trifluorotoluene	%	105	78

svTRH (C10-C40) in Soil						
Our Reference		280027-1	280027-2	280027-4	280027-5	280027-6
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	130	<100	<100	160	<100
Total +ve TRH (C10-C36)	mg/kg	130	<50	<50	160	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	140	<100	<100	190	<100
TRH >C_{34} -C_{40}	mg/kg	140	<100	<100	150	<100
Total +ve TRH (>C10-C40)	mg/kg	290	<50	<50	340	<50
Surrogate o-Terphenyl	%	97	90	89	96	90

svTRH (C10-C40) in Soil						
Our Reference		280027-7	280027-8	280027-9	280027-10	280027-11
Your Reference	UNITS	BH102	BH103	BH103	BH103	BH103
Depth		1.4-1.6	0.03-0.4	0.5-0.7	0.7-0.95	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	62
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	60
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	90	90	89	86	90

svTRH (C10-C40) in Soil						
Our Reference		280027-12	280027-13	280027-14	280027-15	280027-17
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		0.04-0.3	0.5-0.95	1.5-1.95	3.0-3.2	3.8-4.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	1/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	130	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	130	340	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	130	470	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	160	420	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	120	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	160	540	<50	<50	<50
Surrogate o-Terphenyl	%	77	75	89	86	86

svTRH (C10-C40) in Soil						
Our Reference		280027-18	280027-21	280027-22	280027-25	280027-26
Your Reference	UNITS	BH108	BH117	BH117	BH119	BH119
Depth		0-0.1	0-0.1	0.5-0.95	0.05-0.3	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	81	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	120	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	130	180	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	130	380	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	93	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	93	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	160	240	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	160	430	<50	<50	<50
Surrogate o-Terphenyl	%	94	100	87	88	87

svTRH (C10-C40) in Soil			
Our Reference		280027-30	280027-31
Your Reference	UNITS	SDup7	SDup9
Depth		-	-
Type of sample		Soil	Soil
Date Sampled		30/09/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	160	<100
TRH C_{29} - C_{36}	mg/kg	270	<100
Total +ve TRH (C10-C36)	mg/kg	420	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	310	110
TRH >C_{34} -C_{40}	mg/kg	190	120
Total +ve TRH (>C10-C40)	mg/kg	500	230
Surrogate o-Terphenyl	%	102	83

PAHs in Soil						
Our Reference		280027-1	280027-2	280027-4	280027-5	280027-6
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.6	<0.1	<0.1	0.1	0.8
Anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Fluoranthene	mg/kg	0.6	0.1	<0.1	<0.1	1.4
Pyrene	mg/kg	0.6	0.1	<0.1	<0.1	1.3
Benzo(a)anthracene	mg/kg	0.4	<0.1	<0.1	0.2	1.1
Chrysene	mg/kg	0.2	<0.1	<0.1	0.2	0.6
Benzo(b,j+k)fluoranthene	mg/kg	0.5	<0.2	<0.2	<0.2	2
Benzo(a)pyrene	mg/kg	0.4	0.1	<0.05	0.2	1.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	0.6
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	0.7
Total +ve PAH's	mg/kg	3.8	0.3	<0.05	0.68	10
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	2.1
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	<0.5	2.1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	<0.5	<0.5	<0.5	2.1
Surrogate p-Terphenyl-d14	%	86	84	98	94	90

PAHs in Soil						
Our Reference		280027-7	280027-8	280027-9	280027-10	280027-11
Your Reference	UNITS	BH102	BH103	BH103	BH103	BH103
Depth		1.4-1.6	0.03-0.4	0.5-0.7	0.7-0.95	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.9
Acenaphthylene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.7	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	0.2
Fluoranthene	mg/kg	<0.1	1.5	<0.1	<0.1	0.1
Pyrene	mg/kg	<0.1	1.4	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	1.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.8	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	1.5	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.6	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.7	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	11	<0.05	<0.05	1.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	2.0	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	2.0	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	2.0	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	92	118	91	90

PAHs in Soil						
Our Reference		280027-12	280027-13	280027-14	280027-15	280027-17
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		0.04-0.3	0.5-0.95	1.5-1.95	3.0-3.2	3.8-4.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	1/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.1	0.08	0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	0.4	0.4	0.08	0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	94	95	116	109

PAHs in Soil						
Our Reference		280027-18	280027-21	280027-22	280027-25	280027-26
Your Reference	UNITS	BH108	BH117	BH117	BH119	BH119
Depth		0-0.1	0-0.1	0.5-0.95	0.05-0.3	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.3	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	2.1	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	86	103	103	98

PAHs in Soil			
Our Reference		280027-30	280027-31
Your Reference	UNITS	SDup7	SDup9
Depth		-	-
Type of sample		Soil	Soil
Date Sampled		30/09/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.3
Anthracene	mg/kg	<0.1	0.1
Fluoranthene	mg/kg	0.3	0.3
Pyrene	mg/kg	0.2	0.3
Benzo(a)anthracene	mg/kg	0.2	0.3
Chrysene	mg/kg	0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	0.3
Benzo(a)pyrene	mg/kg	0.2	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	0.1
Total +ve PAH's	mg/kg	1.7	2.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	91	88

Organochlorine Pesticides in soil						
Our Reference		280027-1	280027-5	280027-8	280027-12	280027-18
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH108
Depth		0.02-0.4	0.05-0.1	0.03-0.4	0.04-0.3	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	1/10/2021	30/09/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	102	102	103	104	111

Organochlorine Pesticides in soil				
Our Reference		280027-21	280027-25	280027-31
Your Reference	UNITS	BH117	BH119	SDup9
Depth		0-0.1	0.05-0.3	-
Type of sample		Soil	Soil	Soil
Date Sampled		6/10/2021	1/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	110	94

Organophosphorus Pesticides in Soil						
Our Reference		280027-1	280027-5	280027-8	280027-12	280027-18
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH108
Depth		0.02-0.4	0.05-0.1	0.03-0.4	0.04-0.3	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	1/10/2021	30/09/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<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
Surrogate TCMX	%	102	102	103	104	111

Organophosphorus Pesticides in Soil				
Our Reference		280027-21	280027-25	280027-31
Your Reference	UNITS	BH117	BH119	SDup9
Depth		0-0.1	0.05-0.3	-
Type of sample		Soil	Soil	Soil
Date Sampled		6/10/2021	1/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	110	94

PCBs in Soil						
Our Reference		280027-1	280027-5	280027-8	280027-12	280027-18
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH108
Depth		0.02-0.4	0.05-0.1	0.03-0.4	0.04-0.3	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	1/10/2021	30/09/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	102	102	103	104	111

PCBs in Soil				
Our Reference		280027-21	280027-25	280027-31
Your Reference	UNITS	BH117	BH119	SDup9
Depth		0-0.1	0.05-0.3	-
Type of sample		Soil	Soil	Soil
Date Sampled		6/10/2021	1/10/2021	6/10/2021
Date extracted	-	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	110	94

Acid Extractable metals in soil						
Our Reference		280027-1	280027-2	280027-4	280027-5	280027-6
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	62	17	9	44	43
Copper	mg/kg	59	12	1	74	29
Lead	mg/kg	14	51	13	7	110
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	47	15	<1	73	10
Zinc	mg/kg	41	44	9	37	110

Acid Extractable metals in soil						
Our Reference		280027-7	280027-8	280027-9	280027-10	280027-11
Your Reference	UNITS	BH102	BH103	BH103	BH103	BH103
Depth		1.4-1.6	0.03-0.4	0.5-0.7	0.7-0.95	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	11	34	15	11	36
Copper	mg/kg	6	26	<1	<1	2
Lead	mg/kg	8	42	4	7	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	39	<1	<1	<1
Zinc	mg/kg	18	73	2	<1	1

Acid Extractable metals in soil						
Our Reference		280027-12	280027-13	280027-14	280027-15	280027-17
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		0.04-0.3	0.5-0.95	1.5-1.95	3.0-3.2	3.8-4.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	1/10/2021	1/10/2021	1/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	73	76	19	34	30
Copper	mg/kg	24	34	8	12	17
Lead	mg/kg	5	6	83	57	43
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	75	81	5	3	17
Zinc	mg/kg	37	48	52	38	70

Acid Extractable metals in soil						
Our Reference		280027-18	280027-21	280027-22	280027-25	280027-26
Your Reference	UNITS	BH108	BH117	BH117	BH119	BH119
Depth		0-0.1	0-0.1	0.5-0.95	0.05-0.3	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	19	8	14	15
Copper	mg/kg	9	17	3	29	<1
Lead	mg/kg	63	28	15	28	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	16	2	8	<1
Zinc	mg/kg	31	54	16	37	2

Acid Extractable metals in soil			
Our Reference		280027-30	280027-31
Your Reference	UNITS	SDup7	SDup9
Depth		-	-
Type of sample		Soil	Soil
Date Sampled		30/09/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	6	62
Copper	mg/kg	9	52
Lead	mg/kg	66	13
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	2	48
Zinc	mg/kg	32	40

Moisture						
Our Reference		280027-1	280027-2	280027-4	280027-5	280027-6
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Moisture	%	4.4	8.5	5.2	4.9	17

Moisture						
Our Reference		280027-7	280027-8	280027-9	280027-10	280027-11
Your Reference	UNITS	BH102	BH103	BH103	BH103	BH103
Depth		1.4-1.6	0.03-0.4	0.5-0.7	0.7-0.95	1.4-1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Moisture	%	12	9.8	12	16	7.6

Moisture						
Our Reference		280027-12	280027-13	280027-14	280027-15	280027-17
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		0.04-0.3	0.5-0.95	1.5-1.95	3.0-3.2	3.8-4.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	1/10/2021	1/10/2021	1/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Moisture	%	1.2	2.3	8.7	4.7	5.1

Moisture						
Our Reference		280027-18	280027-21	280027-22	280027-25	280027-26
Your Reference	UNITS	BH108	BH117	BH117	BH119	BH119
Depth		0-0.1	0-0.1	0.5-0.95	0.05-0.3	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Moisture	%	7.3	10	2.6	3.8	2.2

Moisture			
Our Reference		280027-30	280027-31
Your Reference	UNITS	SDup7	SDup9
Depth		-	-
Type of sample		Soil	Soil
Date Sampled		30/09/2021	6/10/2021
Date prepared	-	12/10/2021	12/10/2021
Date analysed	-	13/10/2021	13/10/2021
Moisture	%	6.3	4.4

Asbestos ID - soils NEPM - ASB-001						
Our Reference		280027-1	280027-2	280027-5	280027-8	280027-12
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH104
Depth		0.02-0.4	0.5-0.85	0.05-0.1	0.03-0.4	0.04-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	1/10/2021
Date analysed	-	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Sample mass tested	g	848.45	779.09	1,050.98	819.47	1,011.06
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	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 fibres 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
Asbestos ID in soil <0.1g/kg*	-	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
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		280027-13	280027-18	280027-21	280027-22	280027-25
Your Reference	UNITS	BH104	BH108	BH117	BH117	BH119
Depth		0.5-0.95	0-0.1	0-0.1	0.5-0.95	0.05-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		1/10/2021	30/09/2021	6/10/2021	6/10/2021	1/10/2021
Date analysed	-	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Sample mass tested	g	911.82	918.63	417.36	525.21	817.66
Sample Description	-	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	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 fibres 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
Asbestos ID in soil <0.1g/kg*	-	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
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - materials		
Our Reference		280027-23
Your Reference	UNITS	BH117
Depth		0.5-1.5
Type of sample		Soil
Date Sampled		6/10/2021
Date analysed	-	13/10/2021
Mass / Dimension of Sample	-	80x60x3mm
Sample Description	-	Plaster & debris
Asbestos ID in materials	-	No asbestos detected Organic fibres detected Synthetic mineral fibres detected
Trace Analysis	-	No asbestos detected

PFAS in Soils Extended		
Our Reference		280027-12
Your Reference	UNITS	BH104
Depth		0.04-0.3
Type of sample		Soil
Date Sampled		1/10/2021
Date prepared	-	13/10/2021
Date analysed	-	13/10/2021
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	<0.2
Perfluoropentanoic acid	µg/kg	<0.2
Perfluorohexanoic acid	µg/kg	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1
Perfluorononanoic acid	µg/kg	<0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	<0.1
8:2 FTS	µg/kg	<0.2
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	94
Surrogate $^{13}C_2$ *PFOA*	%	94
Extracted ISTD $^{13}C_3$ *PFBS*	%	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	104

PFAS in Soils Extended		
Our Reference		280027-12
Your Reference	UNITS	BH104
Depth		0.04-0.3
Type of sample		Soil
Date Sampled		1/10/2021
Extracted ISTD $^{13}C_4$ *PFBA*	%	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	116
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	120
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	113
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	112
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	111
Extracted ISTD $^{13}C_8$ *FOSA*	%	116
Extracted ISTD d_3 *N MeFOSA*	%	109
Extracted ISTD d_5 *N EtFOSA*	%	113
Extracted ISTD d_7 *N MeFOSE*	%	108
Extracted ISTD d_9 *N EtFOSE*	%	108
Extracted ISTD d_3 *N MeFOSAA*	%	133
Extracted ISTD d_5 *N EtFOSAA*	%	127
Total Positive PFHxS & PFOS	µg/kg	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1
Total Positive PFAS	µg/kg	<0.1

BTEX in Water		
Our Reference		280027-35
Your Reference	UNITS	FRI-SPT
Depth		-
Type of sample		Water
Date Sampled		6/10/2021
Date extracted	-	11/10/2021
Date analysed	-	12/10/2021
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	108

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	280027-5
Date extracted	-			13/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			14/10/2021	1	13/10/2021	13/10/2021		13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	98	76
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	98	76
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	105	81
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	87	71
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	97	73
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	101	77
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	99	74
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	100	1	91	81	12	102	82

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	13/10/2021	13/10/2021		13/10/2021	13/10/2021
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	12	<25	<25	0	107	89
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	12	<25	<25	0	107	89
Benzene	mg/kg	0.2	Org-023	[NT]	12	<0.2	<0.2	0	104	96
Toluene	mg/kg	0.5	Org-023	[NT]	12	<0.5	<0.5	0	111	84
Ethylbenzene	mg/kg	1	Org-023	[NT]	12	<1	<1	0	105	87
m+p-xylene	mg/kg	2	Org-023	[NT]	12	<2	<2	0	108	90
o-Xylene	mg/kg	1	Org-023	[NT]	12	<1	<1	0	107	88
naphthalene	mg/kg	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	12	101	91	10	73	91

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	13/10/2021	13/10/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	25	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	25	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	25	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	25	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	25	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	25	95	95	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	280027-5
Date extracted	-			13/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			13/10/2021	1	13/10/2021	13/10/2021		13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	85	72
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	98	105
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	130	<100	26	108	#
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	85	72
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	140	<100	33	98	105
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	140	<100	33	108	#
Surrogate o-Terphenyl	%		Org-020	100	1	97	96	1	100	96

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	13/10/2021	13/10/2021		13/10/2021	13/10/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	12	<50	<50	0	73	75
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	12	<100	<100	0	103	102
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	12	130	140	7	98	#
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	12	<50	<50	0	73	75
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	12	160	170	6	103	102
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	12	<100	<100	0	98	#
Surrogate o-Terphenyl	%		Org-020	[NT]	12	77	76	1	102	83

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	13/10/2021	13/10/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	25	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	25	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	25	88	86	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	280027-5
Date extracted	-			12/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			14/10/2021	1	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	103
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	101
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	101
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	0.6	0.6	0	112	114
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	0.6	0.7	15	108	88
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.6	0.7	15	105	92
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.3	29	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.3	40	71	79
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	0.5	0.5	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	0.4	0.4	0	126	132
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	83	1	86	73	16	91	95

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	84	88
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	95	85
Fluorene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	105	93
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	12	0.2	0.2	0	124	97
Anthracene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	112	#
Pyrene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	109	#
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	71	97
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	12	<0.05	<0.05	0	112	#
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	12	102	107	5	125	90

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	14/10/2021	14/10/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	25	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	25	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	25	103	95	8	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	280027-5
Date extracted	-			12/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			14/10/2021	1	14/10/2021	14/10/2021		14/10/2021	14/10/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	100
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	121	110
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	87
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	99
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	78
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	88
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	80
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	82
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	92
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	76
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	112	1	102	97	5	117	104

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	14/10/2021	14/10/2021		14/10/2021	14/10/2021
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	98	94
HCB	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	106	96
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	97	71
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	109	85
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	100	92
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	107	80
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	79	70
Endrin	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	86	92
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	100	90
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	70	84
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	12	104	116	11	108	97

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	14/10/2021	14/10/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	25	110	103	7	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	280027-5
Date extracted	-			12/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			14/10/2021	1	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	95
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	99
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	103
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	120
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	100
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	72
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	90
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	112	1	102	97	5	117	104

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	76	83
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	114	91
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	119	77
Malathion	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	116	120
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	118	88
Parathion	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	87	78
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	90	84
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	12	104	116	11	108	97

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	14/10/2021	14/10/2021		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	25	110	103	7	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	280027-5
Date extracted	-			12/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			14/10/2021	1	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	100	80
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	112	1	102	97	5	117	104

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	280027-31
Date extracted	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	100	80
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	12	104	116	11	108	97

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	14/10/2021	14/10/2021		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	25	110	103	7	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	280027-5
Date prepared	-			12/10/2021	1	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			13/10/2021	1	13/10/2021	13/10/2021		13/10/2021	13/10/2021
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	102	88
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	98	76
Chromium	mg/kg	1	Metals-020	<1	1	62	73	16	98	74
Copper	mg/kg	1	Metals-020	<1	1	59	57	3	101	122
Lead	mg/kg	1	Metals-020	<1	1	14	14	0	99	80
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	94	94
Nickel	mg/kg	1	Metals-020	<1	1	47	55	16	103	94
Zinc	mg/kg	1	Metals-020	<1	1	41	46	11	101	74

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	280027-31
Date prepared	-			[NT]	12	12/10/2021	12/10/2021		12/10/2021	12/10/2021
Date analysed	-			[NT]	12	13/10/2021	13/10/2021		13/10/2021	13/10/2021
Arsenic	mg/kg	4	Metals-020	[NT]	12	<4	<4	0	107	104
Cadmium	mg/kg	0.4	Metals-020	[NT]	12	<0.4	<0.4	0	102	85
Chromium	mg/kg	1	Metals-020	[NT]	12	73	83	13	102	84
Copper	mg/kg	1	Metals-020	[NT]	12	24	27	12	106	#
Lead	mg/kg	1	Metals-020	[NT]	12	5	6	18	103	93
Mercury	mg/kg	0.1	Metals-021	[NT]	12	<0.1	<0.1	0	98	97
Nickel	mg/kg	1	Metals-020	[NT]	12	75	83	10	107	83
Zinc	mg/kg	1	Metals-020	[NT]	12	37	43	15	103	86

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	25	12/10/2021	12/10/2021		[NT]	[NT]
Date analysed	-			[NT]	25	13/10/2021	13/10/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	25	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	25	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	25	14	14	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	25	29	23	23	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	25	28	28	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	25	8	9	12	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	25	37	41	10	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			13/10/2021	12	13/10/2021	13/10/2021		13/10/2021	[NT]
Date analysed	-			13/10/2021	12	13/10/2021	13/10/2021		13/10/2021	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	103	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	102	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	97	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	96	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	95	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	89	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	101	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	101	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	110	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	106	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	98	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	100	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	100	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	106	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	107	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	94	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	12	<5	<5	0	104	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	92	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	104	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	101	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	111	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	12	<1	<1	0	98	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	12	<1	<1	0	108	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	12	<1	<1	0	91	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	12	<1	<1	0	110	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	12	<5	<5	0	103	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	93	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	104	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	12	94	93	1	92	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	96	12	94	96	2	97	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	91	12	100	95	5	99	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	98	12	104	107	3	110	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	96	12	104	109	5	107	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	99	12	105	105	0	106	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	92	12	100	100	0	101	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	12	101	104	3	101	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	12	105	107	2	110	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	12	112	115	3	110	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	102	12	118	117	1	121	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	106	12	116	112	4	111	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	111	12	114	117	3	110	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	106	12	120	122	2	109	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	105	12	113	116	3	112	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	12	117	116	1	114	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	12	112	123	9	108	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	12	111	130	16	115	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	107	12	116	118	2	116	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	104	12	109	112	3	106	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	12	113	116	3	114	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	96	12	108	107	1	108	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	12	108	108	0	114	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	122	12	133	141	6	132	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	101	12	127	170	29	99	[NT]

QUALITY CONTROL: BTEX in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			11/10/2021	[NT]	[NT]	[NT]	[NT]	11/10/2021	[NT]
Date analysed	-			12/10/2021	[NT]	[NT]	[NT]	[NT]	12/10/2021	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	124	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	106	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate/matrix spike is not possible to report as the high concentration of analytes in sample 280027-5,31 have caused interference.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PAH_S:# Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 280027-31 have caused interference.

8 metals in soil - # Percent recovery is not possible to report due to the inhomogeneous nature of the element in the sample. However an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	280027
Date Sample Received	08/10/2021
Date Instructions Received	08/10/2021
Date Results Expected to be Reported	15/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	35 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
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:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Asbestos ID - materials	PFAS in Soils Extended	BTEX in Water	On Hold
BH101-0.02-0.4	✓	✓	✓	✓	✓	✓	✓	✓				
BH101-0.5-0.85	✓	✓	✓				✓	✓				
BH101-1.5-1.7												✓
BH101-1.7-1.95	✓	✓	✓				✓					
BH102-0.05-0.1	✓	✓	✓	✓	✓	✓	✓	✓				
BH102-0.5-0.95	✓	✓	✓				✓					
BH102-1.4-1.6	✓	✓	✓				✓					
BH103-0.03-0.4	✓	✓	✓	✓	✓	✓	✓	✓				
BH103-0.5-0.7	✓	✓	✓				✓					
BH103-0.7-0.95	✓	✓	✓				✓					
BH103-1.4-1.5	✓	✓	✓				✓					
BH104-0.04-0.3	✓	✓	✓	✓	✓	✓	✓	✓		✓		
BH104-0.5-0.95	✓	✓	✓				✓	✓				
BH104-1.5-1.95	✓	✓	✓				✓					
BH104-3.0-3.2	✓	✓	✓				✓					
BH104-3.2-3.45												✓
BH104-3.8-4.1	✓	✓	✓				✓					
BH108-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓				
BH108-0.1-0.4												✓
BH108-0.8-1.0												✓
BH117-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓				
BH117-0.5-0.95	✓	✓	✓				✓	✓				
BH117-0.5-1.5									✓			
BH117-1.3-1.5												✓
BH119-0.05-0.3	✓	✓	✓	✓	✓	✓	✓	✓				
BH119-0.5-0.8	✓	✓	✓				✓					
BH119-1.0-1.3												✓
BH119-1.8-2.0												✓
BH119-2.4-2.5												✓
SDup7	✓	✓	✓				✓					
SDup9	✓	✓	✓	✓	✓	✓	✓					
PFAS Dup 2												✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Asbestos ID - materials	PFAS in Soils Extended	BTEX in Water	On Hold
PFASDup4												✓
PFASDup5												✓
FRI-SPT											✓	
PFAS Soil												✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

COC rec'd - 1840

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos ID	
06/10/2021	1	BH101	0.02-0.4	G, A	3.8	F: silty gravelly sand			X						X			
06/10/2021	2	BH101	0.5-0.85	G, A	1.8	F: silty sand		X							X			
06/10/2021	3	BH101	1.5-1.7	G, A	0.2	F: silty sand												
06/10/2021	4	BH101	1.7-1.95	G, A	0.5	XW Sandstone		X										
06/10/2021	5	BH102	0.05-0.1	G, A, PFAS	1.4	F: Silty gravelly sand			X						X			
06/10/2021	6	BH102	0.5-0.95	G, A, PFAS	3.3	F: silty clay		X										
06/10/2021	7	BH102	1.4-1.6	G, A, PFAS	1.6	Sandstone		X										
06/10/2021	8	BH103	0.03-0.4	G, A, PFAS	1.2	F: Silty gravelly sand			X						X			
06/10/2021	9	BH103	0.5-0.7	G, A, PFAS	7.5	Sandy clay		X										
06/10/2021	10	BH103	0.7-0.95	G, PFAS	505	Silty clay		X										
06/10/2021	11	BH103	1.4-1.5	G, PFAS	579	Sandy clay		X										
01/10/2021	12	BH104	0.04-0.3	G, A, PFAS	0.1	F: sandy gravel			X						X	X		
01/10/2021	13	BH104	0.5-0.95	G, A, PFAS	0	F: Silty gravelly sand		X							X			
01/10/2021	14	BH104	1.5-1.95	G, A, PFAS	0.2	F: silty gravelly sand		X										
01/10/2021	15	BH104	3.0-3.2	G	5.6	F: silty gravelly sand		X										
01/10/2021	16	BH104	3.2-3.45	G, A, PFAS	0.6	F: silty sand												
01/10/2021	17	BH104	3.8-4.1	G, A	1.1	F: silty sand		X										
30/09/2021	18	BH108	0-0.1	G, A	0	F: Sandy Silty Clay			X						X			
30/09/2021	19	BH108	0.1-0.4	G, A	0.1	F: Sandy Silty Clay												
30/09/2021	20	BH108	0.8-1.0	G, A	0.2	Sandstone												
06/10/2021	21	BH117	0-0.1	G, A	9.4	F: silty sand			X						X			
06/10/2021	22	BH117	0.5-0.95	G, A	2.4	F: silty sand		X							X			
06/10/2021	23	BH117	0.5-1.5	A	-	Fragment											X	
06/10/2021	24	BH117	1.3-1.5	G, A	5.2	F: silty sand												
01/10/2021	25	BH119	0.05-0.3	G, A, PFAS	0.6	F: silty sand			X						X			
01/10/2021	26	BH119	0.5-0.8	G, A, PFAS	0.6	Sandstone		X										

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar V- Vial A - Ziplock Asbestos Bag PFAS - Pfas Jar P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
C. Ridley	8/10/2021			8/10/2021

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW
Ph: (02) 9910 6200

Job No: 230027
Date Received: 8/10/2021
Time Received: 1340
Received By:

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	JKE Job Number: E32507BR	JKEnvironments
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		Attention: Craig Ridley
Attention: Aileen	Page: 2 of 2	cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos ID	
01/10/2021	27	BH119	1.0-1.3	PFAS	-	Sandstone												
01/10/2021	28	BH119	1.8-2.0	PFAS	-	Sandstone												
01/10/2021	29	BH119	2.4-2.5	PFAS	-	Sandstone												
30/09/2021	30	SDup7	-	G, A	-	Duplicate		X										
01/10/2021	—	SDup8	-	G, A	-	Duplicate		X			Send to VIC							
06/10/2021	31	SDup9	-	G, A	-	Duplicate			X									
06/10/2021	—	SDup10	-	G, A	-	Duplicate		X			Send to Vic							
01/10/2021	32	PFAS Dup 2	-	PFAS	-	Duplicate												
01/10/2021	—	PFAS Dup 3	-	PFAS	-	Duplicate					Send to Vic					X		
06/10/2021	33	PFASDup4	-	PFAS	-	Duplicate												
06/10/2021	34	PFASDup5	-	PFAS	-	Duplicate												
06/10/2021	35	FRI-SPT	-	V	-	Rinsate								X				
06/10/2021	36	PFAS Soil	-	PFAS	-	PFAS Blank												
	37	~~BH117 (material) Extra PM (0.5-1.5)~~																

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar V- Vial A - Ziplock Asbestos Bag PFAS - Pfas Jar P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
		1840	[illegible]	8/10/2021

280027

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 280027-A

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	additional analysis
Date samples received	08/10/2021
Date completed instructions received	20/10/2021

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	27/10/2021
Date of Issue	27/10/2021

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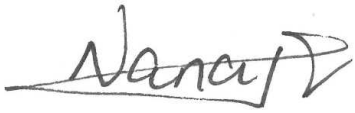
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Josh Williams, LC Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

svTRH (C10-C40) in Soil		
Our Reference		280027-A-11
Your Reference	UNITS	BH103
Depth		1.4-1.5
Type of sample		Soil
Date Sampled		6/10/2021
Date extracted	-	27/10/2021
Date analysed	-	27/10/2021
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
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	%	69

TCLP Preparation - Acid						
Our Reference		280027-A-1	280027-A-5	280027-A-6	280027-A-8	280027-A-12
Your Reference	UNITS	BH101	BH102	BH102	BH103	BH104
Depth		0.02-0.4	0.05-0.1	0.5-0.95	0.03-0.4	0.04-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	1/10/2021
pH of soil for fluid# determ.	pH units	9.3	8.3	8.1	8.7	8.5
pH of soil TCLP (after HCl)	pH units	1.8	1.8	1.8	1.7	1.8
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.8	5.0	5.0	5.1	5.4

TCLP Preparation - Acid		
Our Reference		280027-A-13
Your Reference	UNITS	BH104
Depth		0.5-0.95
Type of sample		Soil
Date Sampled		1/10/2021
pH of soil for fluid# determ.	pH units	8.6
pH of soil TCLP (after HCl)	pH units	1.8
Extraction fluid used	-	1
pH of final Leachate	pH units	5.4

Metals from Leaching Fluid pH 2.9 or 5						
Our Reference		280027-A-1	280027-A-5	280027-A-6	280027-A-12	280027-A-13
Your Reference	UNITS	BH101	BH102	BH102	BH104	BH104
Depth		0.02-0.4	0.05-0.1	0.5-0.95	0.04-0.3	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	1/10/2021	1/10/2021
Date extracted	-	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
Date analysed	-	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
Lead	mg/L	[NA]	[NA]	0.2	[NA]	[NA]
Nickel	mg/L	0.02	0.09	[NA]	0.07	0.06

PAHs in TCLP (USEPA 1311)			
Our Reference		280027-A-6	280027-A-8
Your Reference	UNITS	BH102	BH103
Depth		0.5-0.95	0.03-0.4
Type of sample		Soil	Soil
Date Sampled		6/10/2021	6/10/2021
Date extracted	-	26/10/2021	26/10/2021
Date analysed	-	27/10/2021	27/10/2021
Naphthalene in TCLP	mg/L	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	71	88

CEC			
Our Reference		280027-A-5	280027-A-13
Your Reference	UNITS	BH102	BH104
Depth		0.05-0.1	0.5-0.95
Type of sample		Soil	Soil
Date Sampled		6/10/2021	1/10/2021
Date prepared	-	27/10/2021	27/10/2021
Date analysed	-	27/10/2021	27/10/2021
Exchangeable Ca	meq/100g	23	12
Exchangeable K	meq/100g	0.3	0.3
Exchangeable Mg	meq/100g	5.5	5.0
Exchangeable Na	meq/100g	0.3	0.2
Cation Exchange Capacity	meq/100g	29	17

sTPH in Soil (C10-C40)-Silica			
Our Reference		280027-A-13	280027-A-30
Your Reference	UNITS	BH104	SDup7
Depth		0.5-0.95	-
Type of sample		Soil	Soil
Date Sampled		1/10/2021	30/09/2021
Date extracted	-	27/10/2021	27/10/2021
Date analysed	-	27/10/2021	27/10/2021
TPH C_{10} - C_{14}	mg/kg	<50	<50
TPH C_{15} - C_{28}	mg/kg	150	<100
TPH C_{29} - C_{36}	mg/kg	230	<100
TPH >C_{10} -C_{16}	mg/kg	<50	<50
TPH >C_{16} -C_{34}	mg/kg	340	<100
TPH >C_{34} -C_{40}	mg/kg	100	<100
Surrogate o-Terphenyl	%	79	74

Method ID	Methodology Summary
INORG-004	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-22	
Date extracted	-			27/10/2021	11	27/10/2021	27/10/2021		27/10/2021	[NT]
Date analysed	-			27/10/2021	11	27/10/2021	27/10/2021		27/10/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	11	<50	<50	0	127	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	11	<100	<100	0	137	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	11	<100	<100	0	76	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	11	<50	<50	0	127	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	11	<100	<100	0	137	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	11	<100	<100	0	76	[NT]
Surrogate o-Terphenyl	%		Org-020	83	11	69	69	0	88	[NT]

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/10/2021	1	25/10/2021	25/10/2021		25/10/2021	[NT]
Date analysed	-			25/10/2021	1	25/10/2021	25/10/2021		25/10/2021	[NT]
Lead	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	1	0.02	0.02	0	100	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			26/10/2021	[NT]	[NT]	[NT]	[NT]	26/10/2021	[NT]
Date analysed	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	85	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	89	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	83	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	78	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	77	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/10/2021	5	27/10/2021	27/10/2021		27/10/2021	[NT]
Date analysed	-			27/10/2021	5	27/10/2021	27/10/2021		27/10/2021	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	5	23	21	9	109	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	5	0.3	0.3	0	110	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	5	5.5	4.9	12	104	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	5	0.3	0.2	40	115	[NT]

QUALITY CONTROL: sTPH in Soil (C10-C40)-Silica					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
Date analysed	-			27/10/2021	[NT]	[NT]	[NT]	[NT]	27/10/2021	[NT]
TPH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	103	[NT]
TPH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TPH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	103	[NT]
TPH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
Surrogate o-Terphenyl	%		Org-020	102	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab 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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	280027-A
Date Sample Received	08/10/2021
Date Instructions Received	20/10/2021
Date Results Expected to be Reported	27/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
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	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	sTPH in Soil (C10-C40)-Silica	On Hold
BH101-0.02-0.4	✓		✓																				
BH101-0.5-0.85																							✓
BH101-1.5-1.7																							✓
BH101-1.7-1.95																							✓
BH102-0.05-0.1	✓		✓																		✓		
BH102-0.5-0.95	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH102-1.4-1.6																							✓
BH103-0.03-0.4	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH103-0.5-0.7																							✓
BH103-0.7-0.95																							✓
BH103-1.4-1.5																						✓	
BH104-0.04-0.3	✓		✓																				
BH104-0.5-0.95	✓		✓																		✓	✓	
BH104-1.5-1.95																							✓
BH104-3.0-3.2																							✓
BH104-3.2-3.45																							✓
BH104-3.8-4.1																							✓
BH108-0-0.1																							✓
BH108-0.1-0.4																							✓
BH108-0.8-1.0																							✓

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Sample ID	TCLP Preparation - Acid	Lead	Nickel	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	CEC	sTPH in Soil (C10-C40)-Silica	On Hold
BH117-0-0.1																							✓
BH117-0.5-0.95																							✓
BH117-0.5-1.5																							✓
BH117-1.3-1.5																							✓
BH119-0.05-0.3																							✓
BH119-0.5-0.8																							✓
BH119-1.0-1.3																							✓
BH119-1.8-2.0																							✓
BH119-2.4-2.5																							✓
SDup7																						✓	
SDup9																							✓
PFAS Dup 2																							✓
PFASDup4																							✓
PFASDup5																							✓
FRI-SPT																							✓
PFAS Soil																							✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Ming To

Subject: FW: Results for Registration 280027 E32507BR, Greenwich

Ref: 280027-A.
TAT: Standard.
Due: 27/10/2021
MT

280027-A

From: Craig Ridley <CRidley@jkenvironments.com.au>
Sent: Wednesday, 20 October 2021 5:26 PM
To: Greta Petzold <GPetzold@envirolab.com.au>
Cc: Samplereceipt <Samplereceipt@envirolabservices.com.au>
Subject: Re: Results for Registration 280027 E32507BR, Greenwich

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Greta,

Can we please arrange for the following additional analysis for this sample batch (standard turnaround):

Sample ID and Depth		Lab Reference	Test Required
BH101 (0.02-0.4m)	1.	1	TCLP Nickel
BH102 (0.05-0.1m)	5	5	TCLP Nickel, CEC
BH102 (0.5-0.95m)	6.	6	TCLP Lead, TCLP PAH
BH103 (0.03-0.4m)	8	8	TCLP PAH
BH103 (1.4-1.5m)	11	11	TRH (Silica Gel)
BH104 (0.04-0.3m)	12	12	TCLP Nickel
BH104 (0.5-0.95m)	13	13	TCLP Nickel, TRH (Silica Gel), CEC
SDUP7	30	30	TRH (Silica Gel)

Any issues, please call.

Thanks,

Craig

Regards

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CERTIFICATE OF ANALYSIS 279440-A

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	131 Soil
Date samples received	30/09/2021
Date completed instructions received	01/10/2021

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	11/10/2021
Date of Issue	27/10/2021
Reissue Details	This report replaces R00 created on 11/10/2021 due to: revised report with additional results.

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Hannah Nguyen, Metals Supervisor
Nick Sarlamis, Assistant Operation Manager

Authorised By

Nancy Zhang, Laboratory Manager

Soil Aggressivity						
Our Reference		279440-A-53	279440-A-54	279440-A-55	279440-A-57	279440-A-74
Your Reference	UNITS	BH105	BH105	BH105	BH105	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	2.9-3.0	7.9-8.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	27/09/2021	28/09/2021
pH 1:5 soil:water	pH Units	8.8	8.7	8.0	5.4	6.0
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10	<10	<10
Sulphate, SO4 1:5 soil:water	mg/kg	44	53	10	64	20
Resistivity in soil*	ohm m	91	79	260	230	570

Soil Aggressivity						
Our Reference		279440-A-77	279440-A-79	279440-A-80	279440-A-83	279440-A-87
Your Reference	UNITS	BH106	BH106	BH107	BH107	BH107
Depth		10.9-11.0	12.45-12.55	0-0.2	1.3-1.5	3.9-4.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	28/09/2021	27/09/2021	27/09/2021	27/09/2021
pH 1:5 soil:water	pH Units	6.2	6.2	6.8	5.9	5.3
Chloride, Cl 1:5 soil:water	mg/kg	<10	10	<10	<10	<10
Electrical Conductivity 1:5 soil:water	µS/cm	[NA]	[NA]	[NA]	21	12
Sulphate, SO4 1:5 soil:water	mg/kg	<10	<10	<10	21	10
Resistivity in soil*	ohm m	900	660	300	480	830

Soil Aggressivity						
Our Reference		279440-A-89	279440-A-97	279440-A-98	279440-A-99	279440-A-100
Your Reference	UNITS	BH107	BH107	BH107	BH109	BH109
Depth		5.9-6.0	13.9-14.0	14.9-15.0	0.01-0.4	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
pH 1:5 soil:water	pH Units	5.3	5.8	5.7	9.0	7.7
Chloride, Cl 1:5 soil:water	mg/kg	<10	20	20	<10	<10
Electrical Conductivity 1:5 soil:water	µS/cm	13	16	16	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	10	<10	<10	35	88
Resistivity in soil*	ohm m	750	610	610	130	170

Texture and Salinity*						
Our Reference		279440-A-53	279440-A-54	279440-A-55	279440-A-57	279440-A-74
Your Reference	UNITS	BH105	BH105	BH105	BH105	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	2.9-3.0	7.9-8.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	27/09/2021	28/09/2021
Date prepared	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Electrical Conductivity 1:5 soil:water	µS/cm	110	130	39	43	17
Texture Value	-	9.0	9.0	7.0	14	17
Texture	-	CLAY LOAM	CLAY LOAM	MEDIUM CLAY	SANDY LOAM	SAND
ECe	dS/m	<2	<2	<2	<2	<2
Class	-	NON SALINE	NON SALINE	NON SALINE	NON SALINE	NON SALINE

Texture and Salinity*					
Our Reference		279440-A-77	279440-A-80	279440-A-99	279440-A-100
Your Reference	UNITS	BH106	BH107	BH109	BH109
Depth		10.9-11.0	0-0.2	0.01-0.4	0.5-0.8
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		28/09/2021	27/09/2021	28/09/2021	28/09/2021
Date prepared	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Electrical Conductivity 1:5 soil:water	µS/cm	11	34	77	60
Texture Value	-	17	9.0	14	7.0
Texture	-	SAND	CLAY LOAM	SANDY LOAM	MEDIUM CLAY
ECe	dS/m	<2	<2	<2	<2
Class	-	NON SALINE	NON SALINE	NON SALINE	NON SALINE

CEC						
Our Reference		279440-A-53	279440-A-54	279440-A-55	279440-A-57	279440-A-74
Your Reference	UNITS	BH105	BH105	BH105	BH105	BH106
Depth		0.25-0.4	0.5-0.95	1.2-1.4	2.9-3.0	7.9-8.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		27/09/2021	27/09/2021	27/09/2021	27/09/2021	28/09/2021
Date prepared	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
Exchangeable Ca	meq/100g	9.8	13	2.3	1.5	0.1
Exchangeable K	meq/100g	<0.1	0.1	<0.1	0.1	<0.1
Exchangeable Mg	meq/100g	1.6	2.2	0.8	0.4	0.6
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	12	15	3.2	2.0	<1

CEC				
Our Reference		279440-A-80	279440-A-99	279440-A-100
Your Reference	UNITS	BH107	BH109	BH109
Depth		0-0.2	0.01-0.4	0.5-0.8
Type of sample		Soil	Soil	Soil
Date Sampled		27/09/2021	28/09/2021	28/09/2021
Date prepared	-	11/10/2021	11/10/2021	11/10/2021
Date analysed	-	11/10/2021	11/10/2021	11/10/2021
Exchangeable Ca	meq/100g	8.2	13	2.5
Exchangeable K	meq/100g	0.2	0.2	<0.1
Exchangeable Mg	meq/100g	2.2	4.7	1.9
Exchangeable Na	meq/100g	<0.1	0.1	<0.1
Cation Exchange Capacity	meq/100g	11	18	4.5

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity (non NATA). Resistivity (calculated) may not correlate with results otherwise obtained using Resistivity-Current method, depending on the nature of the soil being analysed.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-123	Determined using a "Texture by Feel" method.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL: Soil Aggressivity						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	279440-A-79
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	77	6.2	6.3	2	101	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	77	<10	<10	0	106	99
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	89	13	14	7	103	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	77	<10	<10	0	106	103
Resistivity in soil*	ohm m	1	Inorg-002	<1	77	900	1100	20	[NT]	[NT]

QUALITY CONTROL: Soil Aggressivity						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	89	5.3	5.3	0	[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	89	<10	<10	0	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	89	10	20	67	[NT]	[NT]
Resistivity in soil*	ohm m	1	Inorg-002	[NT]	89	750	690	8	[NT]	[NT]

QUALITY CONTROL: Texture and Salinity*					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			08/10/2021	77	08/10/2021	08/10/2021		08/10/2021	[NT]
Date analysed	-			08/10/2021	77	08/10/2021	08/10/2021		08/10/2021	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	77	11	9	20	105	[NT]
Texture Value	-		INORG-123	[NT]	77	17	17	0	[NT]	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	279440-A-54
Date prepared	-			11/10/2021	53	11/10/2021	11/10/2021		11/10/2021	11/10/2021
Date analysed	-			11/10/2021	53	11/10/2021	11/10/2021		11/10/2021	11/10/2021
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	53	9.8	12	20	113	#
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	53	<0.1	<0.1	0	107	96
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	53	1.6	1.7	6	110	119
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	53	<0.1	<0.1	0	117	112

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

pH/EC
Samples were out of the recommended holding time for this analysis.

CEC - # Percent recovery is not applicable due to the high concentration of the element in the sample. However an acceptable recovery was obtained for the LCS.

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SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	279440-A
Date Sample Received	30/09/2021
Date Instructions Received	01/10/2021
Date Results Expected to be Reported	11/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	131 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoice accordingly.

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:

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Sample ID	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH105-0.25-0.4				✓
BH105-0.5-0.95				✓
BH105-1.2-1.4				✓
BH105-1.5-1.7				✓
BH106-0.03-0.3				✓
BH106-0.6-0.8				✓
BH107-0-0.2				✓
BH107-0.2-0.4				✓
BH107-0.5-0.95				✓
BH109-0.01-0.4				✓
BH109-0.5-0.8				✓
BH109-0.8-0.95				✓
BH109-1.0-1.2				✓
BH110A-0-0.1				✓
BH110A-0.1-0.2				✓
BH110A-0.5-0.8				✓
BH110A-1.1-1.3				✓
BH111-0-0.1				✓
BH111-0.2-0.3				✓
BH111-0.3-0.6				✓
BH111-0.6-0.8				✓
BH112-0.22-0.65				✓
BH112-0.65-0.8				✓
BH113-0-0.1				✓
BH113-0.1-0.2				✓
BH113-0.35-0.45				✓
BH113-0.45-0.6				✓
BH113-0.6-0.65				✓
BH114-0.05-0.2				✓
BH114-0.2-0.4				✓
BH114-0.4-0.5				✓
BH115-0-0.1				✓

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	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH115-0.3-0.5				✓
BH115-0.6-0.8				✓
BH115-0.9-1.1				✓
BH116-0-0.1				✓
BH116-0.1-0.3				✓
BH116-0.3-0.55				✓
BH118-0-0.1				✓
BH118-0.5-0.6				✓
BH118-1.4-1.5				✓
BH118-1.6-1.8				✓
BH118-2.3-2.5				✓
SDUP1				✓
SDUP2				✓
SDUP3				✓
SDUP4				✓
SDUP5				✓
SDUP6				✓
PFAS DUP1				✓
TS-S1				✓
TB-S1				✓
BH105-0.25-0.4	✓	✓	✓	
BH105-0.5-0.95	✓	✓	✓	
BH105-1.2-1.4	✓	✓	✓	
BH105-2.4-2.5				✓
BH105-2.9-3.0	✓	✓	✓	
BH105-3.9-4.0				✓
BH105-4.9-5.0				✓
BH105-5.9-6.0				✓
BH105-6.9-7.0				✓
BH105-7.7-7.83				✓
BH106-0.03-0.3				✓
BH106-0.6-0.8				✓

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Sample ID	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH106-0.9-1.1				✓
BH106-1.4-1.5				✓
BH106-1.9-2.0				✓
BH106-2.4-2.5				✓
BH106-2.9-3.0				✓
BH106-3.9-4.0				✓
BH106-4.9-5.0				✓
BH106-5.9-6.0				✓
BH106-6.9-7.0				✓
BH106-7.9-8.0	✓	✓	✓	
BH106-8.9-9.0				✓
BH106-9.9-10.0				✓
BH106-10.9-11.0	✓	✓		
BH106-11.9-12.0				✓
BH106-12.45-12.55	✓			
BH107-0-0.2	✓	✓	✓	
BH107-0.2-0.4				✓
BH107-0.5-0.95				✓
BH107-1.3-1.5	✓			
BH107-1.9-2.0				✓
BH107-2.4-2.5				✓
BH107-2.75-2.85				✓
BH107-3.9-4.0	✓			
BH107-4.9-5.0				✓
BH107-5.9-6.0	✓			
BH107-6.9-7.0				✓
BH107-7.9-8.0				✓
BH107-8.9-9.0				✓
BH107-9.9-10.0				✓
BH107-10.9-11.0				✓
BH107-11.9-12.0				✓
BH107-12.9-13.0				✓

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Sample ID	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH107-13.9-14.0	✓			
BH107-14.9-15.0	✓			
BH109-0.01-0.4	✓	✓	✓	
BH109-0.5-0.8	✓	✓	✓	
BH109-0.8-0.95				✓
BH109-1.0-1.2				✓
BH109-1.42-1.50				✓
BH109-1.9-2.0				✓
BH109-2.4-2.5				✓
BH109-2.9-3.0				✓
BH109-3.9-4.0				✓
BH109-4.9-5.0				✓
BH109-5.9-6.0				✓
BH109-6.9-7.0				✓
BH109-7.9-8.0				✓
BH109-8.9-9.0				✓
BH109-9.9-10.0				✓
BH109-10.96-11.0				✓
BH109-11.9-12.0				✓
BH109-12.45-12.56				✓
BH109-11.35-11.45				✓
PFAS Trip Blank -.				✓
BH107-1.0-1.3				✓
BH105-0.25-0.4				✓
BH105-0.5-0.95				✓
BH105-1.2-1.4				✓
BH106-1.5-1.7				✓
BH106-0.03-0.3				✓
BH106-0.6-0.8				✓
BH107-0-0.1				✓
BH107-0.1-0.4				✓
BH107-0.5-0.95				✓

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Sample ID	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH109-0.01-0.4				✓
BH109-0.5-0.8				✓
BH109-0.8-0.95				✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location: Greenwich

Sampler: HW

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos (ID)
27/09/2021	1	BH105	0.25-0.4	G, A, PFAS	0	Fill: Silty Gravelly Sand			X						X	X	
27/09/2021	2	BH105	0.5-0.95	G, A, PFAS	0	Fill: Clayey silty sand		X								X	
27/09/2021	3	BH105	1.2-1.4	G, A, PFAS	0	Sandy Clay		X									
27/09/2021	4	BH105	1.5-1.7	G, A, PFAS	0	XW Sandstone											
28/09/2021	5	BH106	0.03-0.3	G, A	0	Fill: Clayey gravelly sand			X						X		
28/09/2021	6	BH106	0.6-0.8	G, A	0	Silty Clay		X									
27/09/2021	7	BH107	0-0.2	G, A	0	Fill: Silty clay			X						X		
27/09/2021	8	BH107	0.2-0.4	G, A	0	Fill: Sandy clay		X									
27/09/2021	9	BH107	0.5-0.95	G, A	0	Silty Sand											
28/09/2021	10	BH109	0.01-0.4	G, A	0	Fill: Clayey gravelly sand			X						X		
28/09/2021	11	BH109	0.5-0.8	G, A	5	Fill: Sandy clay		X									
28/09/2021	12	BH109	0.8-0.95	G, A	1.5	Sandy Clay		X									
28/09/2021	13	BH109	1.0-1.2	G, A	0	Sandstone											
29/09/2021	14	BH110A	0-0.1	G, A	0.3	Fill: Silty gravelly sand			X						X		
29/09/2021	15	BH110A	0.1-0.2	G, A	0	Fill: Sandy gravel		X									
29/09/2021	16	BH110A	0.5-0.8	G, A	0	Fill: Sandy clay		X							X		
29/09/2021	17	BH110A	1.1-1.3	G, A	0	Sandy clay											
28/09/2021	18	BH111	0-0.1	G, A	0	Fill: Silty sand			X						X		
28/09/2021	19	BH111	0.2-0.3	G, A	0	Fill: Silty sand											
28/09/2021	20	BH111	0.3-0.6	G, A	0	Fill: Silty clay		X									
28/09/2021	21	BH111	0.6-0.8	G, A	0	Fill: Silty clayey Sand		X									
29/09/2021	22	BH112	0.22-0.65	G, A	0	F: Silty gravelly sand			X						X		
29/09/2021	23	BH112	0.65-0.8	G, A	0	XW Sandstone		X									
29/09/2021	24	BH113	0-0.1	G, A	0	Fill: Silty sand			X						X		
29/09/2021	25	BH113	0.1-0.2	G, A	0	Fill: Silty clayey sand		X									
29/09/2021	26	BH113	0.35-0.45	G, A	0	Sandy Clay		X									

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag
PFAS - Pfas Jar

Relinquished By:	Date:	Time:	Received By:	Date:
				30/09/2021 COC 01/10/2021

279440
updated
COC

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
ENVIROLAB SERVICES PTY LTD
12 ASHLEY STREET
CHATSWOOD NSW 2067
P: (02) 99106200
F: (02) 99106201

Attention: Aileen

JKE Job Number: E32507BR

Date Results Required: STANDARD

Page: 2 of 2

FROM:
JKEnvironments
REAR OF 115 WICKS ROAD
MACQUARIE PARK, NSW 2113
P: 02-9888 5000 F: 02-9888 5001
Attention: Craig Ridley
cridley@jkenvironments.com.au

Location: Greenwich
Sampler: HW

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM)	PFAS	Asbestos (ID)	
29/09/2021	27	BH113	0.45-0.6	G	0	Sandy clay												
29/09/2021	28	BH113	0.6-0.65	G	0	Sandstone												
29/09/2021	29	BH114	0.05-0.2	G, A	0	Fill: Silty sandy gravel			X						X			
29/09/2021	30	BH114	0.2-0.4	G, A	0	Silty clayey sand												
29/09/2021	31	BH114	0.4-0.5	G, A	0	Sandy clay												
29/09/2021	32	BH115	0-0.1	G, A	0	Fill: Silty clayey sand			X						X			
29/09/2021	33	BH115	0.3-0.5	G, A	0	Fill: silty clayey sand												
29/09/2021	34	BH115	0.6-0.8	G, A	0	Sandy clay		X										
29/09/2021	35	BH115	0.9-1.1	G, A	0	Sandy clay												
29/09/2021	36	BH116	0-0.1	G, A	0	Fill: Silty sandy gravel			X						X			
29/09/2021	37	BH116	0.1-0.3	G, A	0	Silty clayey sand		X										
29/09/2021	38	BH116	0.3-0.55	G	0	Sandy clay												
29/09/2021	39	BH118	0-0.1	G, A	0	Fill: Silty sandy clay			X						X			
29/09/2021	40	BH118	0.5-0.6	G, A	0	Fill: Silty sandy clay												
29/09/2021	41	BH118	1.4-1.5	G, A	0	Fill: Silty sandy clay		X										
29/09/2021	42	BH118	1.6-1.8	G, A	0	Sandy clay		X										
29/09/2021	43	BH118	2.3-2.5	G, A	0	Sandy clay												
28/09/2021	44	SDUP1	-	G, A	-	Duplicate												
28/09/2021	45	SDUP2	-	G	-	Duplicate												
28/09/2021	46	SDUP3	-	G, A	-	Duplicate		X							X			
29/09/2021	47	SDUP4	-	G, A	-	Duplicate			X						X			
29/09/2021	48	SDUP5	-	G, A	-	Duplicate												
29/09/2021	49	SDUP6	-	G, A	-	Duplicate			X						X			
27/09/2021	50	PFAS DUP1	-	PFAS	-	Duplicate								X				
27/09/2021	51	TS-S1	-	V	-	Spike							X					
27/09/2021	52	TB-S1	-	G, PFAS	-	Blank								X				

Remarks (comments/detection limits required):
PLEASE SEND SDUP6 TO VIC

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag PFAS - PFAS Jar
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
27/09/2021	S3	BH105	0.25-0.4	G	Fill: Silty Gravelly Sand	X	X	X	X	X	X	X					
27/09/2021	S4	BH105	0.5-0.95	G	Fill: Clayey silty sand	X	X	X	X	X	X	X					
27/09/2021	S5	BH105	1.2-1.4	G	Sandy Clay	X	X	X	X	X	X	X					
27/09/2021	S6	BH105	2.4-2.5	G	XW Sandstone												
27/09/2021	S7	BH105	2.9-3.0	G	XW Sandstone	X	X	X	X	X	X	X					
27/09/2021	S8	BH105	3.9-4.0	G	Sandstone												
27/09/2021	S9	BH105	4.9-5.0	G	Sandstone												
27/09/2021	60	BH105	5.9-6.0	G	Sandstone												
27/09/2021	61	BH105	6.9-7.0	G	Sandstone												
27/09/2021	62	BH105	7.7-7.83	G	Sandstone												
28/09/2021	63	BH106	0.03-0.3	G	Fill: Clayey gravelly sand												
28/09/2021	64	BH106	0.6-0.8	G	Silty Clay												
28/09/2021	65	BH106	0.9-1.1	G	Sandstone												
28/09/2021	66	BH106	1.4-1.5	G	Sandstone												
28/09/2021	67	BH106	1.9-2.0	G	Sandstone												
28/09/2021	68	BH106	2.4-2.5	G	Sandstone												
28/09/2021	69	BH106	2.9-3.0	G	Sandstone												
28/09/2021	70	BH106	3.9-4.0	G	Sandstone												
28/09/2021	71	BH106	4.9-5.0	G	Sandstone												
28/09/2021	72	BH106	5.9-6.0	G	Sandstone												
28/09/2021	73	BH106	6.9-7.0	G	Sandstone												
28/09/2021	74	BH106	7.9-8.0	G	Sandstone	X	X	X	X	X	X	X					
28/09/2021	75	BH106	8.9-9.0	G	Sandstone												
28/09/2021	76	BH106	9.9-10.0	G	Sandstone												
28/09/2021	77	BH106	10.9-11.0	G	Sandstone	X		X	X	X	X						

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 2 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
28/09/2021	78	BH106	11.9-12.0	G	Sandstone												
28/09/2021	79	BH106	12.45-12.55	G	Sandstone	X	X		X	X	X						
27/09/2021	80	BH107	0-0.2	G	Fill: Silty clay	X	X	X	X	X	X	X					
27/09/2021	81	BH107	0.2-0.4	G	Fill: Sandy clay												
27/09/2021	82	BH107	0.5-0.95	G	Silty Sand												
27/09/2021	119	BH107	1.0-1.3	G	Silty Clay												
27/09/2021	83	BH107	1.3-1.5	G	Sandstone	X	X		X	X	X						
27/09/2021	84	BH107	1.9-2.0	G	Sandstone												
27/09/2021	85	BH107	2.4-2.5	G	Sandstone												
27/09/2021	86	BH107	2.75-2.85	G	Sandstone												
27/09/2021	87	BH107	3.9-4.0	G	Sandstone	X	X		X	X	X						
27/09/2021	88	BH107	4.9-5.0	G	Sandstone												
27/09/2021	89	BH107	5.9-6.0	G	Sandstone	X	X		X	X	X						
27/09/2021	90	BH107	6.9-7.0	G	Sandstone												
27/09/2021	91	BH107	7.9-8.0	G	Sandstone												
27/09/2021	92	BH107	8.9-9.0	G	Sandstone												
27/09/2021	93	BH107	9.9-10.0	G	Sandstone												
27/09/2021	94	BH107	10.9-11.0	G	Sandstone												
27/09/2021	95	BH107	11.9-12.0	G	Sandstone												
27/09/2021	96	BH107	12.9-13.0	G	Sandstone												
27/09/2021	97	BH107	13.9-14.0	G	Sandstone	X	X		X	X	X						
27/09/2021	98	BH107	14.9-15.0	G	Sandstone	X	X		X	X	X						
28/09/2021	99	BH109	0.01-0.4	G	Fill: Clayey gravelly sand	X	X	X	X	X	X	X					
28/09/2021	100	BH109	0.5-0.8	G	Fill: Sandy clay	X	X	X	X	X	X	X					
28/09/2021	101	BH109	0.8-0.95	G	Sandy Clay												

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 3 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	HW	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
28/09/2021	102	BH109	1.0-1.2	G	Sandstone												
28/09/2021	103	BH109	1.42-1.50	G	Sandstone												
28/09/2021	104	BH109	1.9-2.0	G	Sandstone												
28/09/2021	105	BH109	2.4-2.5	G	Sandstone												
28/09/2021	106	BH109	2.9-3.0	G	Sandstone												
28/09/2021	107	BH109	3.9-4.0	G	Sandstone												
28/09/2021	108	BH109	4.9-5.0	G	Sandstone												
28/09/2021	109	BH109	5.9-6.0	G	Sandstone												
28/09/2021	110	BH109	6.9-7.0	G	Sandstone												
28/09/2021	111	BH109	7.9-8.0	G	Sandstone												
28/09/2021	112	BH109	8.9-9.0	G	Sandstone												
28/09/2021	113	BH109	9.9-10.0	G	Sandstone												
28/09/2021	114	BH109	10.96-11.0	G	Sandstone												
28/09/2021	115	BH109	11.9-12.0	G	Sandstone												
28/09/2021	116	BH109	12.45-12.56	G	Sandstone												
28/09/2021	117	BH109	11.35-11.45	G	Sandstone												
27/09/21	118	AEAS Trip Blank	—														

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:

279440

S

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	SCr extended	pH field test (pHF apHFOX)										
27/09/2021	120	BH105	0.25-0.4	P	Fill: Sandy Gravelly Sand		X										
27/09/2021	121	BH105	0.5-0.95	P	Fill: Clayey silty sand		X										
27/09/2021	122	BH105	1.2-1.4	P	Sandy Clay		X										
28/09/2021	123	BH106	1.5-1.7	P	Fill: Clayey gravelly sand		X										
28/09/2021	124	BH106	0.03-0.3	P	Silty Clay		X										
27/09/2021	125	BH106	0.6-0.8	P	Silty Clay		X										
27/09/2021	126	BH107	0-0.1	P	Fill: Silty clay		X										
27/09/2021	127	BH107	0.1-0.4	P	Fill: Sandy clay		X										
27/09/2021	128	BH107	0.5-0.95	P	Silty Sand		X										
28/09/2021	129	BH109	0.01-0.4	P	Fill: Clayey gravelly sand		X										
28/09/2021	130	BH109	0.5-0.8	P	Fill: Clayey gravelly sand		X										
28/09/2021	131	BH109	0.8-0.95	P	Sandy Clay		X										
27/09/2021	119	BH107	1-1.3	P	Silty Clay		X										

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
			Tony	

279440

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 280023

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	47 Soil
Date samples received	11/10/2021
Date completed instructions received	11/10/2021

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	15/10/2021
Date of Issue	15/10/2021

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Giovanni Agosti, Group Technical Manager

Authorised By

Nancy Zhang, Laboratory Manager

Soil Aggressivity						
Our Reference		280023-1	280023-2	280023-4	280023-12	280023-13
Your Reference	UNITS	BH101	BH101	BH101	BH102	BH102
Depth		0.02-0.4	0.5-0.85	1.7-1.95	0.05-0.1	0.5-0.95
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	6/10/2021	6/10/2021	6/10/2021	6/10/2021
Electrical Conductivity 1:5 soil:water	µS/cm	170	110	60	71	81
pH 1:5 soil:water	pH Units	9.8	9.1	8.7	9.0	7.0
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10	<10	10
Sulphate, SO4 1:5 soil:water	mg/kg	120	21	24	<10	56
Resistivity in soil*	ohm m	60	95	170	140	120

Soil Aggressivity						
Our Reference		280023-14	280023-22	280023-24	280023-26	280023-31
Your Reference	UNITS	BH102	BH104	BH104	BH104	BH108
Depth		1.4-1.6	0.04-0.3	1.5-1.95	3.2-3.45	0.1-0.4
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		6/10/2021	1/10/2021	1/10/2021	1/10/2021	30/09/2021
Electrical Conductivity 1:5 soil:water	µS/cm	53	[NA]	[NA]	170	[NA]
pH 1:5 soil:water	pH Units	7.8	8.5	9.0	8.2	4.9
Chloride, Cl 1:5 soil:water	mg/kg	10	25	<10	10	10
Sulphate, SO4 1:5 soil:water	mg/kg	32	1,800	100	130	45
Resistivity in soil*	ohm m	190	13	90	58	210

Soil Aggressivity						
Our Reference		280023-34	280023-36	280023-40	280023-41	280023-43
Your Reference	UNITS	BH108	BH108	BH108	BH108	BH108
Depth		1.9-2.0	2.9-3.0	6.9-7.0	7.9-8.0	9.9-10.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021
Electrical Conductivity 1:5 soil:water	µS/cm	19	11	13	16	20
pH 1:5 soil:water	pH Units	5.3	5.4	5.9	5.8	5.7
Chloride, Cl 1:5 soil:water	mg/kg	20	<10	10	20	20
Sulphate, SO4 1:5 soil:water	mg/kg	49	<10	<10	<10	<10
Resistivity in soil*	ohm m	530	900	760	640	500

Texture and Salinity*				
Our Reference		280023-22	280023-24	280023-31
Your Reference	UNITS	BH104	BH104	BH108
Depth		0.04-0.3	1.5-1.95	0.1-0.4
Type of sample		Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	30/09/2021
Date prepared	-	12/10/2021	12/10/2021	12/10/2021
Date analysed	-	12/10/2021	12/10/2021	12/10/2021
Electrical Conductivity 1:5 soil:water	µS/cm	790	110	49
Texture Value	-	9.0	9.0	14
Texture	-	CLAY LOAM	CLAY LOAM	SANDY LOAM
ECe	dS/m	7.1	<2	<2
Class	-	MODERATELY SALINE	NON SALINE	NON SALINE

CEC				
Our Reference		280023-22	280023-24	280023-31
Your Reference	UNITS	BH104	BH104	BH108
Depth		0.04-0.3	1.5-1.95	0.1-0.4
Type of sample		Soil	Soil	Soil
Date Sampled		1/10/2021	1/10/2021	30/09/2021
Date prepared	-	14/10/2021	14/10/2021	14/10/2021
Date analysed	-	14/10/2021	14/10/2021	14/10/2021
Exchangeable Ca	meq/100g	100	33	2.4
Exchangeable K	meq/100g	1.8	0.7	1.1
Exchangeable Mg	meq/100g	46	14	1.6
Exchangeable Na	meq/100g	2.0	0.3	0.2
Cation Exchange Capacity	meq/100g	153	48	5.2

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity (non NATA). Resistivity (calculated) may not correlate with results otherwise obtained using Resistivity-Current method, depending on the nature of the soil being analysed.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-123	Determined using a "Texture by Feel" method.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL: Soil Aggressivity						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	280023-34
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	14	53	49	8	101	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	14	7.8	7.9	1	102	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	14	10	10	0	95	75
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	14	32	30	6	93	#
Resistivity in soil*	ohm m	1	Inorg-002	<1	14	190	200	5	[NT]	[NT]

QUALITY CONTROL: Soil Aggressivity						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	40	13	14	7	[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	40	5.9	5.9	0	[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	40	10	10	0	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	40	<10	<10	0	[NT]	[NT]
Resistivity in soil*	ohm m	1	Inorg-002	[NT]	40	760	720	5	[NT]	[NT]

QUALITY CONTROL: Texture and Salinity*					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Date analysed	-			13/10/2021	[NT]	[NT]	[NT]	[NT]	13/10/2021	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	280023-24
Date prepared	-			14/10/2021	22	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Date analysed	-			14/10/2021	22	14/10/2021	14/10/2021		14/10/2021	14/10/2021
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	22	100	100	0	118	#
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	22	1.8	1.9	5	122	108
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	22	46	49	6	118	126
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	22	2.0	2.2	10	126	117

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

CEC - # High spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the high recovery was confirmed. This is suspected to be from matrix interferences. However, an acceptable recovery was obtained for the LCS.

AGGRESSIVITY - # Percent recovery is not possible to report due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	280023
Date Sample Received	11/10/2021
Date Instructions Received	11/10/2021
Date Results Expected to be Reported	15/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	47 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice
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	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH101-0.02-0.4	✓			
BH101-0.5-0.85	✓			
BH101-1.5-1.7				✓
BH101-1.7-1.95	✓			
BH101-2.4-2.5				✓
BH101-2.9-3.0				✓
BH101-3.9-4.0				✓
BH101-4.9-5.0				✓
BH101-5.9-6.0				✓
BH101-6.9-7.0				✓
BH101-7.4-7.5				✓
BH102-0.05-0.1	✓			
BH102-0.5-0.95	✓			
BH102-1.4-1.6	✓			
BH102-1.9-2.0				✓
BH102-2.4-2.5				✓
BH102-2.9-3.0				✓
BH102-3.9-4.0				✓
BH102-4.9-5.0				✓
BH102-5.9-6.0				✓
BH102-6.0-6.12				✓
BH104-0.04-0.3	✓	✓	✓	
BH104-0.5-0.95				✓
BH104-1.5-1.95	✓	✓	✓	
BH104-2.4-2.5				✓
BH104-3.2-3.45	✓			
BH104-4.2-4.3				✓
BH104-4.89-4.99				✓
BH104-5.87-5.97				✓
BH108-0-0.1				✓
BH108-0.1-0.4	✓	✓	✓	
BH108-0.8-1.0				✓

Envirolab Services Pty Ltd
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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Soil Aggressivity	Texture and Salinity*	CEC	On Hold
BH108-1.4-1.5				✓
BH108-1.9-2.0	✓			
BH108-2.4-2.5				✓
BH108-2.9-3.0	✓			
BH108-3.9-4.0				✓
BH108-4.9-5.0				✓
BH108-5.9-6.0				✓
BH108-6.9-7.0	✓			
BH108-7.9-8.0	✓			
BH108-8.9-9.0				✓
BH108-9.9-10.0	✓			
BH108-10.9-11.0				✓
BH108-11.9-12.0				✓
BH108-12.9-13.0				✓
BH108-13.85-13.95				✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	JKE Job Number: E32507BR	JKEnvironments
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067	Date Results Required: STANDARD	MACQUARIE PARK, NSW 2113
P: (02) 99106200		P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201	Page: 1 of 2	Attention: Craig Ridley
Attention: Aileen		cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
6/10/2021	1	BH101	0.02-0.4	G	F: Silty gravelly sand	x	x		x	x	x						
6/10/2021	2	BH101	0.5-0.85	G	F: silty sand	x	x		x	x	x						
6/10/2021	3	BH101	1.5-1.7	G	F: silty sand												
6/10/2021	4	BH101	1.7-1.95	G	XW Sandstone	x	x		x	x	x						
6/10/2021	5	BH101	2.4-2.5	G	Sandstone												
6/10/2021	6	BH101	2.9-3.0	G	Sandstone												
6/10/2021	7	BH101	3.9-4.0	G	Sandstone												
6/10/2021	8	BH101	4.9-5.0	G	Sandstone												
6/10/2021	9	BH101	5.9-6.0	G	Sandstone												
6/10/2021	10	BH101	6.9-7.0	G	Sandstone												
6/10/2021	11	BH101	7.4-7.5	G	Sandstone												
6/10/2021	12	BH102	0.05-0.1	G	F: Silty gravelly sand	x	x		x	x	x						
6/10/2021	13	BH102	0.5-0.95	G	F: silty clay	x	x		x	x	x						
6/10/2021	14	BH102	1.4-1.6	G	Sandstone	x	x		x	x	x						
6/10/2021	15	BH102	1.9-2.0	G	Sandstone												
6/10/2021	16	BH102	2.4-2.5	G	Sandstone												
6/10/2021	17	BH102	2.9-3.0	G	Sandstone												
6/10/2021	18	BH102	3.9-4.0	G	Sandstone												
6/10/2021	19	BH102	4.9-5.0	G	Sandstone												
6/10/2021	20	BH102	5.9-6.0	G	Sandstone												
6/10/2021	21	BH102	6.0-6.12	G	Sandstone												
1/10/2021	22	BH104	0.04-0.3	G	F: sandy gravel	x	x	x	x	x	x	x					
1/10/2021	23	BH104	0.5-0.95	G	F: silty gravelly sand												
1/10/2021	24	BH104	1.5-1.95	G	F: silty gravelly sand	x	x	x	x	x	x	x					
1/10/2021	25	BH104	2.4-2.5	G	F: silty gravelly sand												

Environlab Services
12 Ashley
Chatswood NSW 2
Ph: (02) 9910
Job No: 280023
Date Received: 8/10/2021
Time Received: 1600
Temp: Cool / Ambient
Cooling: Ice / Pack
Security: Intact / Broken
18

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag			
Relinquished By:	Date: 8/10/2021	Time:	Received By:	Date:
C Ridley		1600	8/10/2021	1600

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 2 of 2	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley cridley@jkenvironments.com.au

Location:	Greenwich					Sample Preserved in Esky on Ice											
Sampler:	HW					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH	EC	ECe (texture)	Sulphate	Chloride	Resistivity	CEC					
1/10/2021	26	BH104	3.2-3.45	G	F: silty sand	x	x		x	x	x						
1/10/2021	27	BH104	4.2-4.3	G	Sandstone												
1/10/2021	28	BH104	4.89-4.99	G	Sandstone												
1/10/2021	29	BH104	5.87-5.97	G	Sandstone												
30/09/2021	30	BH108	0-0.1	G	Fill: Sandy Silty Clay												
30/09/2021	31	BH108	0.1-0.4	G	Fill: Sandy Silty Clay	X	X	x	x	x	x	x					
30/09/2021	32	BH108	0.8-1.0	G	Sandstone												
30/09/2021	33	BH108	1.4-1.5	G	Sandstone												
30/09/2021	34	BH108	1.9-2.0	G	Sandstone	x	x		x	x	x						
30/09/2021	35	BH108	2.4-2.5	G	Sandstone												
30/09/2021	36	BH108	2.9-3.0	G	Sandstone	x	x		x	x	x						
30/09/2021	37	BH108	3.9-4.0	G	Sandstone												
30/09/2021	38	BH108	4.9-5.0	G	Sandstone												
30/09/2021	39	BH108	5.9-6.0	G	Sandstone												
30/09/2021	40	BH108	6.9-7.0	G	Sandstone	x	x		x	x	x						
30/09/2021	41	BH108	7.9-8.0	G	Silty Clay	x	x		x	x	x						
30/09/2021	42	BH108	8.9-9.0	G	Sandstone												
30/09/2021	43	BH108	9.9-10.0	G	Sandstone	x	x		x	x	x						
30/09/2021	44	BH108	10.9-11.0	G	Sandstone												
30/09/2021	45	BH108	11.9-12.0	G	Sandstone												
30/09/2021	46	BH108	12.9-13.0	G	Sandstone												
30/09/2021	47	BH108	13.85-13.95	G	Sandstone												

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	280023

Relinquished By:	Date:	Time:	Received By:	Date:
		1600	Ang	8/10/2021

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 280509

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR, Greenwich**
Number of Samples	11 Water
Date samples received	15/10/2021
Date completed instructions received	15/10/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	22/10/2021
Date of Issue	22/10/2021

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Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Senior Chemist
Jenny He, Chemist
Josh Williams, LC Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/10/2021	18/10/2021	18/10/2021	18/10/2021	18/10/2021
Date analysed	-	18/10/2021	18/10/2021	18/10/2021	18/10/2021	18/10/2021
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	42	<1	16	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	7	<1	2	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1	<1

VOCs in water						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	103	110	105	109	108
Surrogate toluene-d8	%	101	100	101	100	99
Surrogate 4-BFB	%	111	110	110	110	109

VOCs in water			
Our Reference		280509-6	280509-7
Your Reference	UNITS	MW109	WDUP1
Date Sampled		14/10/2021	13/10/2021
Pump ID		27.2	-
Type of sample		Water	Water
Date extracted	-	18/10/2021	18/10/2021
Date analysed	-	18/10/2021	18/10/2021
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1

VOCs in water			
Our Reference		280509-6	280509-7
Your Reference	UNITS	MW109	WDUP1
Date Sampled		14/10/2021	13/10/2021
Pump ID		27.2	-
Type of sample		Water	Water
Ethylbenzene	µg/L	<1	<1
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	108	108
Surrogate toluene-d8	%	99	100
Surrogate 4-BFB	%	111	110

vTRH(C6-C10)/BTEXN in Water						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/10/2021	18/10/2021	18/10/2021	18/10/2021	18/10/2021
Date analysed	-	18/10/2021	18/10/2021	18/10/2021	18/10/2021	18/10/2021
TRH C_6 - C_9	µg/L	43	<10	22	<10	<10
TRH C_6 - C_{10}	µg/L	44	<10	23	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	44	<10	23	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	103	110	105	109	108
Surrogate toluene-d8	%	101	100	101	100	99
Surrogate 4-BFB	%	111	110	110	110	109

vTRH(C6-C10)/BTEXN in Water					
Our Reference		280509-6	280509-7	280509-9	280509-10
Your Reference	UNITS	MW109	WDUP1	TS-W1	TB-W1
Date Sampled		14/10/2021	13/10/2021	13/10/2021	13/10/2021
Pump ID		27.2	-	-	-
Type of sample		Water	Water	Water	Water
Date extracted	-	18/10/2021	18/10/2021	18/10/2021	18/10/2021
Date analysed	-	18/10/2021	18/10/2021	21/10/2021	21/10/2021
TRH C_6 - C_9	µg/L	<10	<10	[NA]	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	[NA]	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	[NA]	[NA]
Benzene	µg/L	<1	<1	96%	<1
Toluene	µg/L	<1	<1	103%	<1
Ethylbenzene	µg/L	<1	<1	115%	<1
m+p-xylene	µg/L	<2	<2	110%	<2
o-xylene	µg/L	<1	<1	110%	<1
Naphthalene	µg/L	<1	<1	[NA]	[NA]
Surrogate Dibromofluoromethane	%	108	108	105	104
Surrogate toluene-d8	%	99	100	101	100
Surrogate 4-BFB	%	111	110	100	103

svTRH (C10-C40) in Water						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	90	92	84	89	100

svTRH (C10-C40) in Water			
Our Reference		280509-6	280509-7
Your Reference	UNITS	MW109	WDUP1
Date Sampled		14/10/2021	13/10/2021
Pump ID		27.2	-
Type of sample		Water	Water
Date extracted	-	19/10/2021	19/10/2021
Date analysed	-	20/10/2021	20/10/2021
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50
Surrogate o-Terphenyl	%	76	84

PAHs in Water - Low Level						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Date analysed	-	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	0.3
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	0.29
Surrogate p-Terphenyl-d14	%	77	96	90	94	91

PAHs in Water - Low Level			
Our Reference		280509-6	280509-7
Your Reference	UNITS	MW109	WDUP1
Date Sampled		14/10/2021	13/10/2021
Pump ID		27.2	-
Type of sample		Water	Water
Date extracted	-	19/10/2021	19/10/2021
Date analysed	-	19/10/2021	19/10/2021
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	5.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	5.1	<0.1
Surrogate p-Terphenyl-d14	%	75	77

PFAS in Waters Extended				
Our Reference		280509-3	280509-8	280509-11
Your Reference	UNITS	MW105	WPFASDUP1	PFASTB-W
Date Sampled		14/10/2021	14/10/2021	13/10/2021
Pump ID		2.8	-	-
Type of sample		Water	Water	Water
Date prepared	-	18/10/2021	18/10/2021	20/10/2021
Date analysed	-	18/10/2021	18/10/2021	20/10/2021
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	97	96	91
Surrogate $^{13}C_2$ *PFOA*	%	100	111	112
Extracted ISTD $^{13}C_3$ *PFBS*	%	94	95	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	111	111	108
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	99	104

PFAS in Waters Extended				
Our Reference		280509-3	280509-8	280509-11
Your Reference	UNITS	MW105	WPFASDUP1	PFASTB-W
Date Sampled		14/10/2021	14/10/2021	13/10/2021
Pump ID		2.8	-	-
Type of sample		Water	Water	Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	101	101	109
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	96	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%	113	112	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%	113	113	101
Extracted ISTD $^{13}C_4$ *PFOA*	%	110	108	113
Extracted ISTD $^{13}C_5$ *PFNA*	%	124	122	128
Extracted ISTD $^{13}C_2$ *PFDA*	%	121	123	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	123	108	123
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	107	100	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	81	87	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	111	107	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	111	108	166
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	100	100	152
Extracted ISTD $^{13}C_8$ *FOSA*	%	110	112	107
Extracted ISTD d_3 *N MeFOSA*	%	110	110	103
Extracted ISTD d_5 *N EtFOSA*	%	109	107	97
Extracted ISTD d_7 *N MeFOSE*	%	123	123	109
Extracted ISTD d_9 *N EtFOSE*	%	111	115	105
Extracted ISTD d_3 *N MeFOSAA*	%	119	120	143
Extracted ISTD d_5 *N EtFOSAA*	%	107	97	179
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01

HM in water - dissolved						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Date analysed	-	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Arsenic-Dissolved	µg/L	2	1	<1	3	2
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.2	0.2	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	6	5	7	5
Lead-Dissolved	µg/L	<1	<1	<1	17	3
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	3	<1	18	10	5
Zinc-Dissolved	µg/L	40	6	81	73	47

HM in water - dissolved			
Our Reference		280509-6	280509-7
Your Reference	UNITS	MW109	WDUP1
Date Sampled		14/10/2021	13/10/2021
Pump ID		27.2	-
Type of sample		Water	Water
Date prepared	-	19/10/2021	19/10/2021
Date analysed	-	19/10/2021	19/10/2021
Arsenic-Dissolved	µg/L	1	2
Cadmium-Dissolved	µg/L	<0.1	0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	4	4
Lead-Dissolved	µg/L	<1	3
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	3	5
Zinc-Dissolved	µg/L	18	38

Miscellaneous Inorganics						
Our Reference		280509-1	280509-2	280509-3	280509-4	280509-5
Your Reference	UNITS	MW101	MW102	MW105	MW106	MW107
Date Sampled		14/10/2021	14/10/2021	14/10/2021	14/10/2021	13/10/2021
Pump ID		29.7	40.3	2.8	11.2	2.4
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Date analysed	-	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
pH	pH Units	6.2	7.0	5.4	4.5	4.9
Electrical Conductivity	µS/cm	300	69	590	350	250
Sulphate, SO4	mg/L	36	4	150	65	40
Chloride, Cl	mg/L	25	4	16	42	32

Miscellaneous Inorganics		
Our Reference		280509-6
Your Reference	UNITS	MW109
Date Sampled		14/10/2021
Pump ID		27.2
Type of sample		Water
Date prepared	-	15/10/2021
Date analysed	-	15/10/2021
pH	pH Units	5.3
Electrical Conductivity	µS/cm	240
Sulphate, SO4	mg/L	48
Chloride, Cl	mg/L	19

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			18/10/2021	1	18/10/2021	20/10/2021		18/10/2021	[NT]
Date analysed	-			18/10/2021	1	18/10/2021	21/10/2021		18/10/2021	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	42	36	15	104	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	7	5	33	102	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	1	<1	0	94	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	103	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	106	1	103	102	1	102	[NT]
Surrogate toluene-d8	%		Org-023	100	1	101	100	1	102	[NT]
Surrogate 4-BFB	%		Org-023	109	1	111	103	7	104	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			18/10/2021	1	18/10/2021	20/10/2021		18/10/2021	[NT]
Date analysed	-			18/10/2021	1	18/10/2021	21/10/2021		18/10/2021	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	43	45	5	103	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	44	45	2	103	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	102	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	106	1	103	102	1	102	[NT]
Surrogate toluene-d8	%		Org-023	100	1	101	100	1	102	[NT]
Surrogate 4-BFB	%		Org-023	102	1	111	103	7	104	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	280509-7
Date extracted	-			19/10/2021	1	19/10/2021	19/10/2021		19/10/2021	19/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	112	94
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	114	99
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	94	85
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	112	94
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	114	99
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	94	85
Surrogate o-Terphenyl	%		Org-020	91	1	90	78	14	95	78

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	280509-2
Date extracted	-			19/10/2021	[NT]	[NT]	[NT]	[NT]	19/10/2021	19/10/2021
Date analysed	-			19/10/2021	[NT]	[NT]	[NT]	[NT]	19/10/2021	19/10/2021
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	104
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	67	83
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	98
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	118
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	93
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	91
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	66	76
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	83
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	83	93

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/10/2021	11	20/10/2021	20/10/2021		20/10/2021	[NT]
Date analysed	-			20/10/2021	11	20/10/2021	20/10/2021		20/10/2021	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	115	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	105	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	96	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	103	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	102	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	78	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	107	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	116	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	101	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	117	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	99	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	100	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	91	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	95	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	105	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	93	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	11	<0.5	<0.5	0	110	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	104	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	108	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	105	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	117	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	102	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	106	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	112	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	113	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	11	<0.5	<0.5	0	95	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	123	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	117	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	11	91	101	10	97	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	113	11	112	115	3	113	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	92	11	97	93	4	94	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	113	11	108	108	0	107	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	11	104	96	8	97	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	112	11	109	107	2	108	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	99	11	97	96	1	95	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	102	11	98	93	5	103	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	108	11	101	108	7	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	110	11	113	100	12	103	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	130	11	128	116	10	118	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	125	11	114	110	4	117	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	121	11	123	107	14	121	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	103	11	104	99	5	96	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	84	11	83	71	16	83	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	119	11	122	110	10	106	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	114	11	166	116	35	86	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	142	11	152	112	30	120	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	107	11	107	105	2	102	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	104	11	103	103	0	101	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	98	11	97	99	2	98	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	117	11	109	113	4	112	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	112	11	105	96	9	105	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	135	11	143	123	15	109	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	111	11	179	107	50	89	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	280509-2
Date prepared	-			19/10/2021	1	19/10/2021	19/10/2021		19/10/2021	19/10/2021
Date analysed	-			19/10/2021	1	19/10/2021	19/10/2021		19/10/2021	19/10/2021
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	2	1	67	94	93
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	97	94
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	94	94
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	97
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	1	0	94	93
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	105	102
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	94	95
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	40	40	0	98	101

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			15/10/2021	1	15/10/2021	15/10/2021		15/10/2021	[NT]
Date analysed	-			15/10/2021	1	15/10/2021	15/10/2021		15/10/2021	[NT]
pH	pH Units		Inorg-001	[NT]	1	6.2	6.2	0	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	300	300	0	100	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	36	36	0	86	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	25	25	0	88	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

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	JK Environments
Attention	C Ridley

Sample Login Details

Your reference	E32507BR, Greenwich
Envirolab Reference	280509
Date Sample Received	15/10/2021
Date Instructions Received	15/10/2021
Date Results Expected to be Reported	22/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	8 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Sample NOT RECEIVED - TS-W1, TB-W1 and PFASTB-W1

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	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	PFAS in Waters Extended	HM in water - dissolved	pH	Electrical Conductivity	Sulphate, SO4	Chloride, Cl
MW101	✓	✓	✓	✓		✓	✓	✓	✓	✓
MW102	✓	✓	✓	✓		✓	✓	✓	✓	✓
MW105	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW106	✓	✓	✓	✓		✓	✓	✓	✓	✓
MW107	✓	✓	✓	✓		✓	✓	✓	✓	✓
MW109	✓	✓	✓	✓		✓	✓	✓	✓	✓
WDUP1	✓	✓	✓	✓		✓				
WPFASDUP1					✓					

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley

Location:	Greenwich	Sample Preserved in Esky on Ice
Sampler:	MME	Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3L	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness	Sulfate and Chloride	PFAS	
14/10/2021	1	MW101	G1 x2, V x3, H, PVC x2	29.7	Water		X	X	X						X		
14/10/2021	2	MW102	G1 x2, V x3, H, PVC	40.3	Water		X	X	X						X		
14/10/2021	3	MW105	G1 x2, V x3, H, PVC, PFAS	2.8	Water		X	X	X						X	X	
14/10/2021	4	MW106	G1 x2, V x3, H, PVC	11.2	Water		X	X	X						X		
13/10/2021	5	MW107	G1 x 2, V x 3, H, PVC	2.4	Water		X	X	X						X		
14/10/2021	6	MW109	G1 x 2, V x 3, H, PVC	27.2	Water		X	X	X						X		
13/10/2021	7	WDUP1	G1 x 2, V x 3, H, PVC	-	Duplicate		X	X									
14/10/2021	—	WDUP2	G1 x 2, V x 3, H, PVC	-	Duplicate		X	X		SEND TO VIC							
14/10/2021	8	WPFASDUP1	PFAS	-	Duplicate											X	
13/10/2021	NR	TS-W1	V		Trip Spike								X				
13/10/2021	NR	TB-W1	V		Trip Blank								X				
13/10/2021	NR	PFASTB-W1	PFAS		PFAS Blank											X	

Remarks (comments/detection limits required):

All analysis PQLs to ANZECC (2000) Detection Limits Please

Sample Containers:
G1 - 100mL Amber Glass Bottle G2 - 1L Amber Glass Bottle
V - BTEX Vial H - HNO3 Wash PVC
PVC - HDPE Plastic Bottles PFAS - PFAS Bottle

Relinquished By:	Date:	Time:	Received By:	Date:
ENVIROLAB	Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200			15/10/21

Job No: 280509
Date Received: 15/10/21
Time Received: 16:05
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 28210

Client Details

Client	JK Environments
Attention	Craig Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32507BR**
Number of Samples	1 Water
Date samples received	19/10/2021
Date completed instructions received	19/10/2021

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	26/10/2021
Date of Issue	26/10/2021

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Results Approved By
Chris De Luca, Operations Manager

Authorised By

Pamela Adams, Laboratory Manager

VOCs in water		
Our Reference		28210-1
Your Reference	UNITS	WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Date extracted	-	25/10/2021
Date analysed	-	25/10/2021
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1

VOCs in water		
Our Reference		28210-1
Your Reference	UNITS	WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	99
Surrogate toluene-d8	%	98
Surrogate 4-BFB	%	98

vTRH(C6-C10)/BTEXN in Water		
Our Reference	UNITS	28210-1
Your Reference		WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Date extracted	-	25/10/2021
Date analysed	-	25/10/2021
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 -C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Total +ve Xylenes	µg/L	<1
Total BTEX in water	µg/L	<1
Surrogate Dibromofluoromethane	%	101
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	99

TRH Water(C10-C40) NEPM		
Our Reference	UNITS	28210-1
Your Reference		WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Date extracted	-	20/10/2021
Date analysed	-	21/10/2021
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
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
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	80

PAHs in Water - Low Level		
Our Reference		28210-1
Your Reference	UNITS	WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Date extracted	-	20/10/2021
Date analysed	-	21/10/2021
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}	%	120

HM in water - dissolved		
Our Reference	UNITS	28210-1
Your Reference		WDUP2
Date Sampled		14/10/2021
Type of sample		Water
Date prepared	-	20/10/2021
Date analysed	-	20/10/2021
Arsenic-Dissolved	µg/L	3
Cadmium-Dissolved	µg/L	0.3
Chromium-Dissolved	µg/L	1
Copper-Dissolved	µg/L	9
Lead-Dissolved	µg/L	19
Nickel-Dissolved	µg/L	11
Zinc-Dissolved	µg/L	76
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-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022	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-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. 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	-			25/10/2021	[NT]	[NT]	[NT]	[NT]	25/10/2021	[NT]
Date analysed	-			25/10/2021	[NT]	[NT]	[NT]	[NT]	25/10/2021	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<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]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	99	[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	-			25/10/2021	[NT]	[NT]	[NT]	[NT]	25/10/2021	[NT]
Date analysed	-			25/10/2021	[NT]	[NT]	[NT]	[NT]	25/10/2021	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	98	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[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	-			20/10/2021	[NT]	[NT]	[NT]	[NT]	20/10/2021	[NT]
Date analysed	-			21/10/2021	[NT]	[NT]	[NT]	[NT]	21/10/2021	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	99	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	99	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-020	79	[NT]	[NT]	[NT]	[NT]	79	[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	-			20/10/2021	[NT]	[NT]	[NT]	[NT]	20/10/2021	[NT]
Date analysed	-			21/10/2021	[NT]	[NT]	[NT]	[NT]	21/10/2021	[NT]
Naphthalene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Acenaphthylene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Fluorene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Benzo(b,j&k)fluoranthene	µg/L	0.2	Org-022	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022	132	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			20/10/2021	[NT]	[NT]	[NT]	[NT]	20/10/2021	[NT]
Date analysed	-			20/10/2021	[NT]	[NT]	[NT]	[NT]	20/10/2021	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Craig Ridley

Sample Login Details

Your reference	E32507BR
Envirolab Reference	28210
Date Sample Received	19/10/2021
Date Instructions Received	19/10/2021
Date Results Expected to be Reported	26/10/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	TRH Water(C10-C40) NEPM	PAHs in Water - Low Level	HM in water - dissolved
WDUP2	✓	✓	✓	✓	✓

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.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E32507BR Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley

Location: Greenwich | Sampler: MME | Sample Preserved in Esky on Ice | Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3L	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness	Sulfate and Chloride	PFAS
14/10/2021	1	MW101	G1 x2, V x3, H, PVC x2	29.7	Water		X	X	X						X	
14/10/2021	2	MW102	G1 x2, V x3, H, PVC	40.3	Water		X	X	X						X	
14/10/2021	3	MW105	G1 x2, V x3, H, PVC, PFAS	2.8	Water		X	X	X						X	X
14/10/2021	4	MW106	G1 x2, V x3, H, PVC	11.2	Water		X	X	X						X	
13/10/2021	5	MW107	G1 x 2, V x 3, H, PVC	2.4	Water		X	X	X						X	
14/10/2021	6	MW109	G1 x 2, V x 3, H, PVC	27.2	Water		X	X	X						X	
13/10/2021	7	WDUP1	G1 x 2, V x 3, H, PVC	-	Duplicate		X	X								
14/10/2021	—	WDUP2	G1 x 2, V x 3, H, PVC	-	Duplicate		X	X		SEND TO VIC						
14/10/2021	8	WPFASDUP1	PFAS	-	Duplicate											X
13/10/2021	NR	TS-W1	V		Trip Spike								X			
13/10/2021	NR	TB-W1	V		Trip Blank											
13/10/2021	NR	PFASTB-W1	PFAS		PFAS Blank											X

ENVIROLAB
Envirolab Services
25 Research Drive
Croydon South VIC 3136
PH: (03) 9763 2500

Job No: 28210
Date Received: 19/10/21
Time Received: 2:30
Received By: GS
Temp: Cool/Ambient
Cooling: Ice/Icepack 13.2
Security: Intact/Broken/None

Remarks (comments/detection limits required):
All analysis PQLs to ANZECC (2000) Detection Limits Please

Sample Containers:
G1 - 100mL Amber Glass Bottle G2 - 1L Amber Glass Bottle
V - BTEX Vial H - HNO3 Wash PVC
PVC - HDPE Plastic Bottles PFAS - PFAS Bottle

Relinquished By:		Time:	Received By:	Date:
ES 5464	ENVIROLAB *Envirolab Services 12 Ashley St Chatswood NSW 2067 PH: (02) 9910 6200*			15/10/21

18/10/21
1230
CMulenne

Job No: 28509
Date Received: 15/10/21
Time Received: 16:05
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Appendix F: Report Explanatory Notes

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[30] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[31]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

[30] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[31] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 6.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	SDUP3 (primary sample BH111 0-0.1m)	Approximately 8% of primary samples	Heavy metals, TRH/BTEX, PAHs, asbestos
Intra-laboratory duplicate (soil)	SDUP4 (primary sample BH115 0-0.1m)	As above	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs, PCBs and asbestos
Intra-laboratory duplicate (soil)	SDUP7 (primary sample BH108 0-0.1m)	As above	Heavy metals, TRH/BTEX, PAHs,
Intra-laboratory duplicate (soil)	SDUP9 (primary sample BH104 0.04-0.3m)	As above	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs and PCBs
Intra-laboratory Duplicate (soil)	PFAS DUP1 (primary sample BH105 0.25-0.4m)	Approximately 33% of primary samples	PFAS
Inter-laboratory duplicate (soil)	SDUP8 (primary sample BH104 0.04-0.3m)	Approximately 4% of primary samples	Heavy metals, TRH/BTEX, PAHs
Inter-laboratory duplicate (soil)	SDUP10 (primary sample BH117 0-0.1m)	As above	As above
Inter-laboratory Duplicate (soil)	PFAS DUP3 (primary sample BH104 0.04-0.3m)	Approximately 33% of primary samples	PFAS
Intra-laboratory duplicate (water)	WDUP1 (primary sample MW107)	Approximately 17% of primary samples	Heavy metals, TRH/BTEX, PAHs, VOCs

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (water)	WPFASDUP1 (primary sample MW105)	Approximately 100% of primary samples	PFAS
Inter-laboratory duplicate (water)	WDUP2 (primary sample MW106)	Approximately 17% of primary samples	Heavy metals, TRH/BTEX, PAHs, VOCs
Trip spike (soil)	TS-S1 (27/09/2021)	One for the investigation to demonstrate adequacy of preservation, storage and transport methods	BTEX
Trip blank (soil)	TB-S1 (27/09/2021)	One for the investigation to demonstrate adequacy of storage and transport methods	BTEX
Rinsate (soil SPT)	FR1-SPT (06/10/2021)	One for the investigation to demonstrate adequacy of decontamination methods	BTEX
Trip spike (water)	TS-W1 (13/10/2021)	One for the investigation to demonstrate adequacy of preservation, storage and transport methods	BTEX
Trip blank (water)	TB-W1 (13/10/2021)	One for the investigation to demonstrate adequacy of storage and transport methods	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table Q1 to Table Q4 inclusive) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field/Trip Blanks and Rinsates

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes and PFAS.

Trip Spikes
Acceptable targets for trip spike samples in this report will be 70% to 130%.

Laboratory QA/QC
The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs
- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes
- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes
- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks
- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with the SAQP. The SAQP was designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times generally in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies. Envirolab noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

One Sample Receipt (Report 279440) reported a holding time exceedance for analysis. The holding time exceedances related to ASS analysis undertaken for the ASS report. All contamination-related analysis was conducted within the recommended holding times.

JKE note that the temperature on receipt of soil samples was reported to be up to 14°C, and up to 13.2°C on receipt of water samples. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. On this basis, JKE are of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch. This is further supported by the trip spike recovery results (discussed further below) which reported adequate recovery in the range of 97% to 106% for the soil trip spike and 96% to 115% for the water trip spike.

The frequency of inter-laboratory analysis of duplicate soil samples was marginally below the target rate of 5%. Due to a sample processing error, a duplicate soil sample scheduled for inter-laboratory analysis was analysed by the primary laboratory. The duplicate sample analysis indicated good correlation between primary and duplicate samples, as discussed further below. On this basis, JKE are of the opinion that the low frequency of inter-laboratory duplicate analysis does not affect the quality of the dataset as a whole or the outcome of the investigation.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC, with the exception of the following:

- Anthracene PQL for groundwater analysis was 10 times greater than the ecological SAC;
- Naphthalene PQL for groundwater analysis was approximately 10 times greater than the HSL-SSA SAC;
- Hexachlorobutadiene PQL for groundwater analysis was marginally greater than the HSL-SSA SAC; and
- Vinyl chloride PQL for groundwater analysis was approximately 3 times greater than the human contact SAC and 33 times greater than the HSL-SSA SAC.

In light of the PAH concentrations reported for soil and groundwater, and the VOC concentrations reported for groundwater, JKE are of the opinion that this is not significant, and it does not affect the quality of the dataset as a whole or the outcome of the investigation.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:

- Elevated RPDs were reported for TRH F3 and several PAH compounds in SDUP3/BH111 (0-0.1m);
- Elevated RPDs were reported for TRH F3, several heavy metals and several PAH compounds in SDUP4/BH115 (0-0.1m);
- Elevated RPDs were reported for several PAH compounds in SDUP9/BH101 (0.02-0.4m);

- Elevated RPDs were reported for TRH F3, TRH F4, naphthalene and phenanthrene in SDUP8/BH104 (0.04-0.3m)
- Elevated RPDs were reported for TRH F2 and chromium in SDUP10/BH117 (0-0.1m);
- Elevated RPDs were reported for acenaphthene and cadmium in WDUP1/MW107; and
- Elevated RPDs were reported for cadmium and chromium in WDUP2/MW106.

Values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. As both the primary and duplicate sample results were compared to the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field/Trip Blanks

During the investigation, one soil trip blank and one water trip blank were placed in the eskies during sampling and transported back to the laboratory The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Rinsates

All results were below the PQL. This indicated that cross-contamination artefacts associated with sampling equipment were not present and the potential for cross-contamination to have occurred was low.

Trip Spikes

The results ranged from 97% to 106% for the soil trip spike and 96% to 115% for the water trip spike. The results indicated that field preservation methods were appropriate.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation.

A review of the laboratory QA/QC data identified the following minor non-conformances:

- Report 279440 – Matrix spike recovery for TRH was not possible for one soil sample due to high analyte concentrations;
- Report 279440 – An RPD exceedance for lead in one soil sample was recovered. The laboratory reported the result as a triplicate sample;
- Report 279440 – A low matrix spike recovery for arsenic in one soil sample was reported. The laboratory considered the low recovery was attributed to sample matrix interference. An acceptable recovery was obtained for the LCS;
- Report 279440 – Matrix spike recoveries for several heavy metals in one soil sample were not possible due to the inhomogeneous nature of the sample. The laboratory noted an acceptable recovery was obtained for the LCS;
- Report 280027 – Surrogate and matrix spike recoveries for TRH were not possible for two soil samples due to high analyte concentrations;

- Report 280027 – Matrix spike recovery for PAH was not possible for one soil sample due to high analyte concentrations; and
- Report 280027 – Matrix spike recovery for copper in one soil sample was not possible due to the inhomogeneous nature of the sample. The laboratory noted an acceptable recovery was obtained for the LCS.

The laboratory data quality non-conformances were minor and were not considered to impact the overall accuracy of the data.

C. DATA QUALITY SUMMARY

JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

There was only one groundwater monitoring event undertaken for the investigation. On this basis there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods. However, given the generally low contaminant concentrations reported, the site history and the surrounding land uses, this is not considered to alter the conclusions of the investigation.

Appendix H: Field Work Documents

Field Calibration Records

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	TSA		
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		
DISSOLVED OXYGEN			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 06·10·21	Name of Calibrator: MME		
Span value: 70% to 130%			
Measured value: 106%			
Measured reading Acceptable (Yes/No):			
pH			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 6/10/21	Name of Calibrator: MME		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 08/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 06/22	Lot No: 366070	
Measured reading of Buffer 1: 7·05			
Measured reading of Buffer 2: 4·0			
Slope: —	Measured reading Acceptable (Yes/No):		
EC			
Make: YSI 4	Model: Professional Plus		
Date: 06·10·21	Name of Calibrator: MME	Temperature: 23 °C	
Calibration solution: Conductivity standard	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container): 1359 µS/cm			
Measured conductivity: 1360 µS/cm	Measured reading Acceptable (Yes/No):		
REDOX			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 06·10·21	Name of Calibrator: MME		
Calibration solution: ORP Test Solution	Expiry date: 04/26	Lot No: 6393	
Theoretical redox value: 240mV			
Measured redox reading: 240·9 mV	Measured reading Acceptable (Yes/No):		

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	TSA		
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		
DISSOLVED OXYGEN			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 7/10/21	Name of Calibrator: MME		
Span value: 70% to 130%			
Measured value: 94%			
Measured reading Acceptable (Yes)/No):			
pH			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 7/10/21	Name of Calibrator: MME		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 8/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 6/22	Lot No: 366070	
Measured reading of Buffer 1: 7.02			
Measured reading of Buffer 2: 4.00			
Slope: —	Measured reading Acceptable (Yes)/No):		
EC			
Make: YSI 4	Model: Professional Plus		
Date: 7/10/21	Name of Calibrator: MME	Temperature: 19.8 °C	
Calibration solution: Conductivity Standard	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container): 1278 µS/cm			
Measured conductivity: 1251 µS/cm	Measured reading Acceptable (Yes)/No):		
REDOX			
Make: YSI 4	Model: Professional Plus		
Date of calibration: 7/10/21	Name of Calibrator: MME		
Calibration solution: ORP Test Solution	Expiry date: 4/26	Lot No: 6393	
Theoretical redox value: 240mV			
Measured redox reading: 240.2 mV	Measured reading Acceptable (Yes)/No):		

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	TSA		
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR2		
DISSOLVED OXYGEN			
Make: YSI	Model: Professional plus		
Date of calibration: 5/10/21	Name of Calibrator: HW		
Span value: 70% to 130%			
Measured value: 99%			
Measured reading Acceptable (Yes/No):			
pH			
Make: YSI	Model: Professional plus		
Date of calibration: 5/10/21	Name of Calibrator: HW		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 8/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 6/22	Lot No: 366070	
Measured reading of Buffer 1: 7.62			
Measured reading of Buffer 2: 4.75			
Slope: —	Measured reading Acceptable (Yes/No):		
EC			
Make: YSI	Model: Professional plus		
Date: 5/10/21	Name of Calibrator: HW	Temperature: 20.3 °C	
Calibration solution: Conductivity Standard	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container):	1278 µS/cm		
Measured conductivity: 1372 µS/cm	Measured reading Acceptable (Yes/No):		
REDOX			
Make: YSI	Model: Professional plus		
Date of calibration: 5/10/21	Name of Calibrator: HW		
Calibration solution: ORP Test Solution	Expiry date: 4/26	Lot No: 6393	
Theoretical redox value: 240mV			
Measured redox reading: 229.7 mV	Measured reading Acceptable (Yes/No):		

JKEnvironments

PID FIELD CALIBRATION FORM

Client:	TSA
Project:	Proposed Hospital Redevelopment
Location:	97-115 River Road, GREENWICH, NSW
Job Number:	E32507BR

PID

Make: MiniRae	Model: 2000	Unit: Yellow	Date of last factory calibration: 10/09/2021
Date of calibration: 6/10/21		Name of Calibrator: MME	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: 100.2 ppm		Error in measured reading:	± 0.02 ppm
Measured reading Acceptable (Yes/No):			

PID

Make: MiniRae	Model: 2000	Unit: Yellow	Date of last factory calibration: 10/09/2021
Date of calibration: 7/10/21		Name of Calibrator: MME	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: 99.7 ppm		Error in measured reading:	± 0.03 ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading:	± ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading:	± ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading:	± ppm
Measured reading Acceptable (Yes/No):			

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	TSA		
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		
DISSOLVED OXYGEN			
Make: YST	Model: Professional Plus		
Date of calibration: 13/10/21	Name of Calibrator: MME		
Span value: 70% to 130%			
Measured value: 114%			
Measured reading Acceptable (Yes/No):			
pH			
Make: YST	Model: Professional Plus		
Date of calibration: 13/10/21	Name of Calibrator: MME		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 8/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 6/22	Lot No: 366070	
Measured reading of Buffer 1: 7.06			
Measured reading of Buffer 2: 4.04			
Slope: —	Measured reading Acceptable (Yes/No):		
EC			
Make: YST	Model: Professional Plus		
Date: 13/10/21	Name of Calibrator: MME	Temperature: 16 °C	
Calibration solution: Conductivity Standard	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container): 1170 µS/cm			
Measured conductivity: 1164 µS/cm	Measured reading Acceptable (Yes/No):		
REDOX			
Make: YST	Model: Professional Plus		
Date of calibration: 13/10/21	Name of Calibrator: MME		
Calibration solution: ORP	Expiry date: 4/26	Lot No: 6393	
Theoretical redox value: 240mV			
Measured redox reading: 243.6 mV	Measured reading Acceptable (Yes/No):		

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	TSA		
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		
DISSOLVED OXYGEN			
Make: YSI	Model: Professional Plus		
Date of calibration: 14/10/21	Name of Calibrator: MME		
Span value: 70% to 130%			
Measured value: 119%			
Measured reading Acceptable (Yes/No):			
pH			
Make: YSI	Model: Professional Plus		
Date of calibration: 14/10/21	Name of Calibrator: MME		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 8/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 6/22	Lot No: 366070	
Measured reading of Buffer 1: 7.02			
Measured reading of Buffer 2: 4.01			
Slope: —	Measured reading Acceptable (Yes/No):		
EC			
Make: YSI	Model: Professional Plus		
Date: 14/10/21	Name of Calibrator: MME	Temperature: 16 °C	
Calibration solution: Conductivity Std.	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container): 1170 µS/cm			
Measured conductivity: 1178 µS/cm	Measured reading Acceptable (Yes/No):		
REDOX			
Make: YSI	Model: Professional Plus		
Date of calibration: 14/10/21	Name of Calibrator: MME		
Calibration solution: ORP	Expiry date: 4/26	Lot No: 6393	
Theoretical redox value: 240mV			
Measured redox reading: 245.1 mV	Measured reading Acceptable (Yes/No):		

JKEnvironments

PID FIELD CALIBRATION FORM

Client:	TSA
Project:	Proposed Hospital Redevelopment
Location:	97-115 River Road, GREENWICH, NSW
Job Number:	E32507BR

PID

Make: MiniRae	Model: 2000	Unit: Yellow	Date of last factory calibration: 10/09/2021
Date of calibration: 13/10/21		Name of Calibrator: MME	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: 99.6 ppm		Error in measured reading: ± 0.04	ppm
Measured reading Acceptable (Yes/No):			

PID

Make: MiniRae	Model: 2000	Unit: Yellow	Date of last factory calibration: 10/09/2021
Date of calibration: 14//0/21		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: 100 ppm		Error in measured reading: ± 0	ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ±	ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ±	ppm
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ±	ppm
Measured reading Acceptable (Yes/No):			

Groundwater Development Field Records

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW101
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	7.5

WELL FINISH DETAILS

	Gatic Cover [X]	Standpipe [ ]	Other (describe) [ ]

WELL DEVELOPMENT DETAILS

Method:	Pump.	**SWL – Before (m):**	2.29m.
Date:	6/10/21.	**Time – Before:**	2:13pm.
Undertaken By:	MME.	**SWL – After (m):**	Dry.
Total Vol. Removed:	14L.	**Time – After:**	2:17pm.
PID Reading (ppm):	2.7ppm.		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	19.6	7.2	294.5	6.73	198.
2	19.1	2.3	385	6.62	192.6.
3	19.2	2.3	417.9	6.57	185.9.
4	19.5	2.4	422.5	6.54	182
6	19.9	2.4	369.9	6.50	178.7.
8	19.9	2.1	368	6.44	178.1
10	19.8	1.8	428.1	6.42	177.6.
12	19.8	1.5	420.7	6.42	175.8
14	19.6	1.3	386.4	6.45	171.7

Comments: Odours (YES / (NO)) NAPL/PSH (YES / (NO)) Sheen (YES / (NO)) Steady State Achieved (YES / (NO))

YSI Used: 4.

Tested By:	MME.
Date Tested:	6/10/21.
Checked By:	CR
Date:	18/10/21

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	Job No.:	E32507BR2
Project:	Proposed Hospital Redevelopment	Well No.:	MW102
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	6.1

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump.	SWL – Before (m):	3.70
Date:	7/10/21.	Time – Before:	9:35 am.
Undertaken By:	MME	SWL – After (m):	Dry
Total Vol. Removed:	5 L	Time – After:	9:37 am.
PID Reading (ppm):	29.8		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	17.5	8.1	201.9	6.93	158.6
2	18.8	6.5	220.9	6.73	158.9
4	18.8	5.8	230.9	6.57	149.3
5	18.7	5.2	219.5	6.53	138.0

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

YSI Used: 4.

Tested By:	MME
Date Tested:	7/10/21
Checked By:	CR
Date:	18/10/2021

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR2
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW104
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	6.0

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump	**SWL – Before (m):**	Dry
Date:	5/10/21	**Time – Before:**	—
Undertaken By:	MME	**SWL – After (m):**	—
Total Vol. Removed:	—	**Time – After:**	—
PID Reading (ppm):	24 ppm		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)

Comments: ~~Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)~~

YSI Used: 4

Tested By:	MME
Date Tested:	5/10/21
Checked By:	CR
Date:	18/10/21

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	Job No.:	E32507BR2
Project:	Proposed Hospital Redevelopment	Well No.:	MW105
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	7.85 m

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump.	SWL – Before (m):	5.80 m.
Date:	5/10/21.	Time – Before:	12:40 pm.
Undertaken By:	MME.	SWL – After (m):	Dry.
Total Vol. Removed:	3 L.	Time – After:	12:48 pm.
PID Reading (ppm):	1.0.		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	21.1	6.4	451	5.85	64.5
2	20.6	5.5	524	5.75	66.3
3	20.2	5.6	514	5.68	64.0

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

YSI Used: 4

Tested By:	MME.
Date Tested:	5/10/21.
Checked By:	CR
Date:	18/10/21

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR2
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW106
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	12.52m

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump	**SWL – Before (m):**	8.26
Date:	5/10/21	**Time – Before:**	12:20pm
Undertaken By:	MME	**SWL – After (m):**	Dry
Total Vol. Removed:	10L	**Time – After:**	12:30pm
PID Reading (ppm):	0		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	20.8	8.2	319.4	6.33	83.4
2	21.2	6.4	343.2	6.17	77.6
3	21.6	5.4	345.5	6.00	78.6
4	21.5	4.9	347.2	5.81	82.8
5	21.5	4.6	347.0	5.63	85.0
6	21.4	4.4	348.4	5.51	86.3
7	21.4	4.3	349.7	5.42	86.1
8	21.4	4.2	350.4	5.35	85.8
9	21.4	4.2	353.2	5.27	85.4
10	21.4	4.2	354.8	5.22	85.1

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

YSI Used: 4

Tested By:	MME	**Remarks:**
Date Tested:	5/10/21	- Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Checked By:	CR	
Date:	18/10/2021	

JKEnvironments

Client:	TSA	Job No.:	E32507BR2
Project:	Proposed Hospital Redevelopment	Well No.:	MW107
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	14.93m

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump	SWL – Before (m):	8.75
Date:	5/10/21	Time – Before:	9:18 am
Undertaken By:	MME	SWL – After (m):	Dry
Total Vol. Removed:		Time – After:	9:21 am
PID Reading (ppm):	1.7		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.5	18.6	5.2	308.5	6.6	130.6
1	19.0	4.0	264.9	6.44	123.4
2	19.2	3.5	253.4	6.33	117.7
3	19.2	3.2	250.8	6.27	110.8
4	19.3	2.8	249.9	6.17	105.3

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)) Steady State Achieved (YES / (NO))

YSI Used: 4

Tested By:	MMF
Date Tested:	5/10/21
Checked By:	CR
Date:	18/10/2021

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	Job No.:	E32507BR2
Project:	Proposed Hospital Redevelopment	Well No.:	MW109
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	12.54 m

WELL FINISH DETAILS

	Gatic Cover ☑	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump	SWL – Before (m):	7.27
Date:	5/10/21	Time – Before:	10:00 am.
Undertaken By:	MME	SWL – After (m):	Dry
Total Vol. Removed:	~~3.0~~ 4.0	Time – After:	10:07 am.
PID Reading (ppm):	12.3		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.5	20.4	5.5	242.1	5.92	79.4
1.0	19.8	4.9	262.2	5.80	78.0
1.5	19.9	4.9	261.5	5.68	75.2
2.0	19.9	5.0	250.7	5.56	72.8
2.5	19.9	5.4	246.8	5.33	71.9
3.0	20.0	5.2	245.4	5.10	71.7
3.5	20.0	3.1	243.0	4.85	73.1
4.0	20.3	2.6	244.8	4.73	73.5

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)) Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

YSI Used: 4

Tested By:	MME
Date Tested:	5/10/21.
Checked By:	CR
Date:	18/10/2021

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	TSA	Job No.:	E32507BR2
Project:	Proposed Hospital Redevelopment	Well No.:	MW119.
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	5.75m

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Pump.	SWL – Before (m):	Dry. at 2.57
Date:	5/10/21.	Time – Before:	—
Undertaken By:	MME	SWL – After (m):	—
Total Vol. Removed:	—	Time – After:	—
PID Reading (ppm):	1.0		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
Dry					

Comments: Odours (YES / ~~NO~~), ~~NAPL/PSH (YES / NO)~~, Sheen (YES / ~~NO~~), ~~Steady State Achieved (YES / NO)~~

YSI Used:

Tested By:	MME
Date Tested:	5/10/21.
Checked By:	CR
Date:	18/10/2021

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

Groundwater Sampling Field Records

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW101
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	7.5

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow.	**SWL – Before:**	3.58 m.
Date:	14/10/21	**Time – Before:**	10:18
Undertaken By:	MME	**Total Vol Removed:**	0.9 L.
Pump Program No:	–	**PID (ppm):**	29.7

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
10:23.	3.65	0.4		20.0	3.2	301.2	5.75	-8.6
10:28	3.69	0.5		21.0	1.6	308.1	5.78	-36.7
10:33	3.70	0.6		21.3	1.6	317.2	5.80	-38.3
10:38	3.72	0.7		21.0	1.7	317.0	5.80	-36.8
10:43.	3.74	0.8.		20.9	1.4	316.2	5.79	-37.0
10:48	3.75	0.9		20.9	1.4	316.1	5.79	-37.1
			start sampling					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)) Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

Sampling Containers Used: 2 x glass amber, 3 x BTEX vials, 1 x HNO3 plastic, ~~x H2SO4 plastic~~, 2 x unpreserved plastic

YSI used: 5

Tested By: ~~Craig Ridley~~ MME.	**Remarks:**
Date Tested: 14/10/21.	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 15/10/21	

JKEnvironments

Client:	TSA	Job No.:	E32507BR
Project:	Proposed Hospital Redevelopment	Well No.:	MW102
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	6.1

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow.	SWL – Before:	3.67 m.
Date:	14/10/21.	Time – Before:	11:21 am
Undertaken By:	MME	Total Vol Removed:	1.0 L
Pump Program No:	—	PID (ppm):	40.3

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
11:23.	3.77	0.3		20.5	5.4	45.6	6.57	-40.2
11:25	3.81	0.4		20.5	4.7	44.8	6.51	-50.4
11:29	3.88	0.5		20.4	3.8	73.5	6.41	-51.5
11:36.	3.94	0.6		20.8	3.8	71.3	6.32	-46.8
11:43	3.97	0.7		21.4	3.9	71.2	6.34	-45.2
11:49	4.02	0.8		22.0	3.7	71.6	6.46	-46.5
11:55	4.04	0.9		22.0	3.5	71.7	6.46	-43.6
12:01	4.07	1.0		22.0	3.6	71.7	6.46	-44.0
			start Sampling					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

Sampling Containers Used: 2x glass amber, 3x BTEX vials, 1 x HNO3 plastic, ~~x H2SO4 plastic~~, 1 x unpreserved plastic

YSI used: 5

Tested By: ~~Craig Ridley~~ MME	**Remarks:**
Date Tested: 14/10/21.	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 15/10/21	

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW104.
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	6.0

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow sampling.	**SWL – Before:**	Dry.
Date:	13/10/21.	**Time – Before:**	2:24pm.
Undertaken By:	MME	**Total Vol Removed:**	-
Pump Program No:	-	**PID (ppm):**	15.2

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: x glass amber, x BTEX vials, x HNO3 plastic, x H2SO4 plastic, x unpreserved plastic

YSI used:

Tested By: ~~Craig Ridley~~ MME.	**Remarks:**
Date Tested: 13/10/21	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 15/10/21	

JKEnvironments

Client:	TSA	Job No.:	E32507BR
Project:	Proposed Hospital Redevelopment	Well No.:	MW105
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	7.85

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow	SWL – Before:	6.03
Date:	14/10/21	Time – Before:	12:37 pm
Undertaken By:	MME	Total Vol Removed:	0.8 L
Pump Program No:	—	PID (ppm):	2.8

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
12:41	6.17	0.3		23.8	7.7	3.1	5.53	10.2
12:45	6.20	0.4		24.2	3.2	333.4	5.05	-38.1
12:52	6.23	0.5		24.6	3.9	653	5.07	-34.7
1:01	6.25	0.6		24.7	3.7	658	5.06	-33.7
1:10	6.26	0.7		24.8	3.6	659	5.06	-33.3
1:21	6.27	0.8		24.9	3.5	660	5.06	-34.5
			start sampling					

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: 2 x glass amber, 3 x BTEX vials, 1 x HNO3 plastic, ~~x H2SO4 plastic~~, 1 x unpreserved plastic

YSI used: 5 PFAS Dup 1 taken here.

Tested By: ~~Craig Ridley~~ MME	**Remarks:**
Date Tested: 14/10/21	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 15/10/21	

JKEnvironments

Client:	TSA	Job No.:	E32507BR
Project:	Proposed Hospital Redevelopment	Well No.:	MW106
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	12.52

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow	SWL – Before:	~~9.28 m~~ 9.17m
Date:	14/10/21	Time – Before:	~~12:28 pm~~ 2:30pm
Undertaken By:	MME.	Total Vol Removed:	1.1
Pump Program No:	–	PID (ppm):	~~19.6~~ 11.2

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
2:33	9.24	0.2		22.3	7.9	13.9	4.82	158.9
2:36	9.27	0.3		22.8	7.0	197.8	4.20	-8.9
2:39	9.27	0.4		22.9	6.4	377.4	4.06	-43.9
2:42	9.28	0.5		23.1	6.8	377.1	4.01	-50.8
2:47	9.28	0.6		23.3	6.5	378.1	4.01	-52.3
2:52	9.29	0.7		23.4	6.7	378.8	4.03	-52.9
2:58	9.30	0.8		23.4	6.5	378.8	4.05	-52.6
3:06	9.30	0.9		23.4	6.5	378.9	4.06	-52.4
3:12	9.30	1.0		23.4	6.7	378.5	4.06	-52.6
3:19	9.30	1.1		23.4	6.5	378.5	4.07	-51.6
			Start Sampling					

Comments: Odours (YES / (NO)) NAPL/PSH (YES (NO)), Sheen (YES (NO)), Steady State Achieved ((YES) / NO)

Sampling Containers Used: 2 x glass amber, 3 x BTEX vials, | x HNO3 plastic, ~~x H2SO4 plastic~~, | x unpreserved plastic

YSI used: 5 WDup2 taken here.

Tested By: ~~Craig Ridley~~ MME.	Remarks:
Date Tested: 14/10/21	- Steady state conditions - difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Checked By: CR	
Date: 15/10/21	

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW107
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	14.93

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow	**SWL – Before:**	9.90
Date:	13/10/21	**Time – Before:**	9:05 am
Undertaken By:	MMF	**Total Vol Removed:**	0.8L
Pump Program No:	—	**PID (ppm):**	2.4

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
9:07	9.96	0.2		16.4	8.9	10.2	6.7	46.4
9:12	9.97	0.4		16.3	3.0	131.5	4.24	-2.0
9:22	9.98	0.5		16.3	3.2	236.9	4.29	-3.7
9:32	10.01	0.6		16.2	3.0	233.0	4.32	-14.0
9:42	10.02	0.7		16.1	3.2	232.5	4.32	-16.0
9:52	10.02	0.8		16.1	3.1	231.2	4.32	-16.2
10:02	10.02	0.9		16.0	3.1	230.6	4.32	-16.2
			START SAMPLING					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved ((YES) / NO)

Sampling Containers Used: 2x glass amber, 3x BTEX vials, | x HNO3 plastic, x ~~H2SO4 plastic~~, | x unpreserved plastic

YSI used: 5 WDup1 taken here.

Tested By: ~~Craig Ridley~~ MMF	**Remarks:**
Date Tested: 13/10/21	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 15/10/21	

JKEnvironments

Client:	TSA	Job No.:	E32507BR
Project:	Proposed Hospital Redevelopment	Well No.:	MW109
Location:	97-115 River Road, GREENWICH, NSW	Depth (m):	12.54

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow	SWL – Before:	7.07
Date:	14/10/21.	Time – Before:	~~8:20~~ am 8:41
Undertaken By:	MME.	Total Vol Removed:	1.2L
Pump Program No:	–	PID (ppm):	27.2

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
8:43.	7.14	0.2		18.8	3.1	15.1	4.58	-55.4
8:46.	7.19	0.4		18.8	1.9	53.3	4.61	-57.3
8:53	7.30	0.6		19.0	1.4	10.0	4.75	-109.4
8:58	7.33	0.7		19.0	2.0	242.8	4.81	-57.9
9:03.	7.37	0.8		19.0	1.2	243.6	4.83	-69.3
9:08	7.38	0.9		19.0	1.1	243.5	4.83	-57.9
9:13.	7.39	1.0		19.1	1.1	244.1	4.84	-56.5
9:18	7.41	1.1		19.0	1.0	244.6	4.86	-54.0
9:23.	7.42	1.2.		19.2	1.1	245.6	4.86	-53.2
			start sampling					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

Sampling Containers Used: 2x glass amber, 3 x BTEX vials, 1 x HNO3 plastic, ~~x H2SO4 plastic~~, 1 x unpreserved plastic

YSI used: 5.

Tested By: ~~Craig Ridley~~ MME.	**Remarks:**
Date Tested: 14/10/21.	- Steady state conditions - difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Checked By: CR	
Date: 15/10/21	

JKEnvironments

Client:	TSA	**Job No.:**	E32507BR
Project:	Proposed Hospital Redevelopment	**Well No.:**	MW119
Location:	97-115 River Road, GREENWICH, NSW	**Depth (m):**	2.75.

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Low flow sampling.	**SWL – Before:**	Dry.
Date:	13/10/21.	**Time – Before:**	2:45 pm
Undertaken By:	MME.	**Total Vol Removed:**	–
Pump Program No:	–	**PID (ppm):**	1.3

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: x glass amber, x BTEX vials, x HNO3 plastic, x H2SO4 plastic, x unpreserved plastic

YSI used:

Tested By: ~~Craig Ridley~~ MME.	**Remarks:**
Date Tested: 13/10/21.	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown
Date: 13/10/21	

HGG Screening Field Records

JKEnvironments

10.7-10.8 7.72 1.0-1.3 107

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA				Weather Conditions: Sunny		
Project:	Proposed Hospital Redevelopment						
Location:	97-115 River Road, GREENWICH, NSW						
Job Number:	E32507BR						
Borehole Number, Start and Finish Time	**Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)**	**Drilling Depth (m Below Ground Level)**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**H_2S (ppm)**	**CO (ppm)**
BH108 7:55am	1011	0.3	0	0	20.4	0	0
		0.5	0	0	20.6	0	0
BH108 8:30am	1009	1.5	0	0.1	20.3	0	14

Notes:

Recorded by:	SR HW
Date:	30/9/21
Checked by:	CA
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

3473

Client:	TSA	Weather Conditions:	
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH112, 8:00am	1018	0.22	0	0.1	20.5	0	0
BH112, 8:45am	1017	0.8	0	0	20.5	0	0
BH115, 9:00am	1017	0.1	0	0	20.6	0	0
BH115, 9:30am		0.95	0	2.6	16.5	0	10
BH116, 9:45am	1014	0.6	0	0.3	20.6	0	11
BH117, 10:30am	1012	0.5	0	3.3	17.6	0	19
BH113, 10:50am	1014	0.1	0	0.1	20.8	0	10
BH113, 11:30am	1014	0.65	0	0	20.8	0	0
BH118, 12:40pm	1013	0.1	0	0.1	20.7	0	0
		0.5	0	0.1	20.0	0	0
~~BH117, 1:00pm~~	1011	2.55	0	5.8	16.1	0	0
BH117 1:00pm	1012	0.1	0	0.4	20.4	0	0
BH117 1:50pm	1012	1.3	0	2.5	18.5	0	0
						/	

Notes:

Recorded by:	CR HW
Date:	29/9/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA	Weather Conditions:	Sunny
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH 101, 8:40am 8:10am	look 1012	~~0.5~~ 0.2	0	0	20.9	0	1
8:45am	~~1022~~ 1011	0.5 ~~0.5~~ ~~0.5~~	~~0~~ 0	~~0~~ 0	~~20.7~~ 20.7	~~0~~ 0	~~3~~ 3
8:55am	1009	1.0	0	0	21.0	0	1
9:00am	1008	1.5	0	0	21.2	0	1

Notes:	Recorded by:	CR AD
	Date:	21/10/21
	Checked by:	CR
	Date:	24/10/21.

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA	Weather Conditions:	
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH102, 12:37pm	1005, 1005	0.2	0	0	21.5	0	6
	1004, 1005	0.5	0	0	21.2	0	6
	1005, 1005	1.0	0	0	21.4	0	6
BH102,	1005, 1005	1.5	0	0	21.2	0	6
BH103,	1005, 1005	0.5	0	0	21.2	0	1
	1006, 1006	1.0	0	0	21.2	0	1
	1006				21.4		

Notes:		
	Recorded by:	~~ER~~ HW.
	Date:	6/10/21
	Checked by:	CR
	Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA	Weather Conditions:	Overcast
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH119 8:20am	1007	0.3	0	0	20.4	0	0
BH119 9:30am	1006	Start coring	—	—	—	—	—
BH104 11:10am	1005	0.3	0	0.4	20.4	0	0
		0.5	0	0.9	19.9	0	0
		1.0	0	1.0	19.8	0	33
		1.5	0	1.4	19.5	0	39
		2.0	0	2.3	18.4	0	25
		3.0	0	1.1	19.4	0	14
BH104 2:00pm	1004	4.0	0	2.3	18.6	0	22
—							

Notes:

Recorded by:	CR HW
Date:	1/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA				Weather Conditions: Sunny, recently sunny			
Project:	Proposed Hospital Redevelopment							
Location:	97-115 River Road, GREENWICH, NSW							
Job Number:	E32507BR							
Borehole Number, Start and Finish Time	**Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)**	**Drilling Depth (m Below Ground Level)**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**H_2S (ppm)**	**CO (ppm)**	
BH117	1002 at 4:32pm	0.1	0.0	0.0	21.4	0	4	
Notes:						Recorded by:	GR MME	
						Date:	6/10/21	
						Checked by:	CR	
						Date:	24/10/21	

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA	Weather Conditions:	Sunny
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH109 at 12:50pm	1014	0.5	0	0	21.0	0	0
BH109 at 1:25pm	1016	1.0	0	0.4	20.8	0	0

Notes:

Recorded by:	CR HNJ
Date:	28/9/21
Checked by:	CR
Date:	24/10/21

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HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA	Weather Conditions:	Sunny
Project:	Proposed Hospital Redevelopment		
Location:	97-115 River Road, GREENWICH, NSW		
Job Number:	E32507BR		

Borehole Number, Start and Finish Time	Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)	Drilling Depth (m Below Ground Level)	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)
BH106 7:40am	1020	0.5	0	0	20.2	0	0
BH106 8:10am	1021	1.0	0	0	20.2	0	0

Notes:

Recorded by:	~~CR~~ HW
Date:	28/9/21
Checked by:	CR
Date:	29/10/21

JKEnvironments

HAZARDOUS GROUND GAS DRILLING FIELD SHEET

Client:	TSA				Weather Conditions:		
Project:	Proposed Hospital Redevelopment						
Location:	97-115 River Road, GREENWICH, NSW						
Job Number:	E32507BR						
Borehole Number, Start and Finish Time	**Start Atmospheric Pressure and Completion Atmospheric Pressure (mb)**	**Drilling Depth (m Below Ground Level)**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**H_2S (ppm)**	**CO (ppm)**
BH107, 8:40am	1027	0.1	0	0	20.1	0	0
		0.5	0	0	20.2	0	0
		1.0	0	0	20.2	0	0
BH107, 9:00am	1028	1.5	0	0	20.5	0	0
BH105, 2:37pm	1015	0.5	0	0.2	20.7	0	0
		1.0	0	0.1	20.8	0	0
BH105, 3:10pm	1014	1.5	0	0.7	20.3	0	10

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HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW101
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	2.29 m.
Job Number:	E32507BR2	PID (ppm):	2.7 ppm.
		Start Time and Atmospheric Pressure (mbar):	1004 at 1:35pm
		Completion Time and Atmopsheric Pressure (mbar):	1005 at 1:47 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.0
1	0	0.0
1.5	0	0.0
2	0	0.0
2.5	0	0.0
3	0	0.0
3.5	0	0.0
4	0	0.0
4.5	0	0.0
5	0	0.0
Initial	0	0.0
Peak	0	0.0

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.0	21.1	0.0	0	6	—	—
1	0.0	0.0	21.1	0.0	0	6	—	—
1.5	0.0	0.0	21.1	0.0	0	4	—	—
2	0.0	0.0	21.1	0.0	0	4	—	—
2.5	0.0	0.0	21.1	0.0	0	3	—	—
3	0.0	0.0	21.1	0.0	0	4	—	—
3.5	0.0	0.0	21.1	0.0	0	4	—	—
4	0.0	0.0	21.1	0.0	0	4	—	—
4.5	0.0	0.0	21.1	0.0	0	6	—	—
5	0.0	0.0	21.1	0.0	0	4	—	—
Initial	0.0	0.0	21.1	0.0	0	6	—	—
Peak	0.0	0.0	21.1	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~HW~~ MNE.
Date:	8/10/21.
Checked by:	CR
Date:	8/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW102
Project:	Proposed Hospital Redevelopment	Weather Conditions:	overcast, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	3.70
Job Number:	E32507BR2	PID (ppm):	29.8
		Start Time and Atmospheric Pressure (mbar):	1003 at 8.54am
		Completion Time and Atmopsheric Pressure (mbar):	1003 at 9.07am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.3
1	0	0.1
1.5	0	0.2
2	0	0.2
2.5	0	0.3
3	0	0.2
3.5	0	0.2
4	0	0.1
4.5	0	0.1
5	0	0.1
Initial	0	0.3
Peak	0	0.3

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.0	20.3	0.0	0	6	—	—
1	0.0	0.0	20.3	0.0	0	6	—	—
1.5	0.0	0.0	20.3	0.0	0	4	—	—
2	0.0	0.0	20.3	0.0	0	6	—	—
2.5	0.0	0.0	20.3	0.0	0	6	—	—
3	0.0	0.0	20.3	0.0	0	3	—	—
3.5	0.0	0.0	20.3	0.0	0	4	—	—
4	0.0	0.0	20.3	0.0	0	6	—	—
4.5	0.0	0.0	20.3	0.0	0	4	—	—
5	0.0	0.0	20.3	0.0	0	4	—	—
Initial	0.0	0.0	20.3	0.0	0	6	—	—
Peak	0.0	0.0	20.3	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~HW~~ MME
Date:	7/10/21
Checked by:	CR
Date:	9/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW104
Project:	Proposed Hospital Redevelopment	Weather Conditions:	sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	
Job Number:	E32507BR2	PID (ppm):	74 ppm.
		Start Time and Atmospheric Pressure (mbar):	998 at 12:11 pm
		Completion Time and Atmopsheric Pressure (mbar):	999 at 12:21 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.0	0.5	0.0	0.8	20.2	0.0	0	4	—	—
1	0	0.0	1	0.0	0.8	20.1	0.0	0	6	—	—
1.5	0	0.2	1.5	0.0	0.9	19.9	0.0	0	4	—	—
2	0	0.2	2	0.0	0.8	20.2	0.0	0	6	—	—
2.5	0	0.2	2.5	0.0	0.8	20.2	0.0	0	6	—	—
3	0	0.2	3	0.0	0.8	20.3	0.0	0	6	—	—
3.5	0	0.1	3.5	0.0	0.9	20.1	0.0	0	6	—	—
4	— 0	0.1	4	0.0	1.3	19.4	0.0	0	8	—	—
4.5	0	0.2	4.5	0.0	2.1	18.2	0.0	0	6	—	—
5	0	0.1	5	0.0	0.9	19.9	0.0	0	6	—	—
Initial	0	0.0	Initial	0.0	0.8	20.2	0.0	0	4	—	—
Peak	0	0.2	Peak	0.0	2.1	20.3	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~HW~~ MME
Date:	5/10/21
Checked by:	CR
Date:	9/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW105
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently Sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	5.80
Job Number:	E32507BR2	PID (ppm):	1.0
		Start Time and Atmospheric Pressure (mbar):	1001 at 11:34 am.
		Completion Time and Atmopsheric Pressure (mbar):	998 at 11:49 am.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.0
1	0	0.0
1.5	0	0.2
2	0	0.2
2.5	0	0.1
3	0	0.2
3.5	0	0.2
4	0	0.2
4.5	0	0.1
5	0	0.1
Initial	0	0.0
Peak	0	0.2

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	5.1	13.4	0.0	0	29	—	—
1	0.0	5.1	13.3	0.0	0	31	—	—
1.5	0.0	5.1	13.3	0.0	0	31	—	—
2	0.0	4.6	12.7	0.0	0	28	—	—
2.5	0.0	4.3	12.6	0.0	0	26	—	—
3	0.0	4.0	12.3	0.0	0	24	—	—
3.5	0.0	3.5	12.3	0.0	0	21	—	—
4	0.0	3.2	12.4	0.0	0	19	—	—
4.5	0.0	3.0	12.5	0.0	0	19	—	—
5	0.0	2.7	12.7	0.0	0	18	—	—
5.5	0.0	2.6	12.9	0.0	0	18	—	—
6	0.0	2.4	13.2	0.0	0	14	—	—
6.5	0.0	2.3	13.4	0.0	0	14	—	—
7	0.0	2.1	13.7	0.0	0	11	—	—
7.5	0.0	1.9	14.3	0.0	0	11	—	—
8	0.0	1.9	14.5	0.0	0	9	—	—
8.5	0.0	1.7	14.9	0.0	0	8	—	—
9	0.0	1.6	15.1	0.0	0	6	—	—
9.5	0.0	1.6	15.3	0.0	0	6	—	—
10.	0.0	1.6	15.5	0.0	0	6		
Initial	0.0	5.1	13.4	0.0	0	29	—	—
Peak	0.0	5.1	15.5	0.0	0	31	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~HW~~ MME
Date:	5/10/21
Checked by:	CR
Date:	5/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW106
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	8.26
Job Number:	E32507BR2	PID (ppm):	0
		Start Time and Atmospheric Pressure (mbar):	10:18am at 1001
		Completion Time and Atmopsheric Pressure (mbar):	10:31am at 1000

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	1	0.6
1	1	0.6
1.5	1	0.6
2	1	0.5
2.5	1	0.6
3	1	0.6
3.5	2	0.7
4	1	0.6
4.5	1	0.5
5	1	0.6
Initial	1	0.6
Peak	2	0.7

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	3.0	18.3	0.0	0	0	–	–
1	0.0	3.0	18.3	0.0	0	8	–	–
1.5	0.0	3.1	18.2	0.0	0	9	–	–
2	0.0	3.2	18.1	0.0	0	8	–	–
2.5	0.0	3.3	18.0	0.0	0	11	–	–
3	0.0	3.5	17.9	0.0	0	11	–	–
3.5	0.0	3.6	17.8	0.0	0	9	–	–
4	0.0	3.8	17.7	0.0	0	9	–	–
4.5	0.0	3.9	17.5	0.0	0	11	–	–
5	0.0	4.0	17.5	0.0	0	9	–	–
Initial	0.0	3.0	18.3	0.0	0	0	–	–
Peak	0.0	4.0	18.3	0.0	0	11	–	–

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	HW
Date:	5/10/21
Checked by:	CL
Date:	8/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW 107.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	8.75 m.
Job Number:	E32507BR2	PID (ppm):	1.7 ppm.
		Start Time and Atmospheric Pressure (mbar):	999 at 8:28am
		Completion Time and Atmopsheric Pressure (mbar):	999 at 8:45 am.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.3	0.5	0.0	0.0	20.6	0.0	0	1	—	—
1	0	0.3	1	0.0	0.0	20.6	0.0	0	3	—	—
1.5	1	0.3	1.5	0.0	0.0	20.6	0.0	0	1	—	—
2	1	0.4	2	0.0	0.0	20.6	0.0	0	3	—	—
2.5	0	0.4	2.5	0.0	0.0	20.6	0.0	0	4	—	—
3	0	0.4	3	0.0	0.0	20.6	0.0	0	4	—	—
3.5	0	0.2	3.5	0.0	0.0	20.6	0.0	0	3	—	—
4	0	0.4	4	0.0	0.0	20.6	0.0	0	4	—	—
4.5	0	0.4	4.5	0.0	0.0	20.6	0.0	0	3	—	—
5	0	0.2	5	0.0	0.0	20.6	0.0	0	3	—	—
Initial	0	0.3	Initial	0.0	0.0	20.6	0.0	0	1	—	—
Peak	1	0.4	Peak	0.0	0.0	20.6	0.0	0	4	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	HW
Date:	5/10/21
Checked by:	CR
Date:	9/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW109
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	7.27
Job Number:	E32507BR2	PID (ppm):	12.3
		Start Time and Atmospheric Pressure (mbar):	9:33am at 1000
		Completion Time and Atmopsheric Pressure (mbar):	9:51am at 1000

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.2
1	0	0.2
1.5	0	0.3
2	0	0.2
2.5	0	0.3
3	1	0.4
3.5	0	0.2
4	0	0.2
4.5	0	0.4
5	0	0.3
	—	
Initial	0	0.2
Peak	1	0.4

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	10.3	6.4	0.0	0	46	—	—
1	0.0	10.4	6.3	0.0	0	51	—	—
1.5	0.0	10.4	6.2	0.0	0	58	—	—
2	0.0	10.5	6.1	0.0	0	58	—	—
2.5	0.0	10.5	6.0	0.0	0	58	—	—
3	0.0	10.5	6.0	0.0	0	59	—	—
3.5	0.0	10.6	5.9	0.0	0	59	—	—
4	0.0	10.6	5.9	0.0	0	58	—	—
4.5	0.0	10.6	5.8	0.0	0	61	—	—
5	0.0	10.6	5.8	0.0	0	61	—	—
5.5	0.0	10.5	5.7	0.0	0	59	—	—
6	0.0	10.4	5.6	0.0	0	59	—	—
6.5	0.0	10.3	5.5	0.0	0	61	—	—
7	0.0	10.2	5.5	0.0	0	58	—	—
7.5	0.0	10.0	5.4	0.0	0	56	—	—
8	0.0	9.9	5.3	0.0	0	54	—	—
8.5	0.0	9.7	5.2	0.0	0	53	—	—
9	0.0	9.7	5.2	0.0	0	53	—	—
9.5	0.0	9.6	5.2	0.0	0	51	—	—
10	0.0	9.5	5.1	0.0	0	51	—	—
Initial	0.0	10.3	6.4	0.0	0	46	—	—
Peak	0.0	10.6	6.4	0.0	0	61	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	HW
Date:	5/10/21
Checked by:	CR
Date:	9/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW114.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	DRY
Job Number:	E32507BR2	PID (ppm):	N.R.
		Start Time and Atmospheric Pressure (mbar):	998 at 11:57am.
		Completion Time and Atmopsheric Pressure (mbar):	998 at 12:09 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.3	0.5	0.0	0.9	20.8	0.0	0	6	—	—
1	0	0.3	1	0.0	0.9	20.8	0.0	0	6	—	—
1.5	0	0.4	1.5	0.0	0.9	20.8	0.0	0	4	—	—
2	0	0.3	2	0.0	0.9	20.8	0.0	0	4	—	—
2.5	0	0.2	2.5	0.0	0.9	20.7	0.0	0	6	—	—
3	0	0.3	3	0.0	0.9	20.7	0.0	0	6	—	—
3.5	0	0.4	3.5	0.0	0.9	20.5	0.0	0	6	—	—
4	0	0.4	4	0.0	0.9	20.5	0.0	0	6	—	—
4.5	0	0.4	4.5	0.0	1.0	20.4	0.0	0	6	—	—
5	0	0.3	5	0.0	1.0	20.4	0.0	0	6	—	—
	—										
Initial	0	0.3	Initial	0.0	0.9	20.8	0.0	0	6	—	—
Peak	0	0.4	Peak	0.0	1.0	20.8	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~MW~~ MMF
Date:	5/10/21.
Checked by:	CR
Date:	8/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA
Project:	Proposed Hospital Redevelopment
Location:	97-115 River Road, GREENWICH, NSW
Job Number:	E32507BR

Monitoring Well No:	MW101
Weather Conditions:	rainy, recently rainy.
SWL (m)^:	3.68 m.
PID (ppm):	38.0
Start Time and Atmospheric Pressure (mbar):	1006 at 1:25.
Completion Time and Atmopsheric Pressure (mbar):	1007 at 1:38.

Time (min)*	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.2
1	0	0.4
1.5	0	0.2
2	0	0.3
2.5	1	0.5
3	0	0.3
3.5	0	0.2
4	0	0.4
4.5	0	0.2
5	0	0.2
Initial	0	0.2
Peak	01	0.5

Time (min)*	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	3.5	15.5	0.0	0	6	—	—
1	0.0	3.6	15.4	0.0	0	6	—	—
1.5	0.0	3.6	15.3	0.0	0	3	—	—
2	0.0	3.7	15.3	0.0	0	6	—	—
2.5	0.0	3.8	15.3	0.0	0	4	—	—
3	0.0	3.9	15.3	0.0	0	4	—	—
3.5	0.0	3.9	15.3	0.0	0	6	—	—
4	0.0	4.0	15.2	0.0	0	3	—	—
4.5	0.0	4.1	15.2	0.0	0	4	—	—
5	0.0	4.2	15.2	0.0	0	4	—	—
Initial	0.0	3.5	15.5	0.0	0	6	—	—
Peak	0.0	4.2	15.5	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

* HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME
Date:	13/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW102
Project:	Proposed Hospital Redevelopment	Weather Conditions:	rainy, recently rainy.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	1.35 m
Job Number:	E32507BR	PID (ppm):	12.2
		Start Time and Atmospheric Pressure (mbar):	1007 at 1:50.
		Completion Time and Atmopsheric Pressure (mbar):	1007 at ~~1:57~~ 2:01

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	1	0.4
1	0	0.1
1.5	0	0.4
2	0	0.3
2.5	1	0.6
3	1	0.4
3.5	0	0.4
4	0	0.3
4.5	1	0.4
5	1	0.5
Initial	1	0.4
Peak	1	0.6

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.1	20.6	0.0	0	1	–	–
1	0.0	0.1	20.6	0.0	0	1	–	–
1.5	0.0	0.1	20.6	0.0	0	0	–	–
2	0.0	0.1	20.6	0.0	0	1	–	–
2.5	0.0	0.1	20.6	0.0	0	3	–	–
3	0.0	0.1	20.6	0.0	0	1	–	–
3.5	0.0	0.1	20.6	0.0	0	3	–	–
4	0.0	0.0	20.6	0.0	0	3	–	–
4.5	0.0	0.0	20.6	0.0	0	1	–	–
5	0.0	0.0	20.6	0.0	0	3	–	–
Initial	0.0	0.1	20.6	0.0	0	1	–	–
Peak	0.0	0.1	20.6	0.0	0	3	–	–

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME
Date:	13/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA
Project:	Proposed Hospital Redevelopment
Location:	97-115 River Road, GREENWICH, NSW
Job Number:	E32507BR

Monitoring Well No:	MW104.
Weather Conditions:	rainy, recently rainy.
SWL (m)^:	Dry.
PID (ppm):	15.2
Start Time and Atmospheric Pressure (mbar):	1007 at 2:09 pm.
Completion Time and Atmopsheric Pressure (mbar):	1007 at 2:21 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.4
1	0	0.4
1.5	1	0.5
2	0	0.4
2.5	0	0.3
3	0	0.3
3.5	0	0.3
4	0	0.4
4.5	0	0.4
5	1	0.5
Initial	0	0.4
Peak	1	0.5

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.5	20.2	0.0	0	4	—	—
1	0.0	0.5	20.3	0.0	0	6	—	—
1.5	0.0	0.4	20.4	0.0	0	3	—	—
2	0.0	0.4	20.4	0.0	0	3	—	—
2.5	0.0	0.3	20.5	0.0	0	4	—	—
3	0.0	0.3	20.5	0.0	0	6	—	—
3.5	0.0	0.3	20.5	0.0	0	3	—	—
4	0.0	0.3	20.4	0.0	0	6	—	—
4.5	0.0	0.3	20.5	0.0	0	4	—	—
5	0.0	0.3	20.5	0.0	0	4	—	—
Initial	0.0	0.5	20.2	0.0	0	4	—	—
Peak	0.0	0.5	20.5	0.0	0	6	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME.
Date:	13/10/21.
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW105.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	rainy, recently rainy.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	6.24
Job Number:	E32507BR	PID (ppm):	0.1
		Start Time and Atmospheric Pressure (mbar):	1007 at 1:04.
		Completion Time and Atmopsheric Pressure (mbar):	1007 at 1:15.

Time (~~min~~)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.3
1	0	0.2
1.5	0	0.3
2	0	0.3
2.5	0	0.3
3	0	0.3
3.5	0	0.3
4	0	0.2
4.5	0	0.2
5	0	0.3
Initial	0	0.3
Peak	0	0.3

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	5.5	16.0	0.0	0	4	–	–
1	0.0	5.1	15.9	0.0	0	4	–	–
1.5	0.0	3.1	17.9	0.0	0	6	–	–
2	0.0	2.5	18.3	0.0	0	4	–	–
2.5	0.0	2.1	18.7	0.0	0	6	–	–
3	0.0	1.7	19.8	0.0	0	6	–	–
3.5	0.0	1.4	19.3	0.0	0	4	–	–
4	0.0	1.3	19.4	0.0	0	4	–	–
4.5	0.0	1.2	19.4	0.0	0	4	–	–
5	0.0	1.1	19.5	0.0	0	4	–	–
Initial	0.0	5.5	16.0	0.0	0	4	–	–
Peak	0.0	5.5	19.8	0.0	0	6	–	–

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	MME
Date:	13/10/21.
Checked by:	CL
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA
Project:	Proposed Hospital Redevelopment
Location:	97-115 River Road, GREENWICH, NSW
Job Number:	E32507BR

Monitoring Well No:	MW106.
Weather Conditions:	rainy, recently rainy.
SWL (m)^:	
PID (ppm):	19.6
Start Time and Atmospheric Pressure (mbar):	1007 at 12:13.
Completion Time and Atmopsheric Pressure (mbar):	1006 at 12:15

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.2
1	0	0.1
1.5	0	0.2
2	0	0.2
2.5	0	0.3
3	0	0.3
3.5	0	0.3
4	0	0.2
4.5	0	0.2
5	0	0.3
—		
Initial	0	0.2
Peak	0	0.3

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.0	20.3	0.0	0	4.0	—	—
1	0.0	5.2	16.6	0.0	0	2.6	—	—
1.5	0.0	5.1	16.7	0.0	0	2.9	—	—
2	0.0	4.9	16.7	0.0	0	3.1	—	—
2.5	0.0	4.9	16.7	0.0	0	2.9	—	—
3	0.0	4.9	16.7	0.0	0	3.1	—	—
3.5	0.0	4.9	16.7	0.0	0	3.1	—	—
4	0.0	4.9	16.7	0.0	0	3.1	—	—
4.5	0.0	4.9	16.7	0.0	0	3.1	—	—
5	0.0	4.9	16.7	0.0	0	3.1	—	—
Initial	0.0	0.0	20.3	0.0	0	4.0	—	—
Peak	0.0	5.2	16.7	0.0	0	4.0	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	CR MMF
Date:	13/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW107
Project:	Proposed Hospital Redevelopment	Weather Conditions:	rain, recently rainy
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	9.90 m
Job Number:	E32507BR	PID (ppm):	2.24
		Start Time and Atmospheric Pressure (mbar):	1008 at 8:50
		Completion Time and Atmospheric Pressure (mbar):	1008 at 9:01

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.3	0.5	0.0	5.9	11.1	0.0	0	6	–	–
1	0	0.3	1	0.0	5.9	11.1	0.0	0	6	–	–
1.5	0	0.3	1.5	0.0	6.0	11.0	0.0	0	6	–	–
2	0	0.3	2	0.0	6.0	11.0	0.0	0	6	–	–
2.5	0	0.3	2.5	0.0	6.0	11.0	0.0	0	8	–	–
3	0	0.3	3	0.0	6.1	11.0	0.0	0	6	–	–
3.5	0	0.2	3.5	0.0	6.1	10.9	0.0	0	6	–	–
4	0	0.2	4	0.0	6.2	10.8	0.0	0	4	–	–
4.5	0	0.2	4.5	0.0	6.3	10.6	0.0	0	4	–	–
5	0	0.2	5	0.0	6.4	10.5	0.0	0	4		
–											
Initial	0	0.3	Initial	0.0	5.9	11.1	0.0	0	6	–	–
Peak	0	0.3	Peak	0.0	6.4	11.1	0.0	0	8	–	–

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MMI
Date:	13/10/21
Checked by:	CR
Date:	14/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW104.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	cloudy, recently rainy.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	7.07
Job Number:	E32507BR	PID (ppm):	27.2
		Start Time and Atmospheric Pressure (mbar):	1001 at 8:04 am.
		Completion Time and Atmopsheric Pressure (mbar):	1001 at 8:16 am.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.3	0.5	0.0	13.2	3.2	0.0	0	8	—	—
1	1	0.4	1	0.0	13.5	3.0	0.0	0	9	—	—
1.5	1	0.4	1.5	0.0	13.5	2.9	0.0	0	9	—	—
2	0	0.0	2	0.0	13.6	2.9	0.0	0	8	—	—
2.5	0	0.3	2.5	0.0	13.6	2.9	0.0	0	9	—	—
3	0	0.3	3	0.0	13.6	2.9	0.0	0	9	—	—
3.5	1	0.5	3.5	0.0	13.7	2.8	0.0	0	9	—	—
4	1	0.4	4	0.0	13.7	2.8	0.0	0	9	—	—
4.5	0	0.2	4.5	0.0	13.7	2.8	0.0	0	9	—	—
5	0	0.3	5	0.0	13.6	2.7	0.0	0	9	—	—
Initial	0	0.3	Initial	0.0	13.2	3.2	0.0	0	8	—	—
Peak	1	0.5	Peak	0.0	13.7	3.2	0.0	0	9	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME.
Date:	14/10/21.
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW119.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	rainy, recently rainy.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	Dry.
Job Number:	E32507BR	PID (ppm):	1.3
		Start Time and Atmospheric Pressure (mbar):	1006 at 2:29 pm
		Completion Time and Atmopsheric Pressure (mbar):	1006 at 2:39 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	0	0.2
1	0	0.3
1.5	0	0.4
2	0	0.4
2.5	0	0.4
3	1	0.5
3.5	0	0.3
4	0	0.2
4.5	0	0.3
5	0	0.2
Initial	0	0.2
Peak	1	0.5

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	3.3	17.0	0.0	0	3	—	—
1	0.0	3.4	16.9	0.0	0	3	—	—
1.5	0.0	3.6	16.7	0.0	0	6	—	—
2	0.0	3.7	16.7	0.0	0	3	—	—
2.5	0.0	3.8	16.6	0.0	0	3	—	—
3	0.0	3.8	16.7	0.0	0	3	—	—
3.5	0.0	3.8	16.7	0.0	0	3	—	—
4	0.0	3.7	16.7	0.0	0	3	—	—
4.5	0.0	3.8	16.6	0.0	0	6	—	—
5	0.0	3.8	16.7	0.0	0	4	—	—
Initial	0.0	3.3	17.0	0.0	0	3	—	—
Peak	0.0	3.8	17.0	0.0	0	6.	—	—

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME
Date:	13/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW101.
Project: ~~—~~	Proposed Hospital Redevelopment	Weather Conditions:	SUNNY, RECENTLY SUNNY.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	3.64
Job Number:	E32507BR	PID (ppm):	14.3
		Start Time and Atmospheric Pressure (mbar):	1018 at 10:39 am
		Completion Time and Atmopsheric Pressure (mbar):	1015 at 10:50. am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	-0.1	0.5	0.0	7.9	13.0	0.0	0	0	0.026	1.0
1	0	-0.1	1	0.0	7.9	12.9	0.0	0	0	0.026	1.0
1.5	0	0.0	1.5	0.0	7.9	12.9	0.0	0	0	0.026	1.0
2	0	0.0	2	0.0	7.9	12.9	0.0	0	0	0.026	1.0
2.5	0	0.0	2.5	0.0	8.0	12.9	0.0	0	0	0.027	1.0
3	0	0.0	3	0.0	8.0	12.9	0.0	0	0	0.027	1.0
3.5	0	0.0	3.5	0.0	8.0	12.8	0.0	0	0	0.026	1.0
4	0	0.0	4	0.0	8.0	12.8	0.0	0	0	0.026	1.0
4.5	0	0.0	4.5	0.0	8.1	12.8	0.0	0	0	0.026	1.0
5	0	0.0	5	0.0	8.0	12.8	0.0	0	0	0.026	1.0
Initial	0	-0.1	Initial	0.0	7.9	13.0	0.0	0	0	0.026	1.0
Peak	0	-0.1	Peak	0.0	8.1	13.0	0.0	0	0	0.027	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CE~~ MMF
Date:	20/10/21.
Checked by:	CL
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW102
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	4.37
Job Number:	E32507BR	PID (ppm):	45.5
		Start Time and Atmospheric Pressure (mbar):	1015 at 11:24 am
		Completion Time and Atmopsheric Pressure (mbar):	1014 at 11:36 am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.0	0.5	0.0	0.3	21.0	0.0	0	0	0.027	1.0
1	0	0.0	1	0.0	0.3	21.0	0.0	0	0	0.027	1.0
1.5	0	0.0	1.5	0.0	0.3	21.0	0.0	0	0	0.026	1.0
2	0	0.0	2	0.0	0.3	21.0	0.0	0	0	0.026	1.0
2.5	0	0.0	2.5	0.0	0.3	20.9	0.0	0	0	0.027	1.0
3	0	0.0	3	0.0	0.3	21.0	0.0	0	0	0.027	1.0
3.5	0	0.0	3.5	0.0	0.3	21.0	0.0	0	0	0.026	1.0
4	0	0.0	4	0.0	0.2	21.2	0.0	0	0	0.026	1.0
4.5	0	0.0	4.5	0.0	0.1	21.3	0.0	0	0	0.026	1.0
5	0	0.0	5	0.0	0.0	21.3	0.0	0	0	0.026	1.0
Initial	0	0.0	Initial	0.0	0.3	21.0	0.0	0	0	0.027	1.0
Peak	0	0.0	Peak	0.0	0.3	21.3	0.0	0	0	0.027	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MMF
Date:	20/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW104
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently Sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	Dry
Job Number:	E32507BR	PID (ppm):	16.3
		Start Time and Atmospheric Pressure (mbar):	1013 at 11:45 am
		Completion Time and Atmopsheric Pressure (mbar):	1016 at 12:56 pm.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0	0.0	0.5	0.0	0.0	21.4	0.0	0	0	0.024	1.0
1	0	0.1	1	0.0	0.0	21.4	0.0	0	0	0.024	1.0
1.5	0	0.0	1.5	0.0	0.0	21.4	0.0	0	0	0.024	1.0
2	0	0.0	2	0.0	0.0	21.4	0.0	0	0	0.024	1.0
2.5	0	0.0	2.5	0.0	0.0	21.4	0.0	0	0	0.023	1.0
3	0	0.0	3	0.0	0.0	21.4	0.0	0	0	0.023	1.0
3.5	0	0.0	3.5	0.0	0.0	21.4	0.0	0	0	0.023	1.0
4	0	0.0	4	0.0	0.0	21.4	0.0	0	0	0.023	1.0
4.5	0	0.0	4.5	0.0	0.0	21.4	0.0	0	0	0.024	1.0
5	0	0.0	5	0.0	0.0	21.5	0.0	0	0	0.024	1.0
Initial	0	0.0	Initial	0.0	0.0	21.4	0.0	0	0	0.024	1.0
Peak	0	0.1	Peak	0.0	0.0	21.5	0.0	0	0	0.024	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MMF
Date:	20/10/21
Checked by:	CA
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW105
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	5.95
Job Number:	E32507BR	PID (ppm):	1.5
		Start Time and Atmospheric Pressure (mbar):	1014 at 10:20 am
		Completion Time and Atmopsheric Pressure (mbar):	1017 at 10:32 am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)
0.5	-3	-0.6
1	-4	-0.7
1.5	-3	-0.5
2	-4	-0.6
2.5	-3	-0.6
3	-3	-0.5
3.5	-3	-0.5
4	-4	-0.6
4.5	-4	-0.7
5	-3	-0.6
Initial	-3	-0.6
Peak	-4	-0.7

Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	0.0	0.0	20.9	0.0	0	0	0.030	1.0
1	0.0	0.0	20.9	0.0	0	0	0.029	1.0
1.5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
2	0.0	0.0	20.9	0.0	0	0	0.029	1.0
2.5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
3	0.0	0.0	21.0	0.0	0	0	0.029	1.0
3.5	0.0	0.0	21.0	0.0	0	0	0.029	1.0
4	0.0	0.0	21.0	0.0	0	0	0.029	1.0
4.5	0.0	0.0	21.0	0.0	0	0	0.029	1.0
5	0.0	0.0	21.0	0.0	0	0	0.029	1.0
Initial	0.0	0.0	20.9	0.0	0	0	0.030	1.0
Peak	0.0	0.0	21.0	0.0	0	0	0.030	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~ER~~ MME
Date:	20/10/21
Checked by:	CM
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW106.
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	9.35.
Job Number:	E32507BR	PID (ppm):	24.4
		Start Time and Atmospheric Pressure (mbar):	1015 at 9:39 am
		Completion Time and Atmopsheric Pressure (mbar):	1015 at 9:52 am.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	-7	-1.2	0.5	0.0	5.8	16.5	0.0	0	10	0.031	1.0
1	-7	-1.2	1	0.0	5.8	16.5	0.0	0	10	0.030	1.0
1.5	-7	-1.2	1.5	0.0	5.9	16.5	0.0	0	10	0.031	1.0
2	-6	-1.1	2	0.0	5.9	16.5	0.0	0	10	0.030	1.0
2.5	-7	-1.2	2.5	0.0	5.9	16.5	0.0	0	10	0.030	1.0
3	-6	-1.1	3	0.0	5.9	16.4	0.0	0	10	0.030	1.0
3.5	-7	-1.2	3.5	0.0	5.9	16.4	0.0	0	10	0.030	1.0
4	-6	-1.1	4	0.0	5.9	16.5	0.0	0	10	0.030	1.0
4.5	-6	-1.0	4.5	0.0	5.9	16.4	0.0	0	10	0.029	1.0
5	-6	-1.0	5	0.0	5.9	16.4	0.0	0	10	0.029	1.0
Initial	-7	-1.2	Initial	0.0	5.8	16.5	0.0	0	10	0.031	1.0
Peak	-7	-1.2	Peak	0.0	5.9	16.5	0.0	0	10	0.031	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MME.
Date:	20/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW107
Project:	Proposed Hospital Redevelopment	Weather Conditions:	sunny, recently sunny
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	9.96
Job Number:	E32507BR	PID (ppm):	0.6
		Start Time and Atmospheric Pressure (mbar):	1015 at 9:15 am
		Completion Time and Atmopsheric Pressure (mbar):	1015 at 9:29 am.

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	-9	-1.5	0.5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
1	-9	-1.5	1	0.0	0.0	20.6	0.0	0	0	0.035	1.0
1.5	-9	-1.5	1.5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
2	-9	-1.6	2	0.0	0.0	20.6	0.0	0	0	0.035	1.0
2.5	-9	-1.5	2.5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
3	-9	-1.6	3	0.0	0.0	20.6	0.0	0	0	0.035	1.0
3.5	-9	-1.6	3.5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
4	-9	-1.6	4	0.0	0.0	20.6	0.0	0	0	0.035	1.0
4.5	-9	-1.3	4.5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
5	-9	-1.5	5	0.0	0.0	20.6	0.0	0	0	0.035	1.0
Initial	-9	-1.5	Initial	0.0	0.0	20.6	0.0	0	0	0.035	1.0
Peak	-9	-1.6	Peak	0.0	0.0	20.6	0.0	0	0	0.035	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	CR MME
Date:	20/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:	TSA	Monitoring Well No:	MW109
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	8.57m.
Job Number:	E32507BR	PID (ppm):	0.2
		Start Time and Atmospheric Pressure (mbar):	1015 at 11:02 am
		Completion Time and Atmopsheric Pressure (mbar):	1015 at 11:04am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	-1	-0.1	0.5	0.0	13.2	3.4	0.0	0	0	0.029	1.0
1	-1	-0.1	1	0.0	13.2	3.4	0.0	0	0	0.029	1.0
1.5	-1	-0.1	1.5	0.0	13.2	3.4	0.0	0	0	0.028	1.0
2	0	0.0	2	0.0	13.2	3.3	0.0	0	0	0.028	1.0
2.5	0	0.0	2.5	0.0	13.3	3.3	0.0	0	0	0.029	1.0
3	0	-0.1	3	0.0	13.3	3.3	0.0	0	0	0.028	1.0
3.5	0	0.0	3.5	0.0	13.3	3.3	0.0	0	0	0.029	1.0
4	0	0.0	4	0.0	13.3	3.3	0.0	0	0	0.028	1.0
4.5	0	-0.1	4.5	0.0	13.3	3.3	0.0	0	0	0.029	1.0
5	0	0.0	5	0.0	13.3	3.2	0.0	0	0	0.029	1.0
Initial	-1	-0.1	Initial	0.0	13.2	3.4	0.0	0	0	0.029	1.0
Peak	-1	-0.1	Peak	0.0	13.3	3.4	0.0	0	0	0.029	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MMF
Date:	20/10/21
Checked by:	CR
Date:	24/10/21

JKEnvironments

HAZARDOUS GROUND GAS MONITORING WELL FIELD SHEET

Client:—	TSA	Monitoring Well No:	MW119
Project:	Proposed Hospital Redevelopment	Weather Conditions:	Sunny, recently sunny.
Location:	97-115 River Road, GREENWICH, NSW	SWL (m)^:	Dry.
Job Number:	E32507BR	PID (ppm):	0.3
		Start Time and Atmospheric Pressure (mbar):	1015 at 10:02 am
		Completion Time and Atmopsheric Pressure (mbar):	1014 at 10:13 am

Time (min)#	Differential Pressure (Pa)	Flow (L/H)	Time (min)#	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	CH_4 (%LEL)	H_2S (ppm)	CO (ppm)	Hexane (%)	PID Cf (ppm)
0.5	-2	-0.4	0.5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
1	-2	-0.3	1	0.0	0.0	20.9	0.0	0	0	0.029	1.0
1.5	-2	-0.3	1.5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
2	-2	-0.3	2	0.0	0.0	20.9	0.0	0	0	0.028	1.0
2.5	-2	-0.3	2.5	0.0	0.0	20.9	0.0	0	0	0.028	1.0
3	-2	-0.3	3	0.0	0.0	20.9	0.0	0	0	0.029	1.0
3.5	-1	-0.2	3.5	0.0	0.0	20.9	0.0	0	0	0.028	1.0
4	-2	-0.4	4	0.0	0.0	20.9	0.0	0	0	0.029	1.0
4.5	-2	-0.4	4.5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
5	-2	-0.3	5	0.0	0.0	20.9	0.0	0	0	0.029	1.0
Initial	-2	-0.4	Initial	0.0	0.0	20.9	0.0	0	0	0.029	1.0
Peak	-2	-0.4	Peak	0.0	0.0	20.9	0.0	0	0	0.029	1.0

Notes:

^ Standing Water Level (SWL) in meters below ground level. Recorded on completion of monitoring.

HGG measurements recorded at least 5 minuites following flow measurements.

Recorded by:	~~CR~~ MNF
Date:	20/10/21
Checked by:	CR
Date:	24/10/21

Appendix I: Equipment Calibration Certificates

AES
sensing safety

Calibration and Service Report – PID

Company:	JK Environments Pty Ltd	**Manufacturer:**	RAE	**Serial #:**	110-006735
Contact:	Alistair Mitchell	**Instrument:**	MINIRAE 2000 SN: 110-006735	**Asset #:**	
Address:	JK Group PO Box 976 NORTH RYDE	**Model:**	MiniRAE 2000	**Part #:**	
		Configuration:	VOC 10.6EV	**Sold:**	09.03.2006
		Wireless:	-	**Last Cal:**	02.03.2021
Phone:	02 9888 5000	**Network ID:**	-	**Job #:**	130723
Fax:		**Unit ID:**	-	**Cal Spec:**	
Email:	amitchell@jkenvironments.com.	**Details:**		**Order #:**	JKE PID 1

Calibration Certificate

Sensor	Type	Serial No.	Span Gas	Concentration	Traceability Lot #	CF	Reading	
							Zero	Span
Oxygen								
LEL								
PID	050-0000-004, 10.6EV 1/2 INCH LAMP	1062R114600/012818	Isobutylene	100ppm	4835-1-1		0	100
Battery	012-3051-000E, NIMH BATTERY PACK 7800	170N2W0093(11/2012)						
Toxic 1								
Toxic 2								
Toxic 3								
Toxic 4								
Toxic 5								
Toxic 6		021689						

Calibrated/Repaired by: JERRY JI Date: 10.09.2021 Next Due: 10.03.2022

AES
sensing safety

Calibration and Service Report – PID

Company:	JK Environments Pty Ltd	**Manufacturer:**	RAE	**Serial #:**	110-006735
Contact:	Alistair Mitchell	**Instrument:**	MINIRAE 2000 SN: 110-006735	**Asset #:**	
Address:	JK Group PO Box 976 NORTH RYDE	**Model:**	MiniRAE 2000	**Part #:**	
		Configuration:	VOC 10.6EV	**Sold:**	09.03.2006
		Wireless:	-	**Last Cal:**	02.03.2021
Phone:	02 9888 5000	**Network ID:**	-	**Job #:**	130723
Fax:		**Unit ID:**	-	**Cal Spec:**	
Email:	amitchell@jkenvironments.com.	**Details:**		**Order #:**	JKE PID 1

Item	Test	Pass/Fail	Comments	Serial Number
Battery	NiCd, NiMH, Dry cell, LiIon	P		
Charger	Power Supply	-		
	Cradle, Travel Charger	-		
Pump	Flow	P	>300ml/min	
Filter	Filter, fitting, etc	x	Dirty, replaced	
Alarms	Audible, visual, vibration	P		
Display	Operation	P		
Switches	Operation	P		
PCB	Operation	P		
Connectors	Condition	P		
Firmware	Version	P	V2.00	
Datalogger	Operation	P		
Monitor Housing	Condition	P		
Case	Condition / Type	-		
Sensors				
PID	Lamp	P	Cleaned	
PID	Sensor	P	Cleaned	
THP	Sensor	P		

Engineer's Report

Cleaned lamp, lamp housing and sensor electrode
Checked flowrate and stall values
Checked unit settings and PC configuration
Unit serviced and calibrated.

ANRI INSTRUMENTS & CONTROLS PTY LTD ABN 21 004 771 564

UNIT 29, 756-758 BURWOOD HWY • FERNTREE GULLY • VIC 3156 • AUSTRALIA • PH: +61 3 9752 3782 • FAX: +61 3 9752 3783
EMAIL: sales@anri.com.au www.anri.com.au

Date: 30.9.20

Attn: Mr. A. Mitchell
JK Geotechnics Pty. Ltd.
115 Wicks Road
Macquarie Park
NSW 2113

Engineers Report # 3598

O/N A. Mitchell

GFM436 s/n 12545 Service & calibration

Test & inspect to find:-
Oxygen readings faulty – Replace sensor
Charge battery - OK
Replace inlet filter.
Test charging circuit - OK
Check piping
Leak test.
Flow test.
Calibration via S/W & test gases.

Parts: Inlet filter	$15.00
Oxygen sensor	$320.00
Labour:- Including calibration with test gases.	$440.00
Freight:	$30.00

Total price: $805.00 + GST

Stephen Hurst
ANRI Instruments & Controls Pty Ltd

ANRI INSTRUMENTS & CONTROLS PTY LTD ABN 21 004 771 564

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EMAIL: sales@anri.com.au www.anri.com.au

Date: 30.9.20

Attn: Mr. A. Mitchell
JK Geotechnics Pty. Ltd.
115 Wicks Road
Macquarie Park
NSW 2113

Order No. A. Mitchell

Calibration Certificate # 5126

Manufacture/Model	: Gas Data GFM436
S/N	: 12545
Gases Monitored	: CH4, 0-100%, CO2 0-100%, O2 0-25%, H2S, CO, Hexane
Zero setting CH4/CO2/O2/H2S/CO	: 0.0
Gas used	: N2
Cylinder No.	: BOC High Purity
Span setting CH4	: 60.0%
Gas used	: 60.0% CH4 in CO2
Cylinder No.	: 72927 Air Liquide (NATA)
60.0% CH4 in CO2 reads	: 60.0%
5.1% CH4 in CO2 reads	: 5.9%
Span setting CO2	: 40.0%
Gas used	: 40.0% CO2 in CH4
Cylinder No.	: 72927 Air Liquide (NATA)
40.0% CO2 in CH4 reads	: 39.8%
5.2% CO2 in CH4	: 5.0%
Span setting O2	: 20.9% (Air) Reads 20.9%
Span setting H2S	: 50ppm Reads 50ppm
Span setting CO	: 1100ppm Reads 1110ppm
Hexane	: Factory setting
Cell replaced	: Oxygen
Estimated Date of cell replacement	: Oxygen 30.9.22
Comments	: Calibration OK
Flow rate	: 560ml/min. OK
Atm. Pressure 996mb	: 997mb
Next Service/calibration Due	: 30.9.21

Stephen Hurst
ANRI Instruments & Controls Pty Ltd

Gas Calibration Certificate

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **GFM430**
Serial No. **11259**
Sensors **CH_4, CO_2, O_2, H_2S, LEL**

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
O_2		20.9% Vol O2		Fresh Air	20.9%
CO_2		40% Vol CO2	NATA	SY400	39.9%
CH_4		60% Vol CH4	NATA	SY400	60.1%

Calibrated by: **Kylie Rawlings**

Calibration date: **1/10/2021**

Next calibration due: **2/04/2022**

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EMAIL: sales@anri.com.au www.anri.com.au

Date: 8.10.21

Attn: Mr. A. Mitchell
JK Geotechnics Pty. Ltd.
115 Wicks Road
Macquarie Park
NSW 2113

Engineers Report # 3727

O/N A. Mitchell

GFM436 s/n 12545 Service & calibration

Test & inspect to find:-
Charge battery - OK
Replace inlet filter.
Check O2 sensor - OK
Test charging circuit - OK
Check piping
Leak test.
Flow test.
Calibration via S/W & test gases.

Parts: Inlet filter	$15.00
Labour:- Including calibration with test gases.	$440.00
Freight:	$40.00

Total price: $495.00 + GST

Stephen Hurst
ANRI Instruments & Controls Pty Ltd

ANRI INSTRUMENTS & CONTROLS PTY LTD ABN 21 004 771 564

UNIT 29, 756-758 BURWOOD HWY • FERNTREE GULLY • VIC 3156 • AUSTRALIA • PH: +61 3 9752 3782 • FAX: +61 3 9752 3783
EMAIL: sales@anri.com.au www.anri.com.au

Date: 8.10.21

Attn: Mr. A. Mitchell
JK Geotechnics Pty. Ltd.
115 Wicks Road
Macquarie Park
NSW 2113

Order No. A. Mitchell

Calibration Certificate # 5216

Manufacture/Model	: Gas Data GFM436
S/N	: 12545
Gases Monitored	: CH4, 0-100%, CO2 0-100%, O2 0-25%, H2S, CO, Hexane
Zero setting CH4/CO2/O2/H2S/CO	: 0.0
Gas used	: N2
Cylinder No.	: BOC High Purity
Span setting CH4	: 60.0%
Gas used	: 60.0% CH4 in CO2
Cylinder No.	: 72927 Air Liquide (NATA)
60.0% CH4 in CO2 reads	: 59.9%
5.1% CH4 in CO2 reads	: 5.8%
Span setting CO2	: 40.0%
Gas used	: 40.0% CO2 in CH4
Cylinder No.	: 72927 Air Liquide (NATA)
40.0% CO2 in CH4 reads	: 40.0%
5.2% CO2 in CH4	: 5.1%
Span setting O2	: 20.9% (Air) Reads 20.9%
Span setting H2S	: 50ppm Reads 50ppm
Span setting CO	: 1100ppm Reads 1108ppm
Hexane	: Factory setting
Cell replaced	: No
Estimated Date of cell replacement	: Oxygen 8.10.22
Comments	: Calibration OK
Flow rate	: 510ml/min. OK
Atm. Pressure 1004mb	: 1005mb
Next Service/calibration Due	: 8.10.22

Stephen Hurst
ANRI Instruments & Controls Pty Ltd

Appendix J: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy Resilience and Hazards 2021 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia