REPORT TO

ERILYAN PTY LTD

ON

DETAILED (STAGE 2) SITE INVESTIGATION

FOR

PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

AT

23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Date: 9 December 2021
Ref: E27318PHrpt2-rev1

JKEnvironments
www.jkenvironments.com.au

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

Report prepared by:

Todd Hore
Senior Associate Environmental Engineer

Report reviewed by:

Brendan Page
Principal Associate | Environmental Scientist

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

DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E27318PHrpt2	Final Report	11 August 2021
E27318PHrpt2-rev1	Final Report	9 December 2021

Executive Summary

Erilyan ('the client') commissioned JK Environments (JKE) to undertake a Detailed (Stage 2) Site Investigation (DSI) for the proposed Northside West Clinic Stage 2 development at 23-27 Lytton Street, Wentworthville, NSW ('the site'). The purpose of the investigation is to meet the recommendations contained in the Preliminary Site Investigation (PSI) report (ref: E27318PHrpt). The DSI will focus on sampling in the development areas outside the main building footprint, where access is reasonable. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

Asbestos was encountered in a surficial fill sample from BH203 and was observed on the ground surface in the south section of the site during a previous waste classification assessment in 2014. Hydrocarbon odours were observed in groundwater along with elevated field photo-ionisation detector (PID) readings of the groundwater monitoring well headspace in MW103.

The DSI included soil sampling from an additional nine boreholes and groundwater sampling from four monitoring wells (two installed previously and two installed for the DSI). All of the soil results were less than the human health based SAC, however, it should be noted that asbestos was encountered on the ground surface and within the top 100mm of fill in BH304. The source of the asbestos was considered likely to be demolition of a nearby shed. Based on the distribution of asbestos across the site, JKE consider it likely that surface soil and shallow fill across the entire site is impacted by relatively low concentrations of asbestos associated with demolition of previous structures.

We note that low concentrations of total recoverable hydrocarbons (TRHs) were encountered in surface soils at BH303, BH304, BH306, BH307 and BH309. The source of the TRHs is unknown, however, the detections appeared to be limited to surficial soil. No TRHs were detected in underlying samples at all of these locations.

Concentrations of cadmium, nickel and zinc in the majority of the groundwater samples exceeded the ecological based SAC. The results were relatively consistent across each analyte and, therefore, are considered likely to be associated with regional groundwater conditions rather than an on-site source of the heavy metals. We note that TRHs, benzene, toluene, ethylbenzene, and xylenes (BTEX), PAHs and volatile organic compound (VOC) results were all less than laboratory detections limits in groundwater.

JKE recommend that a Remediation Action Plan (RAP) be prepared for the site to outline measures to reduce the risk to human receptors at the site following completion of the development works. An Asbestos Management Plan (AMP) should also be prepared to outline control measures to be implemented during the excavation and construction phases of work.

We are of the opinion that the site can be made suitable for the proposed development via implementation of the RAP and AMP during construction works.

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

Table of Contents

1 INTRODUCTION 1

1.1 Proposed Development Details 1
1.2 Aims and Objectives 2
1.3 Scope of Work 2

2 SITE INFORMATION 3

2.1 Background 3
2.2 Site Identification 5
2.3 Site Location and Regional Setting 6
2.4 Topography 6
2.5 Site Inspection 6
2.6 Surrounding Land Use 7
2.7 Underground Services 7
2.8 Section 10.7 Planning Certificate 8

3 GEOLOGY AND HYDROGEOLOGY 9

3.1 Regional Geology 9
3.2 Acid Sulfate Soil (ASS) Risk and Planning 9
3.3 Hydrogeology 9
3.4 Receiving Water Bodies 9

4 CONCEPTUAL SITE MODEL 10

4.1 Potential Contamination Sources/AEC and CoPC 10
4.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways 11

5 SAMPLING, ANALYSIS AND QUALITY PLAN 12

5.1 Data Quality Objectives (DQO) 12
5.2 Soil Sampling Plan and Methodology 15
5.3 Groundwater Sampling Plan and Methodology 16

6 SITE ASSESSMENT CRITERIA (SAC) 19

6.1 Soil 19
6.2 Groundwater 21

7 RESULTS 23

7.1 Summary of Data (QA/QC) Evaluation 23
7.2 Subsurface Conditions 23
7.3 Field Screening 24
7.4 Soil Laboratory Results 24
7.5 Groundwater Laboratory Results 27

8 WASTE CLASSIFICATION ASSESSMENT 29

8.1 Waste Classification of Fill 29
8.2 Classification of Natural Soil and Bedrock 29

9 DISCUSSION 30

9.1 Contamination Sources/AEC and Potential for Site Contamination 30

9.2 TIER 1 RISK ASSESSMENT AND REVIEW OF CSM 30
9.3 DECISION STATEMENTS 31
9.4 DATA GAPS 32
10 CONCLUSIONS AND RECOMMENDATIONS 33
11 LIMITATIONS 34

List of Tables

Table 2-1: Site Identification	5
Table 4-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern	10
Table 4-2: CSM	11
Table 5-1: Soil Sampling Plan and Methodology	15
Table 5-2: Groundwater Sampling Plan and Methodology	16
Table 5-3: Laboratory Details	18
Table 6-1: Details for Asbestos SAC	20
Table 6-2: Waste Categories	21
Table 7-1: Summary of Subsurface Conditions	23
Table 7-2: Summary of Field Screening	24
Table 7-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)	25
Table 7-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria	26
Table 7-5: Summary of Soil Laboratory Results Compared to TCLP Criteria	27
Table 7-6: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)	27
Table 9-1: Data Gap Assessment	32

Attachments

Appendix A: Report Figures
Appendix B: Site Information
Appendix C: Laboratory Results Summary Tables
Appendix D: Borehole Logs
Appendix E: Laboratory Report(s) & COC Documents
Appendix F: Report Explanatory Notes
Appendix G: Data (QA/QC) Evaluation
Appendix H: Field Work Documents
Appendix I: Guidelines and Reference Documents

Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
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**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
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**
Ecological Screening Level	**ESL**
Fibre Cement Fragment(s)	**FCF**
General Approval of Immobilisation	**GAI**
Health Investigation Level	**HILs**
Hardness Modified Trigger Values	**HMTV**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
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**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Per-and Polyfluoroalkyl Substances	**PFAS**
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**
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	**%**

1 INTRODUCTION

Erilyan ('the client') commissioned JK Environments (JKE) to undertake a Detailed (Stage 2) Site Investigation (DSI) for the proposed Northside West Clinic Stage 2 development at 23-27 Lytton Street, Wentworthville, NSW ('the site'). The purpose of the investigation is to meet the recommendations contained in the Preliminary Site Investigation (PSI) report (ref: E27318PHrpt)[1]. The DSI will focus on sampling in the development areas outside the main building footprint, where access is reasonable. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed Northside West Clinic Stage 2 development, with regards to State Environmental Planning Policy No.55 – Remediation of Land (1998)[2].

A geotechnical investigation was undertaken in conjunction with this PSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 33969BTrpt, dated 13 May 2021)[3]. This report should be read in conjunction with the JKG report.

JKE (as EIS, prior to our rebranding) have previously undertaken two contamination screenings at the site (Ref: E27318Klet[4] and E27318Klet2[5]). Following these, the PSI report was undertaken in conjunction with a Preliminary Salinity Assessment[6]. A summary of this information has been included in Section 2.

1.1 Proposed Development Details

From the supplied architectural drawings prepared by Team 2 Architects (Job No. 903, Drawing Nos. SK0010 to SK0015 and SK1011 to SK1020, Revision P1, dated 11 February 2021), we understand that the Stage 2 Development will comprise:

- Construction of a three-storey ward building in the area of the existing on-grade carpark on the southern side of the Northside West Clinic; and
- Demolition of the existing building in the western portion of the site and construction of a two-storey Day Programme building above an undercroft car park.

The ground floor level of the proposed ward building will occupy the eastern half of the building footprint and will be approximately level with Lytton Street on the eastern side, and due to the slope of the site, will be approximately 1.7m above the existing ground level in the north-western corner. This will likely require either placement of fill or suspending the building over the existing ground surface.

[1] JKE (2021a). *Report to Erilyan Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Northside West Clinic Stage 2 Development at 23-27 Lytton Street, Wentworthville, NSW.* (referred to as JKE PSI)

[2] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

[3] JKG, (2020). *Report to Erilyan Pty Ltd on Geotechnical Investigation for Proposed Northside West Stage 2 at 23-27 Lytton Street, Wentworthville, NSW.* (referred to as JKG report)

[4] EIS (2014). *Report to Erilyan Pty Ltd on Preliminary Soil Contamination Screening & Waste Classification for Proposed Additions to Northside West Clinic at 23-27 Lytton Street, Wentworthville, NSW.* (referred to as EIS 2014)

[5] EIS (2015). *Report to Erilyan Pty Ltd on Preliminary Soil Contamination Screening & Waste Classification for Proposed Additions to Northside West Clinic – Stage 2 Works at 23-27 Lytton Street, Wentworthville, NSW.* (referred to as EIS 2015)

[6] JKE (2021b). *Report to Erilyan Pty Ltd on Preliminary Salinity Assessment for Proposed Northside West Clinic Stage 2 Development at 23-27 Lytton Street, Wentworthville, NSW.* (referred to as Salinity Assessment)

The proposed undercroft car park on the western side of the site will be approximately at the existing ground level and we will only require minimal or no excavation or filling. Extensive landscaping is not proposed as part of this development, however, it is noted that existing garden beds and trees are to be retained. Please refer to the development plans attached in the appendices.

1.2 Aims and Objectives

The primary aims of the investigation were to better assess the soil and groundwater contamination conditions in accessible areas at the site. The objectives were to:

- Better assess the soil and groundwater contamination conditions, particularly in relation to asbestos and the potential hydrocarbon impacts in groundwater;
- Provide a preliminary waste classification for off-site disposal of in-situ soil;
- Establish the need for further investigation and/or remediation; and
- Comment on site suitability for the proposed development.

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP54370PH) of 16 June 2021 and written acceptance from the client of 22 June 2021. The scope of work included the following:

- Review of site information, including background information from various sources outlined in the report;
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- 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)[7], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[8] and SEPP55. A list of reference documents/guidelines is included in the appendices.

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

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

2 SITE INFORMATION

2.1 Background

2.1.1 EIS 2014

The EIS 2014 preliminary contamination screening included a site inspection and soil sampling and analysis from four boreholes and one test pit location. The EIS 2014 report identified the following:

- Sub-surface conditions encountered at the site consisted of silty gravelly clay fill material beneath pavement to a maximum depth of approximately 0.8m below ground level (BGL), underlain by natural silty clay and siltstone to the termination depth of approximately 6.0mBGL;
- All soil results were below the human-health based SAC for a commercial/industrial land use setting;
- A single elevation of nickel above the ecological SAC for commercial/industrial land use were identified in the fill within sample BH3 (0.05-0.25m);
- Two fibre cement fragments (FCF) were identified on the ground surface of the south-east and south-west portions of the site. The FCF were not analysed for asbestos, however they were assumed to contain asbestos; and
- The fill material was assigned a preliminary waste classification of General Solid Waste (Non-putrescible) containing asbestos.

The EIS 2014 report concluded that: "*… additional asbestos soil investigation works are required to assess the exposed soils for the presence and nature (friable and/or non-friable) of potential asbestos containing material (ACM). If asbestos is identified at the site and Asbestos Management Plan (AMP) should be prepared to manage the potential health risk posed by ACM. The risk of widespread soil contamination other than potential ACM is considered to be relatively low.*"

2.1.2 EIS 2015

The EIS 2015 preliminary contamination screening included a site inspection and soil sampling and analysis from four borehole locations drilled for the geotechnical investigation. Groundwater wells were installed in two locations for geotechnical purposes but were not sampled as part of the contamination screening. The EIS 2015 report identified the following:

- Sub-surface conditions encountered at the site consisted of fill material beneath pavement to a maximum depth of approximately 1.3mBGL, underlain by natural silty clay and siltstone to the termination depth of approximately 12mBGL;
- All soil results were below the human-health based SAC for a commercial/industrial land use setting;
- Elevated concentrations of nickel above the ecological SAC for commercial/industrial land use were identified in the fill within samples BH101 (0.1-0.2m), BH102 (0.1-0.2m) and BH104 (0.13-0.25m); and
- The fill material was assigned a preliminary waste classification of General Solid Waste (Non-putrescible); and
- A hydrocarbon odour was encountered in the groundwater monitoring well (MW103) installed in BH103 and detections of hydrocarbons were also identified in soil from BH102.

The EIS 2015 report concluded that: "… *EIS are of the opinion that the potential for widespread contamination at the site is relatively low. However, given the potential unknown extent potential* [sic] *of soil and groundwater contamination at the site the following should be undertaken:*

- *Following the removal of the asphalt pavement a suitably qualified environmental consultant should be engaged to inspect the surface of the site for potential ACMs. A number of shallow testpits should be excavated across the site to inspect the fill material for potential ACMs. Additional soil sampling, analysis and reporting may be required depending on the conditions encountered. Should ACMs be identified, the waste classification fill material will be revised to General Solid Waste – containing asbestos; and*
- *A preliminary groundwater contamination screening assessment should be undertaken to assess the groundwater conditions at the site. The groundwater contamination screening assessment should include the development and sampling of the two existing groundwater monitoring well installed at the site (MW101 and MW103)."*

Investigation of the groundwater was also recommended.

2.1.3 JKE PSI

The PSI undertaken at the site included a review of historical information and previous waste classification reports, soil sampling from three borehole locations and groundwater sampling from two monitoring wells.

Historical information indicated that the site has historically been vacant or used for residential purposes prior to the construction and eventual expansion of the community hospital and Wentworthville Clinic from 1961 to the present day.

Asbestos was encountered in a surficial fill sample in BH203 and was observed on the ground surface in the south section of the site during a previous waste classification assessment in 2014.

The well headspace PID readings in MW103 and MW101 were 98ppm and 2ppm, respectively. It is noted that hydrocarbon odours were previously encountered in MW103.

Based on the scope of work undertaken for the PSI, JKE identified the following potential contamination sources:

- Fill material;
- Use of pesticides;
- Hazardous building materials; and
- Potential fuel storage or Underground Storage Tank (UST).

A Detailed Site Investigation (DSI) was recommended to better assess the contamination conditions at the site.

2.1.4 JKE Salinity Assessment

The Salinity Assessment undertaken at the site included soil sampling from three borehole locations and groundwater sampling from two monitoring wells.

The results indicated that that the majority of soil and groundwater at the site was generally non-aggressive to buried concrete and steel. Some soils deeper than 2m were found to be mildly aggressive towards steel and some soils deeper than 1m were found to be mildly aggressive towards concrete.

Soils at the site were generally non-saline to slightly saline to a depth of approximately 2m and the majority of the pH results from surficial soils were within the optimum range for plant growth.

Due to the nature of the proposed development, which will be either at existing levels or require filling in some areas, JKE consider that no salinity management plan will be required.

It should be noted that soils at the site were found to be slightly saline to a depth of approximately 2m and moderately saline beyond 2m. As a result, concrete that will be in contact with these soils should be designed appropriately. This includes using N20 grade concrete to a depth of 2m and N25 grade concrete for any foundations that will be deeper than 2m. The soil aggression characteristics must be factored into the engineering design as required.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Health Care Corporation Pty Limited
Site Address:	23-27 Lytton Street, Wentworthville, NSW
Lot & Deposited Plan:	Lot 1 in DP787784
Current Land Use:	Westmead Clinic
Proposed Land Use:	Westmead Clinic
Local Government Authority:	Cumberland City Council
Current Zoning:	R4: High Density Residential
Site Area (m^2) (approx.):	6,600m^2 (4,200m^2 excluding the main building footprint that was not investigated)
RL (AHD in m) (approx.):	19
Geographical Location (decimal degrees) (approx.):	Latitude: -33.810779 Longitude: 150.974627
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 Wentworthville and is bound by Lytton Street to the east. The site is located immediately (<50m) to the east of Finlayson Creek.

2.4 Topography

The region consists of undulating topography with the site itself characterised by an overall slope with a gradient of approximately 2° that falls to the west towards Finlayson Creek.

2.5 Site Inspection

A walkover inspection of the site was undertaken by JKE on 28 April 2021 and again on 7 July 2021. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken.

A summary of the inspection findings is outlined in the following subsections:

2.5.1 Current Site Use and/or Indicators of Former Site Use

At the time of the inspection, the majority of site was occupied by three buildings that made up the Westmead Clinic. The main clinical building was of recent construction while the smaller two buildings appeared of older vintage. Part of the central building was cut into the slope of the site to form a steep ramp accessed from Lytton Street to the east. Potential asbestos containing building materials were noted as fibre cement lined eaves and awnings of the older style buildings.

The southern and northern portions of the site were occupied by asphaltic concrete car parks. The southern car park was approximately on-grade with Lytton Street. The northern car park was an undercroft and was below street level. Various large native trees and exotic shrubs were located within landscaped areas around the perimeter of the site. No signs or indicators of former land use were identified at the time of the inspection.

2.5.2 Boundary Conditions, Soil Stability and Erosion

The site was fenced by a low steel mesh fence along the western and southern boundaries. The eastern boundary was open along Lytton Street and the northern boundary fenced by a taller metal fence. No signs of erosion or soil wash in unpaved areas was encountered at the time of the inspection.

2.5.3 Presence of Drums/Chemical Storage and Waste

General waste was stored in skip bins located in the northern portion of the site, and a grease trap was located to the west of the main clinic building. Storage of fuel or chemicals was not encountered at the site.

2.5.4 Evidence of Cut and Fill

Portions of the site may have historically been cut and/or filled to create a level platform for the existing buildings, particularly in the eastern portion of the site at the higher end of the slope. The southern car park was retained by a crib retaining wall, above a driveway that extended along the south side of the building.

2.5.5 Visible or Olfactory Indicators of Contamination (odours, spills etc)

FCF was observed on the ground surface in the south-west section of the site (in the vicinity of BH304) and were considered likely to be associated with demolition of a former shed. A newer shed had been constructed nearby. No other visible or olfactory indicators of contamination were identified at the time of the inspection.

2.5.6 Drainage and Services

Surface water runoff is presumed to follow the general slope of the site to the west towards Finlayson Creek. Stormwater drains were located along the western boundary, within the northern car park and the southern driveway and were presumably connected to the local stormwater system.

2.5.7 Sensitive Environments

Finlayson Creek was located immediately (<50m) adjacent the western boundary of the site, running along a general north-south orientation. The creek ran along a man-made a concrete lined channel that was connected to the larger Toongabbie Creek approximately 1.2km to the north of the site.

2.5.8 Landscaped Areas and Visible Signs of Plant Stress

Various large native trees and exotic shrubs were located within landscaped areas around the perimeter of the site. No visual signs of plant stress or dieback were identified at the time of the inspection.

2.6 Surrounding Land Use

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

- North – Low density residential properties;
- South – Wentworthville Community Garden and low-density residential properties;
- East – Grassed public land and Finlayson Creek; and
- West – Lytton Street and residential beyond.

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

2.7 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. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

2.8 Section 10.7 Planning Certificate

The section 10.7 (2 and 5) planning certificates were reviewed for the PSI. A summary of the relevant information is outlined below:

- The land is not deemed to be: significantly contaminated; subject to a management order; subject of an approved voluntary management proposal; or subject to an on-going management order under the provisions of the CLM Act 1997;
- The land is not the subject of a Site Audit Statement (SAS);
- The land is not affected by acid sulfate soils (ASS); and
- The land is not within a heritage conservation area.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information was reviewed for the PSI. The report indicates that the site is underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

The site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation.

3.3 Hydrogeology

Hydrogeological information presented in the PSI report indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There was a total of 15 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 570m from the site. This was utilised for monitoring purposes;
- The remaining bores were registered for monitoring or testing purposes;
- There were no nearby bores (i.e. within 500m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 1.2-3.5m, underlain by shale or sandstone bedrock. Standing water levels (SWLs) in the bores ranged from 5.0mBGL to 7.0mBGL.

The desktop information reviewed for the PSI indicated that the subsurface conditions at the site are likely to consist of relatively low permeability (residual) soils overlying shallow bedrock. This was supported by the intrusive investigations. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is a 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 anticipate groundwater to flow towards the west.

3.4 Receiving Water Bodies

The site location and regional topography indicates that excess surface water flows have the potential to enter the Finlayson Creek located immediately west of the site. This water body is a potential receptor, although it is noted that the areas of the creek near the site comprise a concrete lined channel and there did not appear to be groundwater connectivity to the channel on this basis.

4 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 9.

4.1 Potential Contamination Sources/AEC and CoPC

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

Table 4-1: 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. Boreholes drilled for the previous screenings identified fill to a maximum depth of 1.3m. However, the fill was generally shallower. FCF was encountered in the fill in BH203 during the PSI and on the ground surface during previous screenings. The fill may have been imported from various sources and could be contaminated.	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.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities across the site. In particular in the footprints of the original residential buildings. These materials may also be present in the existing buildings/ structures on site. Asbestos in the form of non-friable/bonded FCF/ACM has been identified in and on soil.	Asbestos, lead and PCBs
Potential Fuel Storage or UST – Based on several lines of evidence, including the identification of hydrocarbon odours in groundwater well MW103 and petroleum compounds in soil in BH102, it is considered possible that an unidentified UST exists, or that a localised fuel spill has occurred at the southern end of the site.	TRHs, BTEX and naphthalene

4.2 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 4-2: CSM

Potential mechanism for contamination	The potential mechanisms for contamination are most likely to include 'top-down' impacts and spills. There is a potential for sub-surface releases to have occurred if deep fill (or other buried industrial infrastructure) is present, although this is considered to be the least likely mechanism for contamination.
Affected media	Soil and groundwater have been identified as potentially affected media. The potential for soil vapour impacts would require further consideration in the event that volatile contamination was found in soil/groundwater.
Receptor identification	Human receptors include site occupants/users (including primarily adults), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users. Use of the site by children may occur, however is expected to be infrequent. This has been discussed further later in this report. Ecological receptors include terrestrial organisms and plants within unpaved areas. This has been included to incorporate the existing trees and garden beds which are to be retained. Potential human (e.g. recreational water users) and ecological receptors may also exist with regards to Finlayson Creek, particularly downstream where (if) the creek is unlined.
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 and BTEX). 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/direct contact and ingestion. Due to its proximity to the site, exposure to groundwater in Finlayson Creek has also been considered for risk assessment purposes. However, as the creek is concrete lined adjoining the site, it does not appear that there is direct connectivity between the groundwater and the creek in the immediate vicinity of the site.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed basement/undercroft and/or building (either from soil contamination or volatilisation of contaminants from groundwater); • 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 downstream recreational water bodies.

5 SAMPLING, ANALYSIS AND QUALITY PLAN

5.1 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 7.1 and the detailed evaluation is provided in the appendices.

5.1.1 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. Investigation data is required to assess the contamination status of the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required.

Asbestos was previously encountered in fill (BH203) and on the ground surface at the site during previous investigations. Further investigation is required to better assess the extent of the asbestos impact.

A hydrocarbon odour was observed in MW103 in 2015 and hydrocarbons were detected in in soil samples from BH102. Elevated PID readings were recorded in groundwater well headspace during the PSI. The source of the hydrocarbons is unknown and further investigation is required to better assess the hydrocarbon impacts at the site.

The PSI recommended further sampling to confirm the waste classification prior to off-site disposal of excavated soil/bedrock.

The DQOs were developed by the author of this report and checked by the reviewer. Both the author and reviewer were joint decision-makers in relation to Step 2 of the DQO process.

The investigation was constrained by access limitations associated with the existing structures on site.

5.1.2 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 of the laboratory results above the site assessment criteria?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

5.1.3 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;
- Site information, including site observations and site history documentation;
- Sampling of potentially affected media, including soil and groundwater;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining, and groundwater physiochemical parameters;
- Laboratory analysis of soils, fibre cement and groundwater for the CoPC identified in the CSM. An extended suite of hydrocarbons (volatile organic compounds – VOCs) were also assessed in groundwater; and
- Field and laboratory QA/QC data.

5.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to a depth of 6m (spatial boundary). The sampling was completed between 6 and July 2021 (temporal boundary). The assessment of potential risk to adjacent land users has been made based on data collected within the site boundary.

Sampling was not undertaken within the existing building footprint due to access constraints.

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

5.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 6. 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.

For this investigation, the individual results have been assessed as either above or below the SAC. Statistical evaluation of the dataset via calculation of mean values and/or 95% upper confidence limit (UCL) values has not been undertaken due to the spatial distribution of the data and the number of samples submitted for analysis.

5.1.5.2 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).

5.1.5.3 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.

5.1.6 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 design was non-probabilistic.

5.1.7 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.

5.2 Soil Sampling Plan and Methodology

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

Table 5-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples were collected from nine locations as shown on the attached Figure 2, in addition to the three locations sampled for the PSI. Based on the investigation area (4,200m^2), this number of locations corresponded to a sampling density of approximately one sample per 350m^2. The sampling plan was not designed to meet the minimum sampling density for hotspot identification, as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)[9], due to access constraints.
Sampling Plan	The sampling locations were placed on a judgemental sampling plan and were broadly positioned for site coverage, taking into consideration areas that were not easily accessible. This included placing some locations in the vicinity of This sampling plan was considered suitable to make an assessment of potential risks associated with the AEC and CoPC identified in the CSM, and assess whether further investigation is warranted.
Set-out and Sampling Equipment	Sampling locations were set out using a tape measure. In-situ sampling locations were checked for underground services by an external contractor prior to sampling. Samples from BH301 to BH303 and BH307 to BH309 were collected using drill rig equipped with spiral flight augers (150mm diameter). Soil samples were obtained from a Standard Penetration Test (SPT) split-spoon sampler, and/or directly from the auger. Samples from BH304 to BH306 were collected using a hand auger.
Sample Collection and Field QA/QC	Soil samples were obtained on 6 July 2021 in accordance with our standard field procedures. 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. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure included alternately filling the sampling containers to obtain a representative split sample.
Field Screening	A portable Photoionisation Detector (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;

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

Aspect	Input
	• 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 6.1. A calibration/check of the accuracy of the scale used for weighing the fibre cement fragments was undertaken using a set of calibration weights. Calibration/check records are maintained on file by JKE. 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 Decon and potable water. 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.

5.3 Groundwater Sampling Plan and Methodology

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

Table 5-2: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Groundwater monitoring wells were installed in BH302 (MW302) and BH307 (MW307). MW302 was positioned in the south section of the site, to better assess the contamination conditions in this area associated with previously observed hydrocarbon odours. MW307 was positioned in the north section of the site to provide site coverage. MW101 and MW103 were installed during previous investigations at the site and are both located in the south section of the site. The wells were surveyed to assess the groundwater flow direction as described in Section 0. Considering the topography and the location of the nearest down-gradient water body, groundwater at the site is expected to flow to the west or north-west. Therefore, MW101 and MW103 are considered to be in the up-gradient area of the site and would be expected to provide an indication of groundwater flowing onto (beneath) the site from the south and east. MW302 and MW307 were considered to be in the intermediate to down-gradient area of the site and would be expected to provide an indication of groundwater flowing across (beneath) the site and beyond the down-gradient site boundary.

Aspect	Input
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 5m to 6m below ground level. 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); • 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 on 7 July 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 six days after development. Groundwater samples were obtained on 13 July 2021. Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) 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/disposable plastic bailer. 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. 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

Aspect	Input
	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.

5.3.1 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 5-3: 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)	273765, 273765-A and 274175
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	26795

6 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.

The guidelines on specific land use scenarios outlined in the NEPM 2013, Schedule B7, Section 3.2.5.3, state that:

"Adults of working age are the population usually most sensitive to health risks associated with soil contamination within the generic commercial/industrial land use scenario. Although many commercial premises welcome children on an intermittent basis, it is unlikely that children visit the majority of workplaces frequently. Similarly, in commercial premises where children are regular visitors, such as shopping centres, both the duration and frequency of child exposures are generally lower than that of a full-time adult employee."

"In accordance with the recommendations outlined in enHealth (2004), the adult employees addressed in the HIL D values have been considered to work within the same commercial/industrial premises for their full working life (30 years). The HILs developed for the commercial/industrial land use scenario are not applicable to a site used frequently by more sensitive groups such as children (within childcare centres, hospitals and hotels) and the elderly (within hospitals, aged care facilities and hospices)."

For this proposed development and associated land use at the site, we have adopted the commercial/industrial human-health and ecological SAC. This SAC is based on the proposed land use as a community health facility which will welcome children on an intermittent basis (for appointments) and it is unlikely that children will be visiting the site frequently or for extended time periods.

6.1 Soil

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

6.1.1 Human Health

- Health Investigation Levels (HILs) for a 'commercial/industrial' exposure scenario (HIL-D);
- Health Screening Levels (HSLs) for a 'commercial/industrial' exposure scenario (HSL-D). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- 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)[10]; and
- Asbestos was assessed against the HSL-D criteria. A summary of the asbestos criteria is provided in the table below:

[10] 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*

Table 6-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-D 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 WA DoH (2021) guidance. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.05% 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): **% w/w asbestos in soil =** **% asbestos content x bonded ACM (kg)** / Soil volume (L) x soil density (kg/L) 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 =** **% asbestos content x bonded ACM (g)** / Soil weight (g)

6.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'commercial/industrial' 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[11];
- ESLs were adopted based on the soil type; and
- EILs for selected metals for samples BH304 (0-0.1m), BH307 (0.05-0.15m) and BH309 0.05-0.15m) were calculated using site specific soil parameters for pH, cation exchange capacity and clay content. These data were used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013), and published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[12]. EILs for selected metals for the remaining samples were calculated based on the most conservative ACL values presented in Schedule B(1) of NEPM (2013) and published ABC values.

6.1.3 Management Limits for Petroleum Hydrocarbons

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

[11] 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)

[12] 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.

6.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[13] as outlined in the following table:

Table 6-2: 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.

6.2 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)[14]. Environmental values for this investigation include aquatic ecosystems and human-health risks in non-use scenarios.

6.2.1 Human Health

- HSLs for a 'commercial/industrial' exposure scenario (HSL-D). HSLs were calculated based on the soil type and the nominated depth to groundwater of 2m to 4m. This depth is based on the groundwater depth measured during development and sampling events and the proposed floor level of the new buildings. We note that the surface of MW302 is located approximately 2m below the proposed floor level;
- VOCs (where there were no HSLs) were assessed against the laboratory PQLs; and
- The Australian Drinking Water Guidelines 2011 (updated 2018)[15] were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g.

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

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

[15] National Health and Medical Research Council (NHMRC), (2018). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

within down-gradient water bodies, with bore water used for irrigation, or with seepage water in the basement). These have been deemed as 'recreational' SAC.

6.2.2 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)[16].

[16] 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)

7 RESULTS

7.1 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.

7.2 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 7-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Asphaltic Concrete (AC) or Concrete pavement, approximately 50mm to 150mm thick, was encountered at the surface in BH301, BH302 and BH307 to BH309.
Fill	Fill was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.2m to 1m. BH304 to BH306 were terminated in the fill at a maximum depth of approximately 0.4m. The fill typically comprised gravelly clay, silty clay, silty sandy clay or silty sand with inclusions of ironstone and igneous gravel, AC fragments, ash, building rubble (brick and porcelain fragments) and root fibres. FCF was observed in the fill in BH304.
Natural Soil	Silty clay was encountered beneath the fill in BH301, BH303 and BH307 to BH309 and extended to depths of approximately 1.6m to 6m. BH307 to BH309 were terminated in the natural soil at a maximum depth of approximately 6m. The silty clay was typically brown or grey with red-brown mottling.
Bedrock	Siltstone bedrock was encountered beneath the fill or natural soil in BH301 to BH303 and extended to the termination of these boreholes at a maximum depth of approximately 6m. The siltstone was typically grey and included iron indurated bands.
Groundwater	Groundwater seepage was not encountered in the boreholes during drilling. All boreholes remained dry on completion of drilling and a short time after. Monitoring wells were installed in BH302 and BH307, in addition to wells installed at the site previously (MW101 and MW103). The SWLs were measured at depths between 1.53m to 4.47m below the ground surface. It is noted that the ground surface at MW302 is approximately 1.5-2m below the other wells.

7.3 Field Screening

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

Table 7-2: Summary of Field Screening

<table>
<tr><th>Aspect</th><th>Details</th></tr>
<tr><td>PID Screening of Soil Samples for VOCs</td><td>PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. All results were less than 2ppm isobutylene equivalents which generally indicates a lack of PID detectable VOCs.</td></tr>
<tr><td>Bulk Screening for Asbestos</td><td>The bulk field screening results are summarised in the attached report tables. Two FCFs (A and B) were encountered in sample BH304 (0-0.1m). Laboratory testing indicated that only one (A) of the FCF contained asbestos. The A FCF weighed 11g. The ACM concentration was calculated based on this weight and was less than the SAC, as were the other results.</td></tr>
<tr><td>Monitoring well survey</td><td>The four monitoring wells were surveyed using a nominal RL of 10m as a benchmark (noting that this RL benchmark is not in mAHD). The RLs of the gatic cover of each well were:
MW101 – 10.15m;
MW103 – 9.76m;
MW302 – 7.65m; and
MW307 – 9.24m.</td></tr>
<tr><td>Groundwater Depth & Flow</td><td>The SWLs were measured at depths between 1.53m to 4.47m below the ground surface in MW101, MW103, MW302 and MW307.

<table><tr><td>MW</td><td>Well RL</td><td>GW SWL</td><td>GW RL</td></tr><tr><td>MW101</td><td>10.15</td><td>4.47</td><td>5.68</td></tr><tr><td>MW103</td><td>9.76</td><td>4.12</td><td>5.64</td></tr><tr><td>MW302</td><td>7.65</td><td>1.53</td><td>6.12</td></tr><tr><td>MW307</td><td>9.24</td><td>4.44</td><td>4.8</td></tr></table>
JKE consider that the groundwater contours and modelled flow direction were skewed by a perched water level in MW302. Excluding MW302, groundwater appears to flow to the west and north-west towards Finlaysons Creek, as would be anticipated based on the ground surface contours.</td></tr>
<tr><td>Groundwater Field Parameters</td><td>Field measurements recorded during sampling were as follows:
pH ranged from 5.29 to 6.02;
EC ranged from 8,204µS/cm to 17,859µS/cm;
Eh ranged from 14.4mV to 56mV; and
DO ranged from 0.8ppm to 2.9ppm.</td></tr>
<tr><td>LNAPLs petroleum hydrocarbons</td><td>Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.</td></tr>
</table>

7.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 6.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

7.4.1 Human Health and Environmental (Ecological) Assessment

Table 7-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	18	13	0	0	-
Cadmium	18	2	0	NSL	-
Chromium (total)	18	74	0	0	-
Copper	18	480	0	1	The copper result of 480mg/kg in the BH304 (0.1-0.2m) sample exceeded the EIL 370mg/kg. It was noted that the copper result in SDUP304 (a duplicate of the BH304 sample) was less than the EIL.
Lead	24	130	0	0	-
Mercury	18	0.2	0	NSL	-
Nickel	18	73	0	0	-
Zinc	18	440	0	0	-
Total PAHs	25	0	0	NSL	-
Benzo(a)pyrene	24	0.3	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	24	<0.5	0	NSL	-
Naphthalene	24	<1	0	NSL	-
DDT+DDE+DDD	10	<0.1	0	NSL	-
DDT	10	<0.1	NSL	0	-
Aldrin and dieldrin	10	1	0	NSL	-
Chlordane	10	0.1	0	NSL	-
Heptachlor	10	<0.1	0	NSL	-
PCBs	10	<0.1	0	NSL	-
TRH F1	24	66	0	0	-
TRH F2	24	86	0	0	-
TRH F3	24	720	0	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F4	24	300	0	0	-
Benzene	24	<0.2	0	0	-
Toluene	24	<0.5	0	0	-
Ethylbenzene	24	<1	0	0	-
Xylenes	24	<3	0	0	-
Asbestos (in soil)	13	<0.1g/kg	0	NA	-
Asbestos in fibre cement	2	NSL	2	NSL	Asbestos was detected in the FCF found on the ground surface at BH304 and in the fill in BH304.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

7.4.2 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Section 6.1.4. The results are presented in the report tables attached in the appendices. A summary of the results is presented in the following table:

Table 7-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	18	0	0	-
Cadmium	18	0	0	-
Chromium	18	0	0	-
Copper	18	NSL	NSL	-
Lead	24	2	0	Lead concentrations exceeded the CT1 criterion in the BH304 (0-0.1m) and SDUP303 samples. We note that SDUP303 is a duplicate of the BH303 (0-0.2m) sample, which recorded a lead result less than the CT1 criterion. The maximum lead concentration was 130mg/kg.
Mercury	18	0	0	-
Nickel	18	2	0	Nickel concentrations exceeded the CT1 criterion in the BH307 (0.05-0.15m) and BH309 (0.05-0.15m) samples. The maximum nickel concentration was 73mg/kg.

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Zinc	18	NSL	NSL	-
TRH (C_6-C_9)	24	0	0	-
TRH (C_{10}-C_{36})	24	0	0	-
BTEX	24	0	0	-
Total PAHs	24	0	0	-
Benzo(a)pyrene	24	0	0	-
OCPs & OPPs	10	0	0	-
PCBs	10	0	0	-
Asbestos	13	-	-	Asbestos was not detected in the soil samples analysed, however, asbestos was encountered in FCF in the fill in the top 100mm of fill in BH304.

N: Total number (primary samples)

NSL: No set limit

Table 7-5: Summary of Soil Laboratory Results Compared to TCLP Criteria

Analyte	N	N > TCLP Criteria	Comments
Lead	1	0	The BH304 (0-0.1m) sample was analysed for TCLP lead.
Nickel	2	0	The BH307 (0.05-0.15m) and BH309 (0.05-0.15m) samples were analysed for TCLP nickel.

N: Total number (primary samples)

7.5 Groundwater Laboratory Results

The groundwater laboratory results were assessed against the SAC presented in Section 6.2. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

Table 7-6: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	4	3	0	0	-
Cadmium	4	0.9	0	2	The cadmium results in the MW302 and MW307 samples exceeded the ecological SAC.
Chromium (total)	4	<1	0	0	-
Copper	4	<1	0	0	-

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Lead	4	<1	0	0	-
Mercury	4	<0.05	0	0	-
Nickel	4	72	0	3	The nickel results in the MW101, MW302 and MW307 samples exceeded the ecological SAC.
Zinc	4	86	0	4	The zinc results in the MW101, MW103 MW302 and MW307 samples exceeded the ecological SAC.
Total PAHs	4	<0.1	NSL	NSL	-
Benzo(a)pyrene	4	<0.1	0	NSL	-
Carcinogenic PAHs (as BaP TEQ)	4	<0.5	NSL	NSL	-
Naphthalene	4	<0.2/<1	NL	0	
TRH F1	4	<10	NL	0	-
TRH F2	4	<50	NL	0	-
TRH F3	4	<100	NSL	0	-
TRH F4	4	<100	NSL	0	-
Benzene	4	<1	0	0	-
Toluene	4	<1	NL	0	-
Ethylbenzene	4	<1	NL	0	-
m+p-Xylene	4	<2	NSL	0	-
o-Xylene	4	<1	NSL	0	-
Total Xylenes	4	<2	0	NSL	-
Other VOCS	4	<1/<10	0	0	-
pH	4	5.8	2	2	The pH results in the MW101 and MW307 samples were below the acceptable range of 6.5 to 8.5.
EC	4	18,000	NSL	NSL	-

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

8 WASTE CLASSIFICATION ASSESSMENT

8.1 Waste Classification of Fill

We note that the lead result of 110mg/kg in the SDUP303 sample slightly exceeded the CT1 criterion of 100mg/kg. This sample was a duplicate of the BH303 (0-0.2m) sample, which contained a lead concentration less than the CT1 criterion. A laboratory duplicate of the BH303 sample also contained a lead concentration less than the CT1 criterion. No TCLP testing was undertaken on fill samples from BH303.

Based on the results of the waste classification assessment, and at the time of reporting, the fill material is considered to be classified as **General Solid Waste (non-putrescible) containing Special Waste (asbestos)**. Surplus fill should be disposed of to a facility that is appropriately licensed to receive this waste stream. The facility should be contacted to obtain the required approvals prior to commencement of excavation.

We understand that only small quantities of waste soil, if any at all, is to be disposed off-site under this waste classification. Prior to off-site disposal of waste, the receiving facility will require a letter confirming the quantity of material being disposed under the above waste classification. This letter should be prepared by a suitably qualified environmental consultant.

8.2 Classification of Natural Soil and Bedrock

Based on the scope of work undertaken for this assessment, and at the time of reporting, JKE are of the opinion that the natural soil and bedrock at the site is likely to meets the definition of **VENM** for off-site disposal or re-use purposes. This classification will need to be confirmed following removal of asbestos impacted fill.

VENM would be considered suitable for re-use on-site (from a contamination viewpoint), or alternatively, the information included in this report may be used to assess whether the material is suitable for beneficial reuse at another site as fill material.

We understand that it is unlikely that natural soil and/or bedrock will be excavated and disposed off-site. Additional waste classification assessment and documentation will be required prior to excavation and any disposal of VENM.

9 DISCUSSION

9.1 Contamination Sources/AEC and Potential for Site Contamination

Based on the scope of work undertaken for this investigation, JKE identified the following potential contamination sources/AEC:

- Fill material across the site, encountered during the previous screenings identified fill to a maximum depth of 1.3m. FCF was encountered in the fill in BH203 during the PSI and on the ground surface during previous screenings;
- Pesticides may have been used beneath the buildings and/or around the site;
- Hazardous building materials may be present as a result of former building and demolition activities across the site. In particular in the footprints of the original residential buildings. These materials may also be present in the existing buildings/ structures on site; and
- Potential Fuel Storage or UST – Based on several lines of evidence, including the identification of hydrocarbon odours in groundwater well MW103 and petroleum compounds in soil in BH102, it is considered possible that an unidentified UST exists, or that a localised fuel spill has occurred at the southern end of the site.

Considering the above, and based on a qualitative assessment of various lines of evidence as discussed throughout this report, JKE are of the opinion that there is a potential for site contamination. The soil and groundwater data collected for the investigation is discussed further in the following subsection, as part of the Tier 1 risk assessment.

9.2 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.

9.2.1 Soil

All of the soil results were less than the human health based SAC, however, it should be noted that asbestos was encountered on the ground surface and within the top 100mm of fill in BH304. The source of the asbestos was considered likely to be demolition of a nearby shed. Asbestos was also encountered in the fill in BH201 during the PSI and on the ground surface in the south section of the site. Based on the distribution of asbestos across the site, JKE consider it likely that surface soil and shallow fill across the entire site is impacted by relatively low concentrations of asbestos associated with demolition of previous structures.

The copper result in the fill sample from BH304 exceeded the ecological based SAC. The elevated copper concentration appeared to be limited to surface soil as the copper result in the underlying sample was less than the SAC. BH304 was located in a small unpaved area, adjacent to a shed, that was unlikely to include

future landscaping. The risk posed by the elevated copper concentration in this area to ecological receptors is considered to be negligible.

We note that low concentrations of TRH were encountered in surface soils at BH303, BH304, BH306, BH307 and BH309. The source of the TRH is unknown, however, the detections appeared to be limited to surficial soil. No TRH was detected in underlying samples at all of these locations.

9.2.2 Groundwater

Concentrations of cadmium, nickel and zinc in the majority of the groundwater samples exceeded the ecological based SAC. The results were relatively consistent across each analyte and, therefore, are considered likely to be associated with regional groundwater conditions rather than an on-site source of the heavy metals.

We note that TRH, BTEX, PAHs and VOC results were all less than laboratory detections limits.

9.3 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

Asbestos was encountered in the top 100mm of fill in BH304. Asbestos was also encountered in the fill in BH201 during the PSI and on the ground surface in the south section of the site, however, these results did not exceed the SAC. None of the asbestos results exceeded the NEPM 2013 HSL criteria. The copper result in the BH304 fill sample exceeded the ecological based SAC.

Cadmium, nickel and zinc results in the groundwater samples exceeded the ecological based SAC.

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

The asbestos presents a risk to human receptors due to the surficial nature of the impact. The risk would be expected to increase during excavation (i.e. disturbance of soil containing asbestos) and development works.

The copper in the fill is considered unlikely to represent a risk to ecological receptors based on the location (an unpaved area behind a shed).

The heavy metals in groundwater are considered to be associated with regional conditions rather than a site specific source and are, therefore, not considered to pose a risk to human or ecological receptors.

Is remediation required?

Remediation is likely to be required in the form of management of the asbestos at the site. As the asbestos impact appears to be sporadic and spread across the majority of the site, remediation is likely to be required across the entire site.

JKE consider that the site can be made suitable for the proposed development provided remediation/management of the asbestos contamination is undertaken.

9.4 Data Gaps

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

Table 9-1: Data Gap Assessment

Data Gap	Assessment
Soil sampling distribution limited	The sampling was limited to accessible areas and excluded the existing buildings footprint. No development is proposed within this excluded areas and additional work to address this data gap is not recommended.
Soil sampling methodology limited	Sampling was limited to boreholes at the site and in some case to the use of hand tools. This methodology is less than ideal when assessing asbestos in fill, however, we have accounted for this with the conservative conclusion that asbestos is likely to be widespread at the site and requires remediation.

10 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of site information, soil sampling from nine boreholes and groundwater sampling from four monitoring wells. The site has historically been vacant or used for residential purposes prior to the construction and eventual expansion of the community hospital and Wentworthville Clinic from 1961 to the present day.

Asbestos has been encountered in the fill and on the ground surface at the site and is considered to represent a risk to human receptors.

JKE recommend that a Remediation Action Plan (RAP) be prepared for the site to outline measures to reduce the risk to human receptors at the site following completion of the development works. An Asbestos Management Plan (AMP) should also be prepared to outline control measures to be implemented during the excavation and construction phases of work.

We are of the opinion that the site can be made suitable for the proposed development via implementation of the RAP and AMP during construction works.

JKE are of the opinion that there is currently no requirement to report the contamination to the NSW EPA under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[17].

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

[17] 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)

11 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 landuse. 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

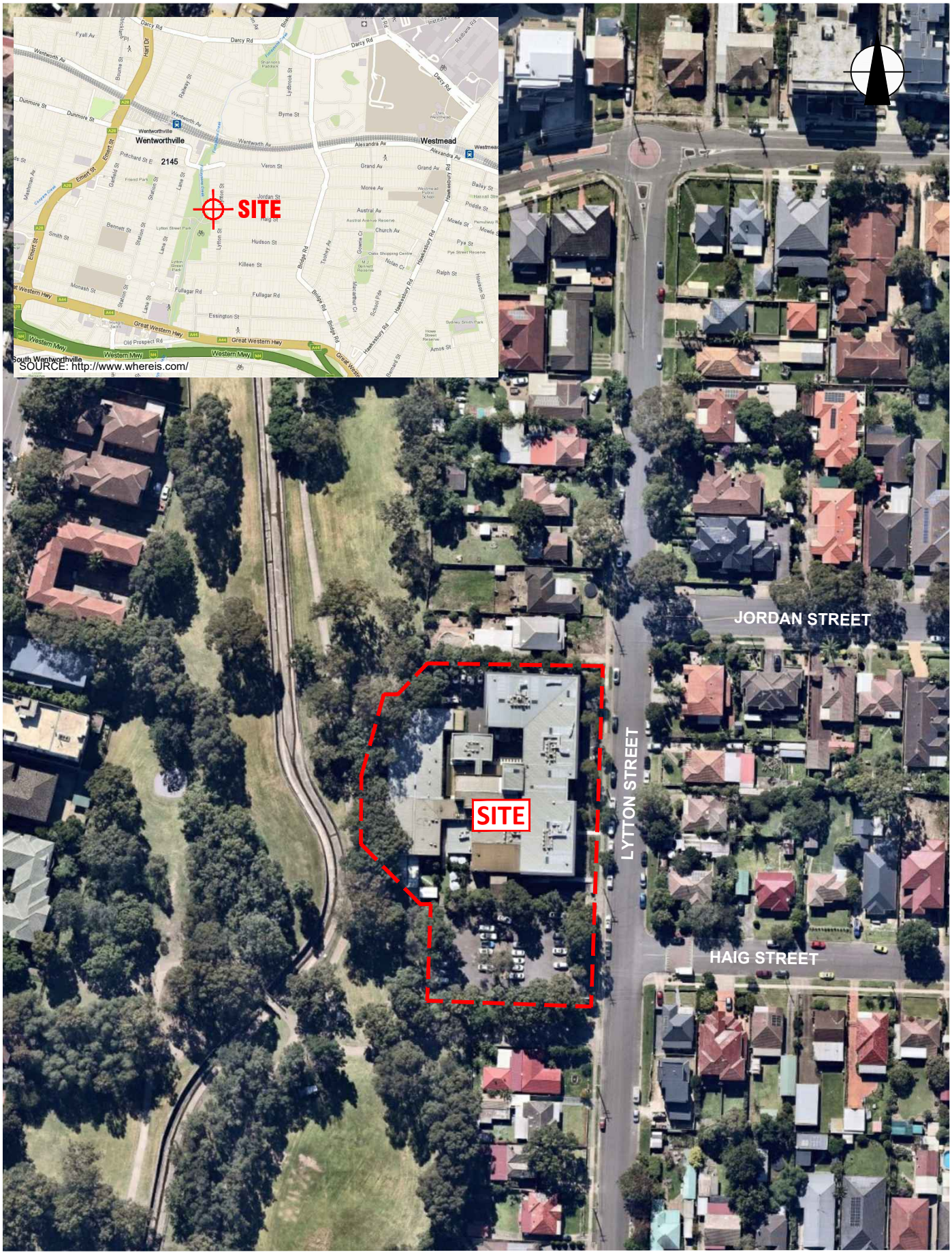
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other 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



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

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

Title: **SITE LOCATION PLAN**

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Project No: E27318PH

Figure No: 1

JKEnvironments

PLOT DATE: 26/05/2021 5:36:45 PM DWG FILE: Z:\5 EIS\5C EIS JOBS\27000'S\E27318K WENTWORTHVILLE\CAD\E27318PH.DWG

FINLAYSONS CREEK

APPROXIMATE OUTLINE OF PROPOSED THREE STORY WARD BUILDING

APPROXIMATE OUTLINE OF PROPOSED DAY PROGRAMME BUILDING

BH305 (>0.4)
BH202 (0.8)
BH203 (>0.8)
BH306 (>0.2)
BH304 (>0.2)
BH201 (1.0)
BH103/MW103 (0.2)
BH/MW302 (0.4)
BH104 (0.25)
BH308 (0.8)
BH/MW307 (1.0)
BH301 (0.3)
BH1 (0.33)
BH4 (0.8)
BH3 (0.25)
BH102 (1.3)
BH101/MW101 (0.4)
BH303 (0.2)
BH309 (0.8)
BH2 (0.3)

"NORTHSIDE WEST CLINIC"
No. 23-27
TWO STOREY
BRICK BUILDING
METAL ROOF

AREA EXCLUDED FROM INVESTIGATION

No.11
ONE STOREY
TIMBER
COTTAGE

LYTTON STREET

LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	PREVIOUS BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	PREVIOUS BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	DSI BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	DSI BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

0 4 8 12 16 20
SCALE 1:400 @A3 METRES

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

Title: **SAMPLE LOCATION PLAN**

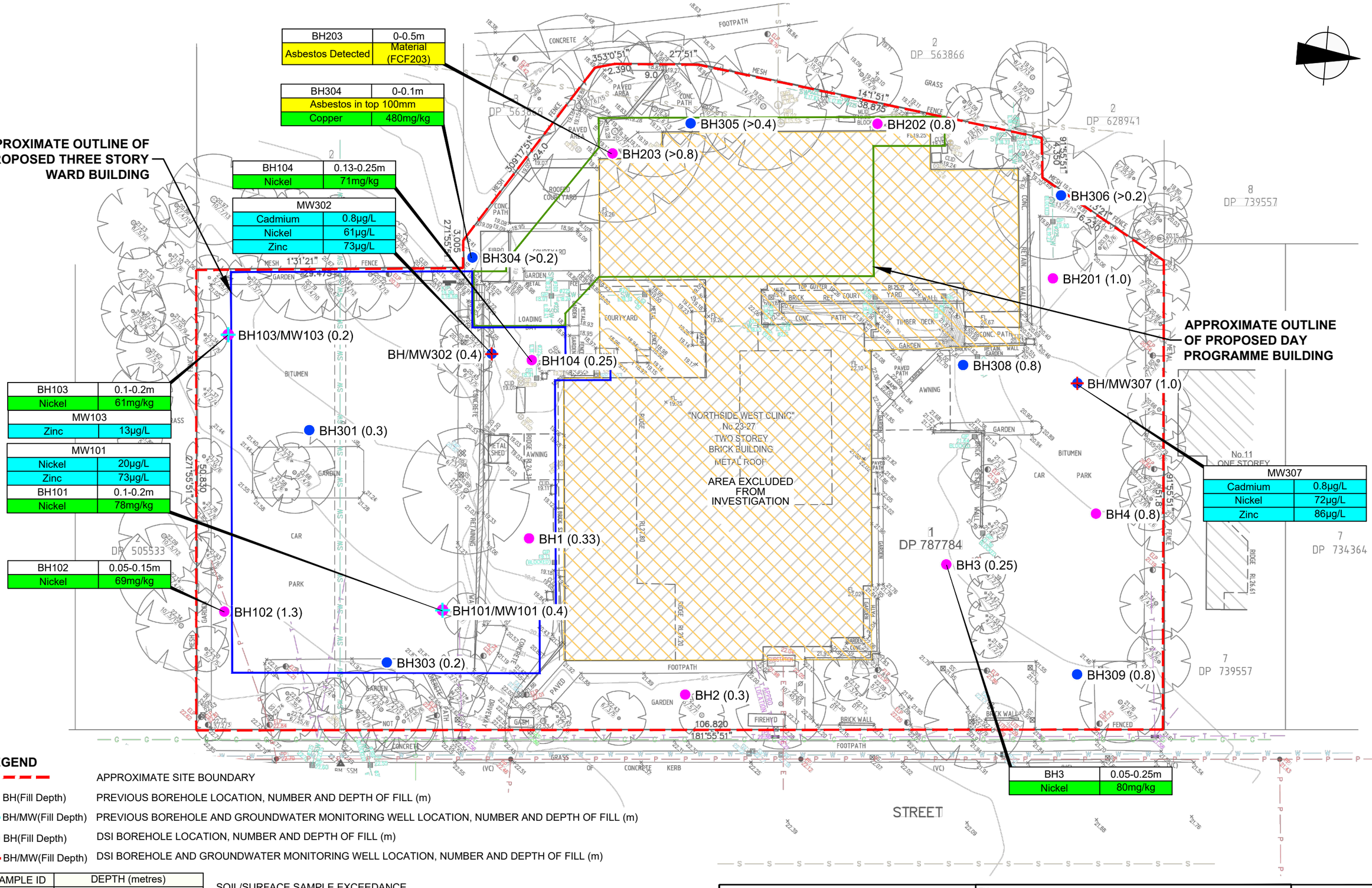
Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Project No: E27318PH

Figure No: 2

JKEnvironments

PLOT DATE: 11/08/2021 12:29:11 PM DWG FILE: Z:\5 EIS\SC EIS JOBS\27000\SIE27318K WENTWORTHVILLE\CAD\E27318PH.DWG



LEGEND

	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	PREVIOUS BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	PREVIOUS BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	DSI BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	DSI 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

0 4 8 12 16 20
SCALE 1:400 @A3 METRES

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

Title: **CONTAMINATION LOCATION PLAN**

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Project No: E27318PH

Figure No: 3

JKEnvironments

PLOT DATE: 11/08/2021 12:29:20 PM DWG FILE: Z:\5 EIS\5C EIS JOBS\27000'S\E27318K WENTWORTHVILLE\CAD\E27318PH.DWG

FINLAYSONS CREEK

APPROXIMATE OUTLINE OF PROPOSED THREE STORY WARD BUILDING

APPROXIMATE OUTLINE OF PROPOSED DAY PROGRAMME BUILDING

BH305 (>0.4)
BH202 (0.8)
BH203 (>0.8)
BH306 (>0.2)
BH304 (>0.2)
BH201 (1.0)
BH103/MW103 (0.2)
BH/MW302 (0.4)
BH104 (0.25)
BH308 (0.8)
BH/MW307 (1.0)
BH301 (0.3)
BH1 (0.33)
BH4 (0.8)
BH3 (0.25)
BH102 (1.3)
BH101/MW101 (0.4)
BH303 (0.2)
BH309 (0.8)
BH2 (0.3)

5.8
5.55
5.3
5.05

AREA EXCLUDED FROM INVESTIGATION

NORTHSIDE WEST CLINIC

No.11 ONE STOREY TIMBER COTTAGE

DP 563866
DP 628941
DP 787784
DP 739557
DP 505533
DP 734364

LYTTON STREET

LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	PREVIOUS BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	PREVIOUS BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	DSI BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	DSI BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

0 4 8 12 16 20
SCALE 1:400 @A3 METRES

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

Title: **GROUNDWATER CONTOUR PLAN**

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

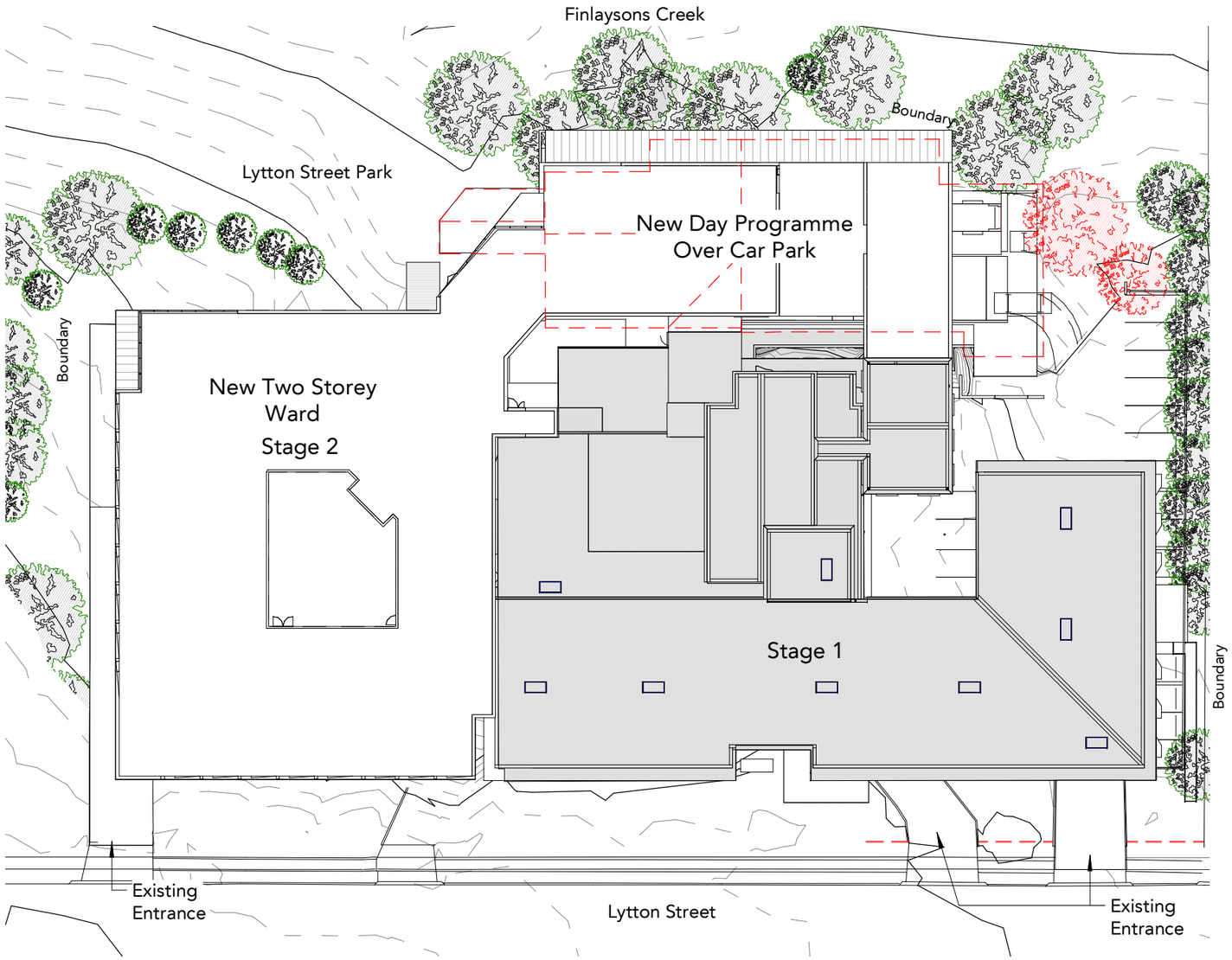
Project No: E27318PH

Figure No: 4

JKEnvironments

Appendix B: Site Information

Proposed Development Plans



1 SK Site Plan
Scale: 1 : 500

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 5 10 20
SCALE 1:500

TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2

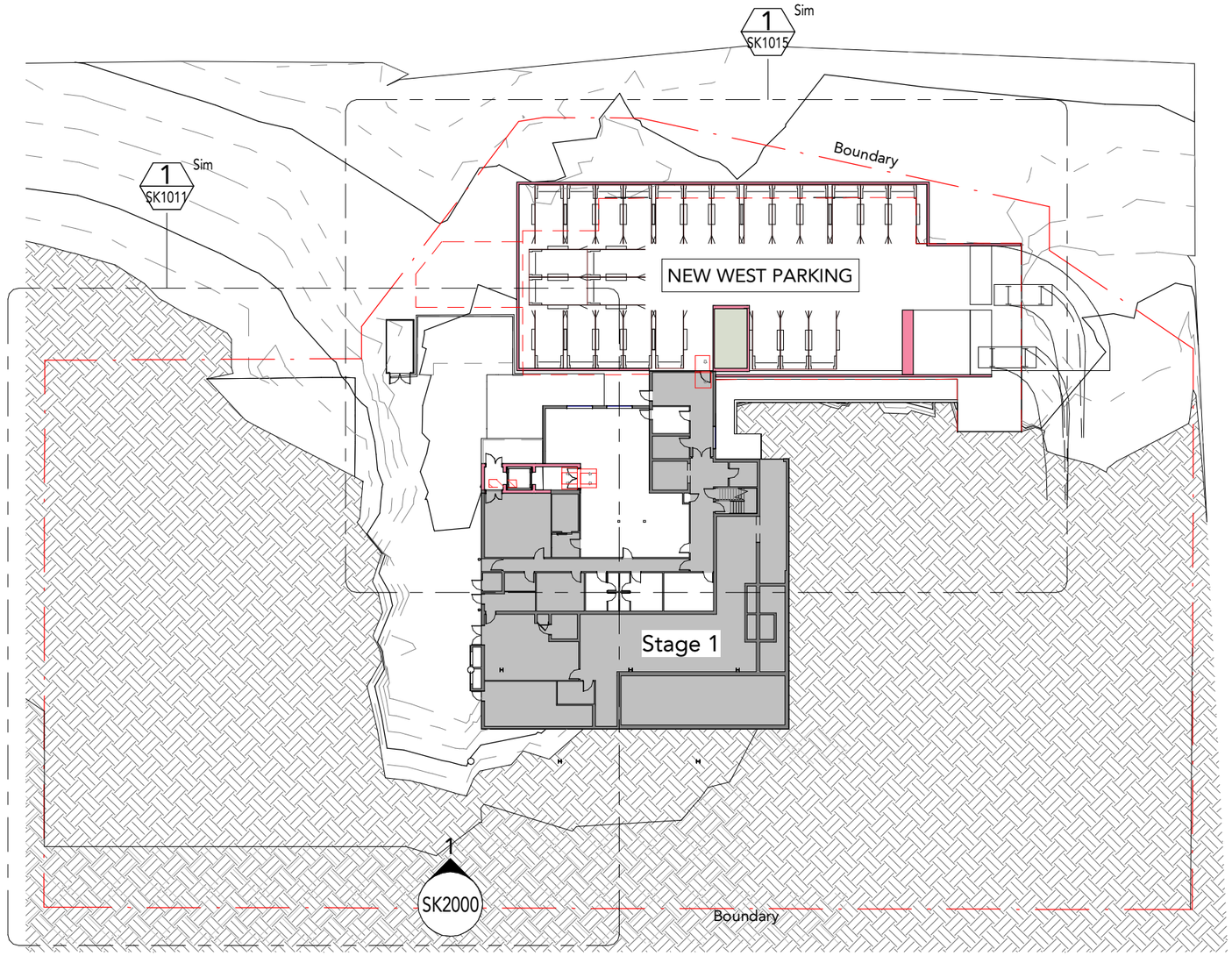
Wentworthville. NSW 2145

Title:
Site Plan

Project #:	Scale:	Drw:	Ckd:
903	1 : 500 @A3	IK	ZA

Drawing #: SK0010

Rev: P5



1 Site Plan - Lower Ground
Scale: 1 : 500

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

CLIENT SIGN OFF

Signature:

Name:

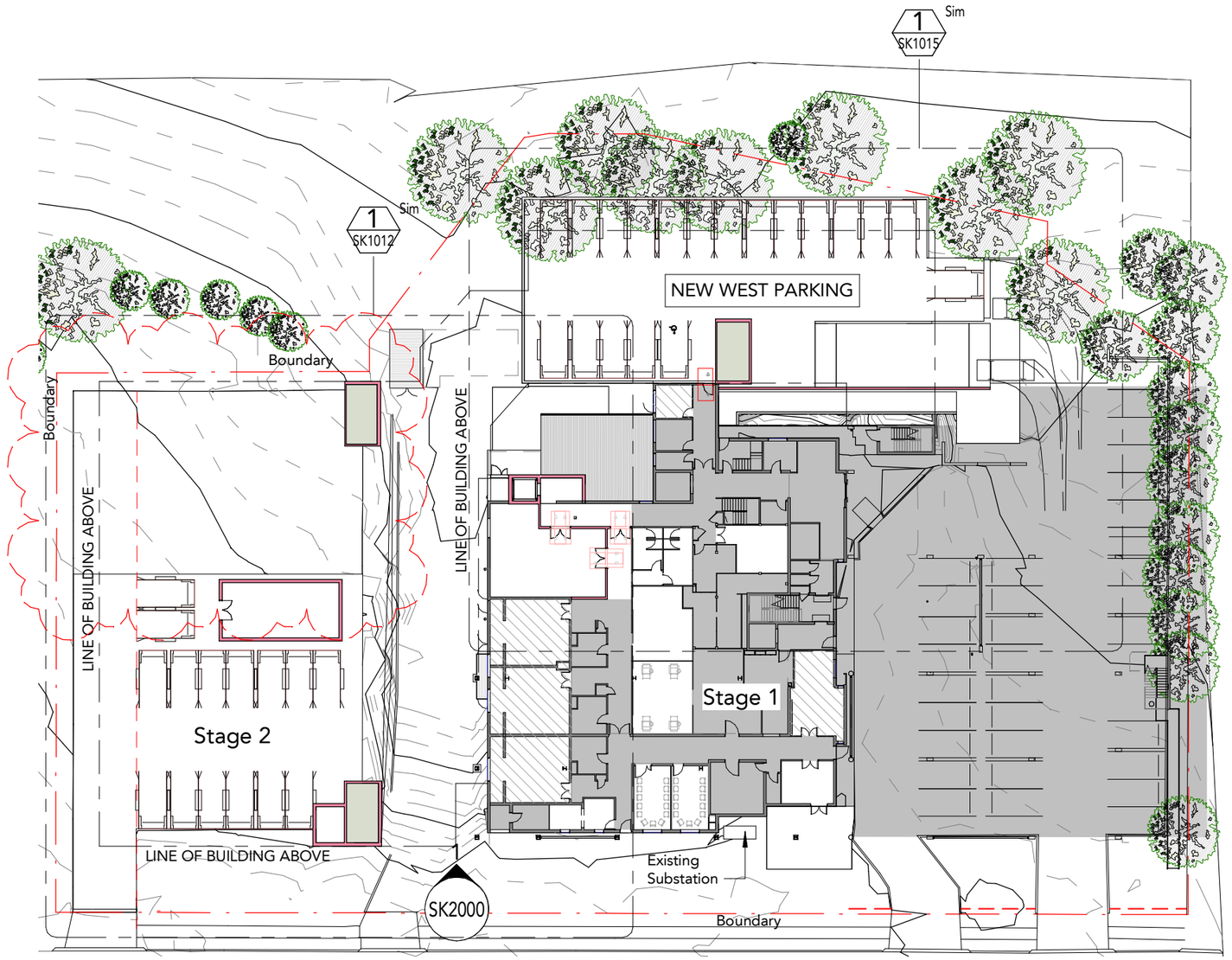
Date:

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Site Plan - Lower Ground

Project #:	Scale:	Drw:	Ckd:
903	As indicated @A3	IK	ZA

Drawing #: SK0011
Rev: P5



1 Site Plan - Ground Floor
Scale: 1 : 500

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Site Plan - Ground Floor

Project #:	Scale:	Drw:	Ckd:
903	As indicated @A3	IK	ZA

Drawing #: SK0012
Rev: P5

CLIENT SIGN OFF

Signature:

Name:

Date:

1 Site Plan - Level 1
Scale: 1 : 500

Ward Room: 41 Rooms
New Consult: 9 Rooms
GFA: 1813m²

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

CLIENT SIGN OFF

Signature:

Name:

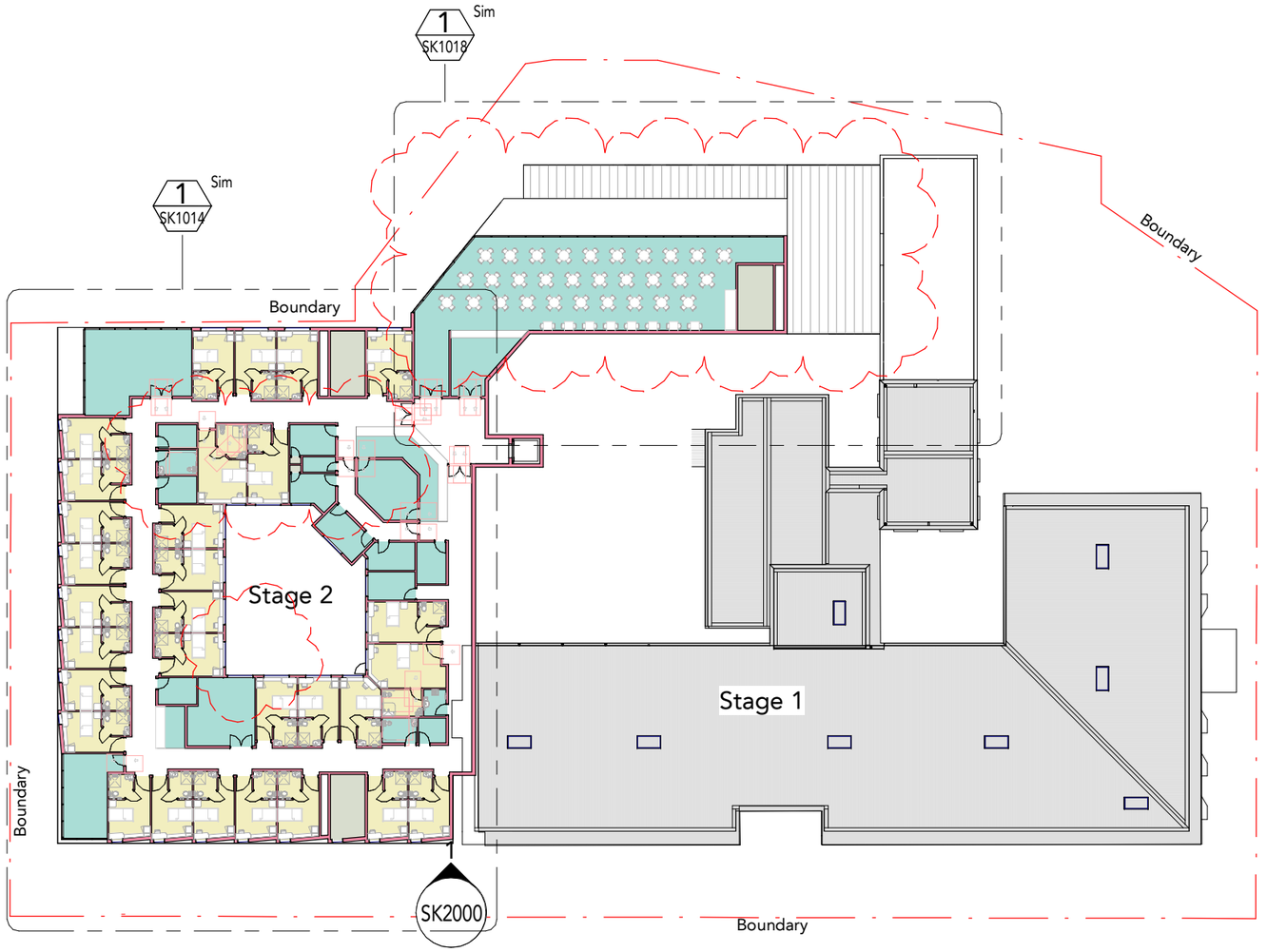
Date:

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Site Plan - Level 1

Project #:	Scale:	Drw:	Ckd:
903	1 : 500 @A3	IK	ZA

Drawing #: SK0013
Rev: P5



1 Site Plan - Level 2
Scale: 1 : 500

Ward Room: 30 Rooms
GFA: 1601m²

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

CLIENT SIGN OFF

Signature:

Name:

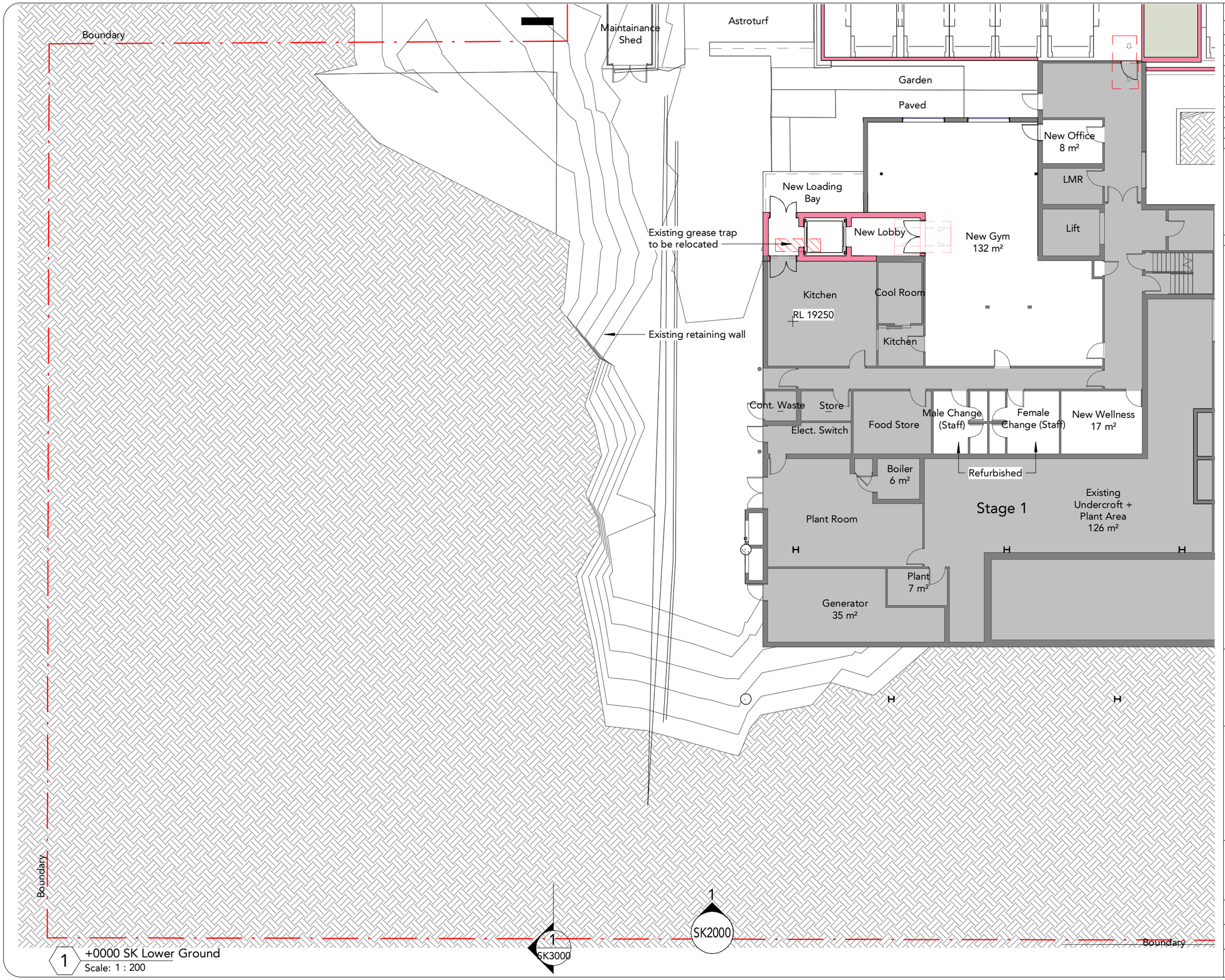
Date:

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Site Plan - Level 2

Project #:	Scale:	Drw:	Ckd:
903	1 : 500 @A3	IK	ZA

Drawing #: SK0014
Rev: P5



1 +0000 SK Lower Ground
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4 5 10
SCALE 1:200

TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2

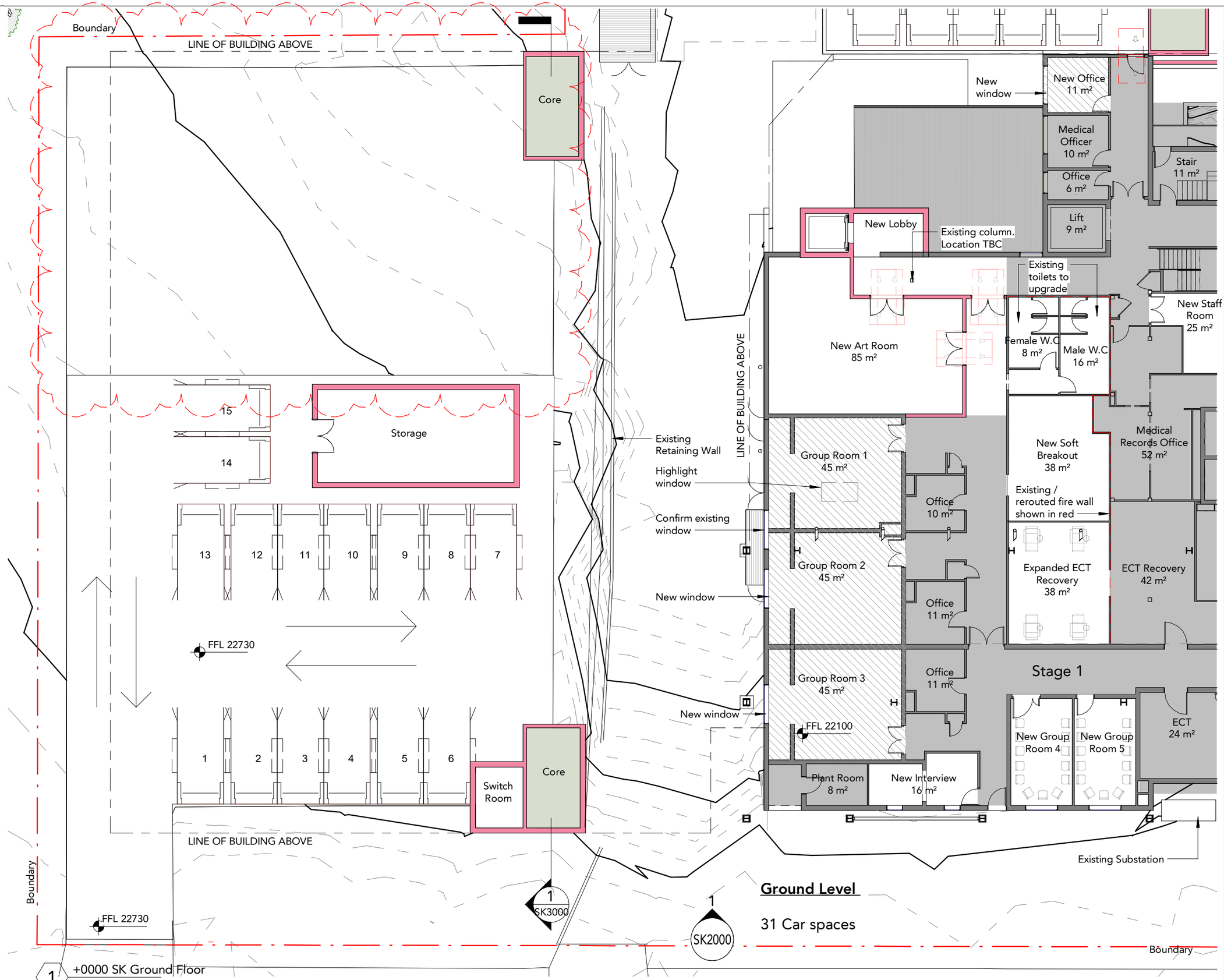
Wentworthville. NSW 2145

Title:
Lower Ground

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1011

Rev: P5



1 +0000 SK Ground Floor
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4 5 10
SCALE 1:200

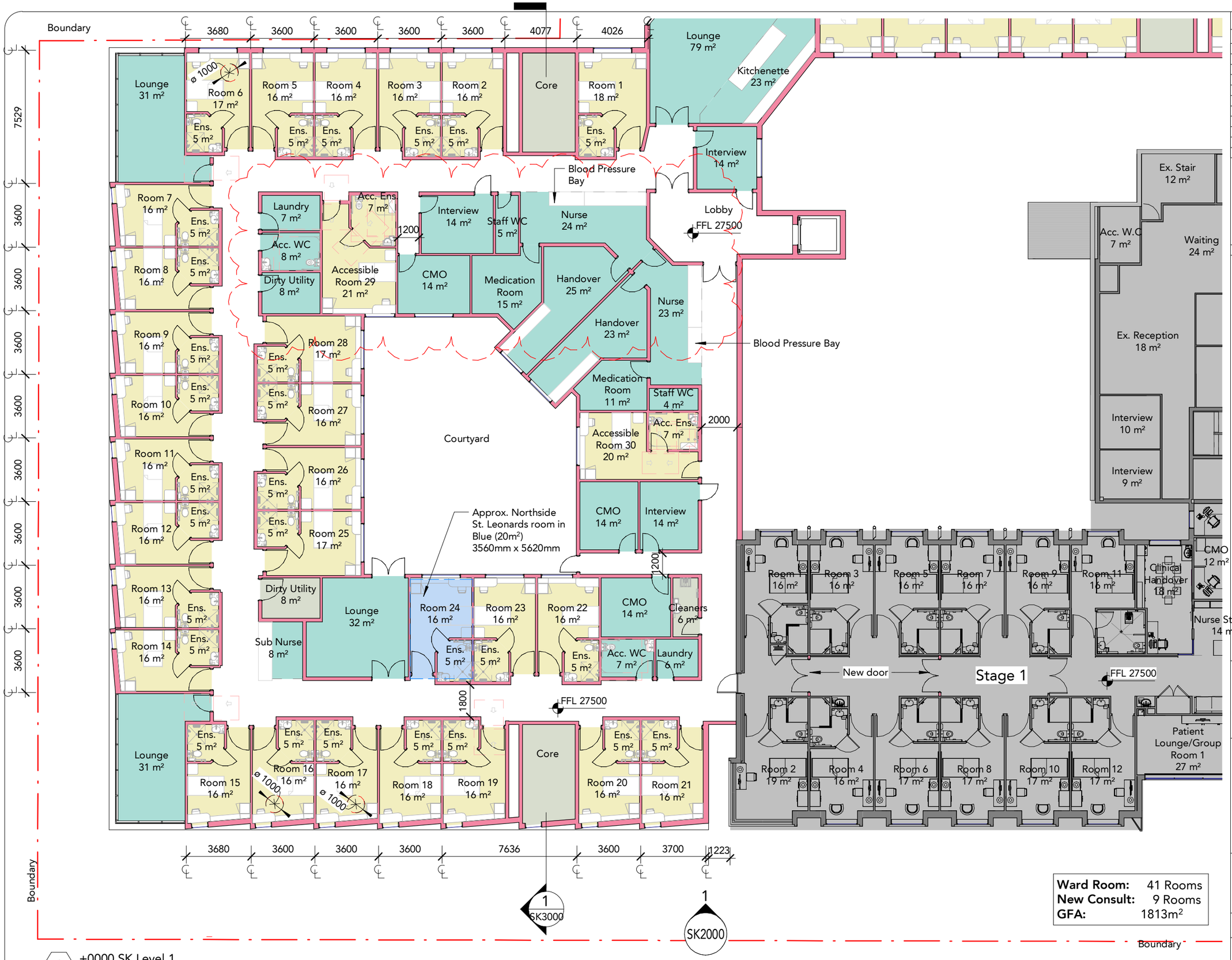
TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Ground Floor

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1012
Rev: P5



Ward Room: 41 Rooms
New Consult: 9 Rooms
GFA: 1813m²

1 +0000 SK Level 1
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4 5 10
SCALE 1:200

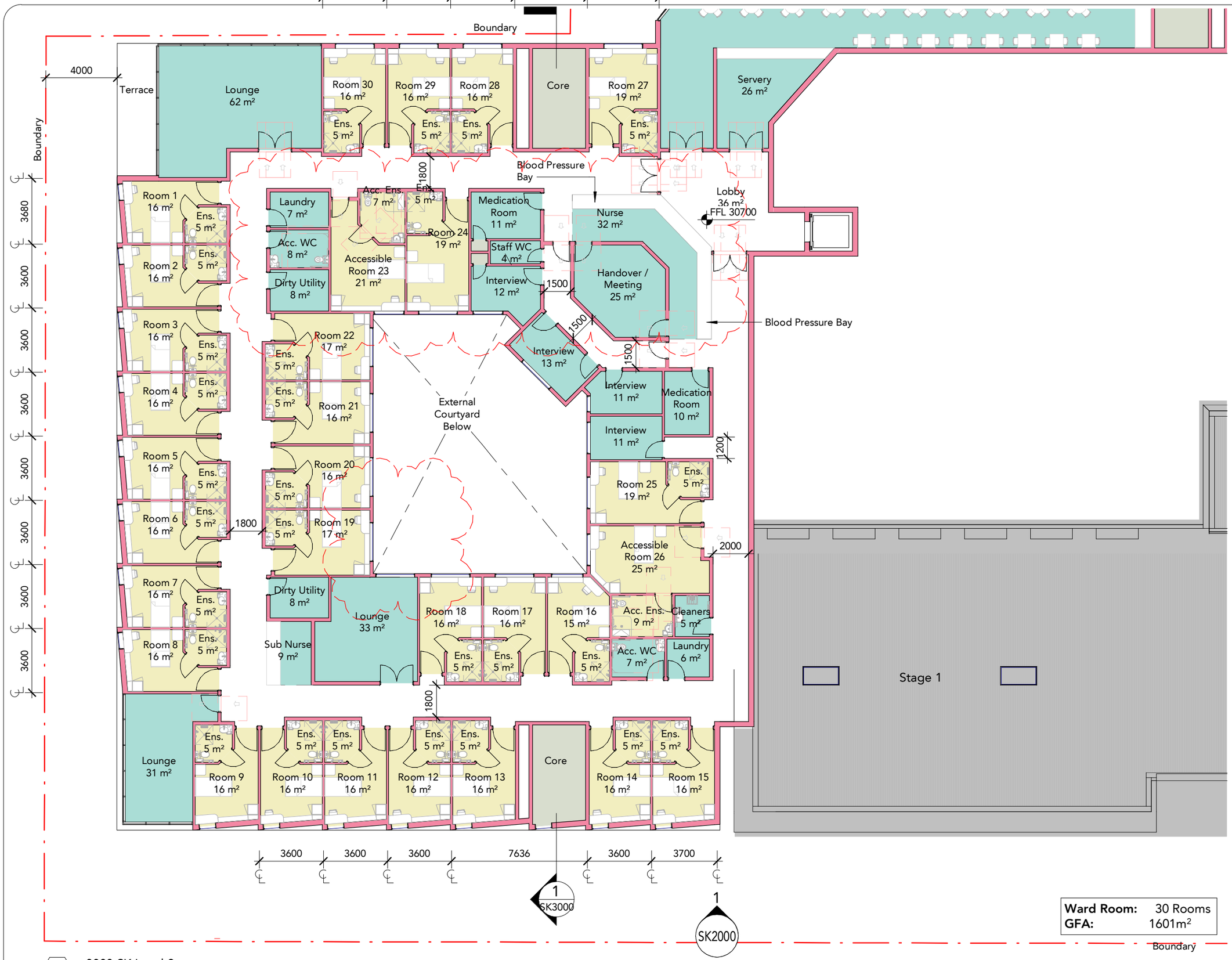
TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: +61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Level 1

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1013
Rev: P5



Ward Room: 30 Rooms
GFA: 1601m²

1 +0000 SK Level 2
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM 2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

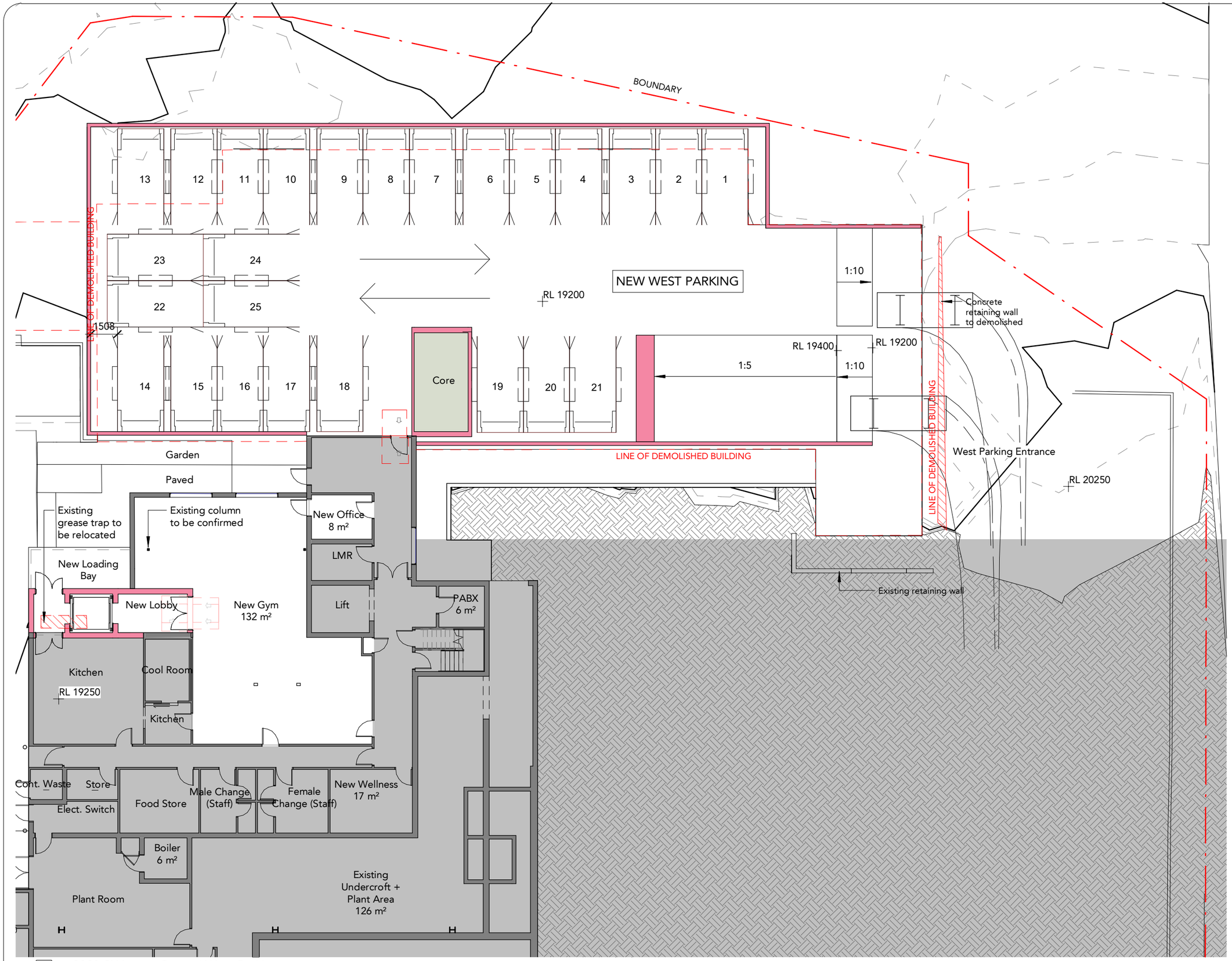
Project:
Northside West Stage 2

Wentworthville. NSW 2145

Title:
Level 2

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1014
Rev: P5



1 +0000 SK Lower Ground West Parking
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2

Wentworthville. NSW 2145

Title:
Lower Ground West Parking

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1015

Rev: P5

BOUNDARY

TREE TO BE DEMOLISHED

13 12 11 10 9 8 7 6 5 4 3 2 1

1000

6000

RL 22100

NEW WEST PARKING

LINE OF DEMOLISHED BUILDING

14 15 16 17 18

Core

RL 21900

1:10

1:5

RL 22100

LINE OF DEMOLISHED BUILDING

LINE OF DEMOLISHED BUILDING

RL 22100

EXISTING BUILDING ABOVE SHOWN IN DASHED

Existing retaining wall

EXISTING BUILDING ABOVE SHOWN IN DASHED

New Lobby

Existing column. Location TBC

Existing toilets to upgrade

Female W.C

Male W.C

New Staff Room 25 m²

New Art Room 85 m²

Stage 1

Group Room 1 45 m²

Highlight Window

New Soft Breakout 38 m²

Expanded ECT Recovery 38 m²

New Group Room 6 35 m²

EXISTING NORTH PARKING

1 +0000 SK Ground Floor West Parking

Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

NOT IN BUSINESS CASE

ERILYAN

0 1 2 3 4

SCALE 1:100

TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2

Wentworthville. NSW 2145

Title:
Ground Floor West Parking

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1016

Rev: P5

1 Level 1 - West Block
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4
SCALE 1:100

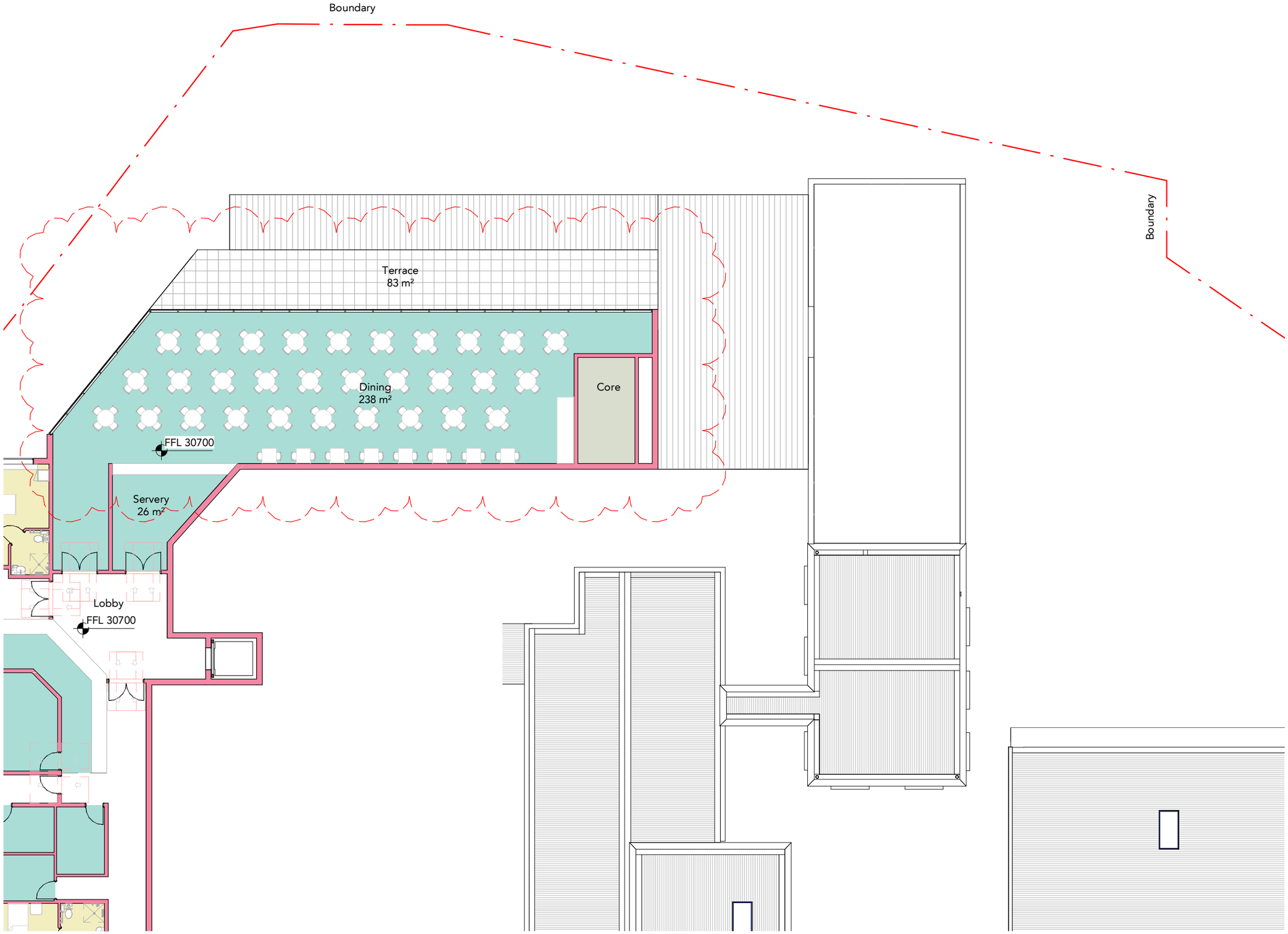
TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940
MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2
Wentworthville. NSW 2145

Title:
Level 1 West Block

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1017
Rev: P5



1 Level 2 - West Block
Scale: 1 : 200

DRAWING STATUS:

PRELIMINARY

Rev	Revision Description	Date
P1	Preliminary Sketch	20.08.20
P2	Preliminary Sketch	26.08.20
P3	Preliminary Sketch	31.08.20
P4	Preliminary Sketch	10.09.20
P5	Preliminary Sketch - VE Option	18.11.20

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
3. All dimensions to be checked on site with any discrepancies referred to team 2 architects before proceeding with work.
4. All work to be carried out in accordance with the requirements of the principal certifying authority, current ncc & australian standards.

ERILYAN

0 1 2 3 4
SCALE 1:100

TEAM2 ARCHITECTS
SYDNEY
701/1 Chandos Street,
St Leonards NSW 2065
T: + 61 2 9437 3166
E: info@team2.com.au
Reg NSW: 9940

MELBOURNE
Suite 204/9-11
Claremont Street
South Yarra VIC 3141
Reg Vic: 19340

Project:
Northside West Stage 2

Wentworthville. NSW 2145

Title:
Level 2 West Block

Project #:	Scale:	Drw:	Ckd:
903	1 : 200 @A3	IK	ZA

Drawing #: SK1018

Rev: P5

Appendix C: Laboratory 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
GSW:	General Solid Waste
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
kg/L	kilograms per litre
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
%w/w:	weight per weight
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
RSW:	Restricted Solid Waste
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
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.

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.

TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-D: 'Commercial/Industrial'

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)			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH301	0.15-0.3	F: gravelly clay	<4	<0.4	**14**	**7**	**18**	<0.1	**3**	**9**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH301	0.15-0.3	Lab duplicate	<4	<0.4	**16**	**9**	**21**	<0.1	**5**	**15**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH301	0.5-0.95	Silty clay	**10**	<0.4	**12**	**12**	**12**	<0.1	<1	**4**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH301	1.6-1.8	Siltstone	NA	NA	NA	NA	**4**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH301	2.2-2.4	Siltstone	NA	NA	NA	NA	**11**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH302	0.16-0.4	F: silty clay	<4	<0.4	**14**	**15**	**12**	<0.1	**12**	**20**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH302	0.5-0.7	Siltstone	NA	NA	NA	NA	**8**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH302	0.8-0.95	Siltstone	<4	<0.4	**2**	**8**	**5**	<0.1	<1	**8**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH302	2.5-2.8	Siltstone	NA	NA	NA	NA	**12**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH303	0-0.2	F: silty sand	<4	<0.4	**12**	**19**	**90**	<0.1	**4**	**80**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH303	0-0.2	Lab duplicate	<4	<0.4	**13**	**17**	**84**	<0.1	**4**	**71**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH303	0-0.2	F: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH303	0.5-0.7	Silty clay	NA	NA	NA	NA	**11**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH303	0.8-0.95	Silty clay	**9**	<0.4	**8**	**7**	**14**	<0.1	<1	**4**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH303	4.8-5.0	Siltstone	NA	NA	NA	NA	**19**	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH304	0-0.1	F: Silty sandy clay	**8**	**0.8**	**21**	**480**	**110**	**0.2**	**10**	**380**	<0.05	<0.5	<0.1	<0.1	<0.1	**1**	**0.1**	<0.1	<0.1	<0.1	<0.1	Not Detected
BH304	0.1-0.2	F: silty clay	**5**	<0.4	**14**	**29**	**28**	<0.1	**3**	**67**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH305	0-0.1	F: clayey silty sand	**4**	<0.4	**15**	**16**	**34**	<0.1	**9**	**70**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH305	0.1-0.3	F: silty sandy clay	<4	<0.4	**12**	**15**	**27**	**0.1**	**7**	**45**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH306	0-0.1	F: silty clayey sand	**4**	<0.4	**16**	**73**	**50**	<0.1	**13**	**78**	**0.65**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH306	0.1-0.2	F: silty clay	**5**	<0.4	**19**	**37**	**59**	<0.1	**18**	**76**	**2.8**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH306	0.1-0.2	Lab duplicate	**5**	<0.4	**20**	**35**	**58**	<0.1	**18**	**80**	**2.5**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH307	0.05-0.15	F: silty sandy clay	<4	<0.4	**73**	**29**	**4**	<0.1	**72**	**40**	**0.4**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH307	0.4-0.5	F: silty sandy clay	**5**	<0.4	**18**	**31**	**9**	<0.1	**22**	**52**	**0.1**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH308	0.05-0.15	F: silty sandy clay	**4**	<0.4	**18**	**26**	**13**	<0.1	**30**	**110**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH308	0.8-1.0	Silty clay	**5**	<0.4	**10**	**14**	**17**	<0.1	**6**	**16**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH309	0.05-0.15	F: silty sandy clay	<4	<0.4	**74**	**30**	**6**	<0.1	**73**	**46**	**0.4**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH309	0.8-1.0	Silty clay	**6**	<0.4	**22**	**10**	**14**	<0.1	**5**	**11**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP301	-	Duplicate	**13**	<0.4	**17**	**17**	**17**	<0.1	**1**	**6**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP302	-	Duplicate	<4	<0.4	**18**	**14**	**11**	<0.1	**13**	**25**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP303	-	Duplicate	**6**	<0.4	**19**	**21**	**110**	<0.1	**7**	**120**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP304	-	Duplicate	**9**	**2**	**25**	**150**	**130**	**0.2**	**16**	**440**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP304	-	Lab Duplicate	**9**	**2**	**25**	**170**	**110**	**0.2**	**12**	**440**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH304	0-0.1AQ	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH304	Surface	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
BH301	0.15-0.3	Triplicate	<4	<0.4	**19**	**10**	**29**	<0.1	**7**	**22**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			27	27	27	27	33	27	27	27	31	31	11	11	11	11	11	11	11	11	11	15
Maximum Value			13	2	74	480	130	0.2	73	440	2.8	<PQL	<PQL	<PQL	<PQL	1	0.1	<PQL	<PQL	<PQL	<PQL	Detected

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

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-D: COMMERCIAL/INDUSTRIAL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH301	0.15-0.3	F: gravelly clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1.2
BH301	0.15-0.3	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH301	0.5-0.95	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH301	1.6-1.8	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH301	2.2-2.4	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH302	0.16-0.4	F: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH302	0.5-0.7	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH302	0.8-0.95	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH302	2.5-2.8	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH303	0-0.2	F: silty sand	0m to <1m	Sand	<25	**86**	<0.2	<0.5	<1	<3	<1	0
BH303	0-0.2	Lab duplicate	0m to <1m	Sand	<25	**85**	<0.2	<0.5	<1	<3	<1	NA
BH303	0.5-0.7	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH303	0.8-0.95	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH303	4.8-5.0	Siltstone	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH304	0-0.1	F: Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH304	0.1-0.2	F: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH305	0-0.1	F: clayey silty sand	0m to <1m	Sand	**29**	<50	<0.2	<0.5	<1	<3	<1	0.8
BH305	0.1-0.3	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH306	0-0.1	F: silty clayey sand	0m to <1m	Sand	**66**	<50	<0.2	<0.5	<1	<3	<1	0
BH306	0.1-0.2	F: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH306	0.1-0.2	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	NA
BH307	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.4
BH307	0.4-0.5	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH308	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH308	0.8-1.0	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH309	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
BH309	0.8-1.0	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
SDUP301	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	-
SDUP302	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	-
SDUP303	-	Duplicate	0m to <1m	Sand	<25	**51**	<0.2	<0.5	<1	<1	<1	-
SDUP304	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
BH304	Surface	FCF			NA	NA	NA	NA	NA	NA	NA	-
Total Number of Samples					31	31	31	31	31	31	31	24
Maximum Value					66	86	<PQL	<PQL	<PQL	<PQL	<PQL	1.2

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
BH301	0.15-0.3	F: gravelly clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH301	0.15-0.3	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH301	0.5-0.95	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH301	1.6-1.8	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH301	2.2-2.4	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH302	0.16-0.4	F: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH302	0.5-0.7	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH302	0.8-0.95	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH302	2.5-2.8	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH303	0-0.2	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH303	0-0.2	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH303	0.5-0.7	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH303	0.8-0.95	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH303	4.8-5.0	Siltstone	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH304	0-0.1	F: Silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH304	0.1-0.2	F: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH305	0-0.1	F: clayey silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH305	0.1-0.3	F: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH306	0-0.1	F: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH306	0.1-0.2	F: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH306	0.1-0.2	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH307	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH307	0.4-0.5	F: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH308	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH308	0.8-1.0	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH309	0.05-0.15	F: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH309	0.8-1.0	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDUP301	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDUP302	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDUP303	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDUP304	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH304	Surface	FCF			NA	NA	NA	NA	NA	NA	NA

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			**COMMERCIAL/INDUSTRIAL**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH301	0.15-0.3	Fine	<25	<50	<100	<100
BH301	0.15-0.3	Fine	<25	<50	<100	<100
BH301	0.5-0.95	Fine	<25	<50	<100	<100
BH301	1.6-1.8	Fine	<25	<50	<100	<100
BH301	2.2-2.4	Fine	<25	<50	<100	<100
BH302	0.16-0.4	Fine	<25	<50	<100	<100
BH302	0.5-0.7	Fine	<25	<50	<100	<100
BH302	0.8-0.95	Fine	<25	<50	<100	<100
BH302	2.5-2.8	Fine	<25	<50	<100	<100
BH303	0-0.2	Coarse	<25	**86**	**680**	**250**
BH303	0-0.2	Coarse	<25	**85**	**720**	**300**
BH303	0.5-0.7	Fine	<25	<50	<100	<100
BH303	0.8-0.95	Fine	<25	<50	<100	<100
BH303	4.8-5.0	Fine	<25	<50	<100	<100
BH304	0-0.1	Fine	<25	<50	**210**	**110**
BH304	0.1-0.2	Fine	<25	<50	<100	<100
BH305	0-0.1	Coarse	**29**	<50	<100	<100
BH305	0.1-0.3	Fine	<25	<50	**520**	<100
BH306	0-0.1	Coarse	**66**	<50	**300**	<100
BH306	0.1-0.2	Fine	<25	<50	<100	<100
BH306	0.1-0.2	Fine	<25	<50	<100	<100
BH307	0.05-0.15	Fine	<25	<50	<100	**120**
BH307	0.4-0.5	Fine	<25	<50	<100	<100
BH308	0.05-0.15	Fine	<25	<50	<100	<100
BH308	0.8-1.0	Fine	<25	<50	<100	<100
BH309	0.05-0.15	Fine	<25	<50	<100	**230**
BH309	0.8-1.0	Fine	<25	<50	<100	<100
SDUP301	-	Fine	<25	<50	<100	<100
SDUP302	-	Fine	<25	<50	<100	<100
SDUP303	-	Coarse	<25	**51**	**390**	**230**
SDUP304	-	Fine	<25	<50	**360**	**190**
Total Number of Samples			31	31	31	31
Maximum Value			66	86	720	300

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)
BH301	0.15-0.3	Fine	800	1000	5000	10000
BH301	0.15-0.3	Fine	800	1000	5000	10000
BH301	0.5-0.95	Fine	800	1000	5000	10000
BH301	1.6-1.8	Fine	800	1000	5000	10000
BH301	2.2-2.4	Fine	800	1000	5000	10000
BH302	0.16-0.4	Fine	800	1000	5000	10000
BH302	0.5-0.7	Fine	800	1000	5000	10000
BH302	0.8-0.95	Fine	800	1000	5000	10000
BH302	2.5-2.8	Fine	800	1000	5000	10000
BH303	0-0.2	Coarse	700	1000	3500	10000
BH303	0-0.2	Coarse	700	1000	3500	10000
BH303	0.5-0.7	Fine	800	1000	5000	10000
BH303	0.8-0.95	Fine	800	1000	5000	10000
BH303	4.8-5.0	Fine	800	1000	5000	10000
BH304	0-0.1	Fine	800	1000	5000	10000
BH304	0.1-0.2	Fine	800	1000	5000	10000
BH305	0-0.1	Coarse	700	1000	3500	10000
BH305	0.1-0.3	Fine	800	1000	5000	10000
BH306	0-0.1	Coarse	700	1000	3500	10000
BH306	0.1-0.2	Fine	800	1000	5000	10000
BH306	0.1-0.2	Fine	800	1000	5000	10000
BH307	0.05-0.15	Fine	800	1000	5000	10000
BH307	0.4-0.5	Fine	800	1000	5000	10000
BH308	0.05-0.15	Fine	800	1000	5000	10000
BH308	0.8-1.0	Fine	800	1000	5000	10000
BH309	0.05-0.15	Fine	800	1000	5000	10000
BH309	0.8-1.0	Fine	800	1000	5000	10000
SDUP301	-	Fine	800	1000	5000	10000
SDUP302	-	Fine	800	1000	5000	10000
SDUP303	-	Coarse	700	1000	3500	10000
SDUP304	-	Fine	800	1000	5000	10000

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		26,000	20,000	27,000	38,000	430	99,000	27,000	81,000	11,000	
Site Use		**COMMERCIAL/INDUSTRIAL - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH301	0.15-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1.2**
BH301	0.15-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH301	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH301	1.6-1.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH301	2.2-2.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH302	0.16-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH302	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH302	0.8-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH302	2.5-2.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH303	0-0.2	<25	**86**	**680**	**250**	<0.2	<0.5	<1	<3	<1	0
BH303	0-0.2	<25	**85**	**720**	**300**	<0.2	<0.5	<1	<3	<1	NA
BH303	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH303	0.8-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH303	4.8-5.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH304	0-0.1	<25	<50	**210**	**110**	<0.2	<0.5	<1	<3	<1	0
BH304	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH305	0-0.1	**29**	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.8**
BH305	0.1-0.3	<25	<50	**520**	<100	<0.2	<0.5	<1	<3	<1	0
BH306	0-0.1	**66**	<50	**300**	<100	<0.2	<0.5	<1	<3	<1	0
BH306	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH306	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH307	0.05-0.15	<25	<50	<100	**120**	<0.2	<0.5	<1	<3	<1	**0.4**
BH307	0.4-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH308	0.05-0.15	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH308	0.8-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH309	0.05-0.15	<25	<50	<100	**230**	<0.2	<0.5	<1	<3	<1	**0.1**
BH309	0.8-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
SDUP301	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	-
SDUP302	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	-
SDUP303	-	<25	**51**	**390**	**230**	<0.2	<0.5	<1	<1	<1	-
SDUP304	-	<25	<50	**360**	**190**	<0.2	<0.5	<1	<1	<1	-
BH304	Surface	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
Total Number of Samples		31	31	31	31	31	31	31	31	31	24
Maximum Value		66	86	720	300	<PQL	<PQL	<PQL	<PQL	<PQL	1.2

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

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HIL-D:Commercial/Industrial

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**					**0.05**			**0.001**			**0.001**											**0.05**	**0.001**
6/07/2021	BH301	0.15-0.3	No	2	1,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH301	0.15-0.3	668.88	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
6/07/2021	BH302	0.16-0.4	No	5	4,680	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH302	0.16-0.4	489.89	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
6/07/2021	BH303	0-0.2	No	10	9,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH303	0-0.2	533.35	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
6/07/2021	BH304	0-0.1	Yes	10	10,360	11.0	1.65	0.0159	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH304	0-0.1	542	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
6/07/2021	BH304	0.1-0.2	NA	9	8,190	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH304	0.1-0.2	448.41	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
6/07/2021	BH305	0-0.1	No	10	11,210	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH305	0-0.1	739.71	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
6/07/2021	BH305	0.1-0.4	NA	7	6,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH305	0.1-0.3	758.59	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
6/07/2021	BH306	0-0.1	No	10	10,830	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH306	0-0.1	624.08	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
6/07/2021	BH306	0.1-0.2	NA	8	7,220	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH306	0.1-0.2	813.42	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
6/07/2021	BH307	0.05-0.15	No	10	12,520	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH307	0.05-0.15	959.01	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
6/07/2021	BH308	0.05-0.8	No	10	10,130	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH307	0.4-0.5	390.29	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
6/07/2021	BH309	0.05-0.8	No	10	10,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	273765	BH308	0.05-0.15	867.44	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	273765	BH309	0.05-0.15	1019.63	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	273765	BH304	0-0.1AQ	46.52	A)Chrysotile asbestos detected: Amosite asbestos detected: B)No asbestos detected: Organic fibres detected	No asbestos detected	NA	NA	NA	NA	NA	NA
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	273765	BH304	Surface	11.83	Chrysotile asbestos detected: Amosite asbestos detected	[NT]	NA	NA	NA	NA	NA	NA
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

JKEnvironments

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				COMMERCIAL/INDUSTRIAL																	
							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) plus napthalene	>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**																				
BH301	0.15-0.3	F: gravelly clay	Fine	NA	NA	NA	<4	**14**	**7**	**18**	**3**	**9**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH301	0.15-0.3	Lab duplicate	Fine	NA	NA	NA	<4	**16**	**9**	**21**	**5**	**15**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH301	0.5-0.95	Silty clay	Fine	NA	NA	NA	**10**	**12**	**12**	**12**	<1	**4**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH301	1.6-1.8	Siltstone	Fine	NA	NA	NA	NA	NA	NA	**4**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH301	2.2-2.4	Siltstone	Fine	NA	NA	NA	NA	NA	NA	**11**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH302	0.16-0.4	F: silty clay	Fine	NA	NA	NA	<4	**14**	**15**	**12**	**12**	**20**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH302	0.5-0.7	Siltstone	Fine	NA	NA	NA	NA	NA	NA	**8**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH302	0.8-0.95	Siltstone	Fine	NA	NA	NA	<4	**2**	**8**	**5**	<1	**8**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH302	2.5-2.8	Siltstone	Fine	NA	NA	NA	NA	NA	NA	**12**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH303	0-0.2	F: silty sand	Coarse	NA	NA	NA	<4	**12**	**19**	**90**	**4**	**80**	<1	<0.1	<25	**86**	**680**	**250**	<0.2	<0.5	<1	<3	<0.05
BH303	0-0.2	Lab duplicate	Coarse	NA	NA	NA	<4	**13**	**17**	**84**	**4**	**71**	<1	<0.1	<25	**85**	**720**	**300**	<0.2	<0.5	<1	<3	<0.05
BH303	0.5-0.7	Silty clay	Fine	NA	NA	NA	NA	NA	NA	**11**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH303	0.8-0.95	Silty clay	Fine	NA	NA	NA	**9**	**8**	**7**	**14**	<1	**4**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH303	4.8-5.0	Siltstone	Fine	NA	NA	NA	NA	NA	NA	**19**	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH304	0-0.1	F: Silty sandy clay	Fine	**7.6**	**98**	**21**	**8**	**21**	480	**110**	**10**	**380**	<1	<0.1	<25	<50	**210**	**110**	<0.2	<0.5	<1	<3	<0.05
BH304	0.1-0.2	F: silty clay	Fine	NA	NA	NA	**5**	**14**	**29**	**28**	**3**	**67**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH305	0-0.1	F: clayey silty sand	Coarse	NA	NA	NA	**4**	**15**	**16**	**34**	**9**	**70**	<1	<0.1	**29**	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH305	0.1-0.3	F: silty sandy clay	Fine	NA	NA	NA	<4	**12**	**15**	**27**	**7**	**45**	<1	NA	<25	<50	**520**	<100	<0.2	<0.5	<1	<3	<0.05
BH306	0-0.1	F: silty clayey sand	Coarse	NA	NA	NA	**4**	**16**	**73**	**50**	**13**	**78**	<1	<0.1	**66**	<50	**300**	<100	<0.2	<0.5	<1	<3	**0.09**
BH306	0.1-0.2	F: silty clay	Fine	NA	NA	NA	**5**	**19**	**37**	**59**	**18**	**76**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.3**
BH306	0.1-0.2	Lab duplicate	Fine	NA	NA	NA	**5**	**20**	**35**	**58**	**18**	**80**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.2**
BH307	0.05-0.15	F: silty sandy clay	Fine	**10.3**	**17**	**8**	<4	**73**	**29**	**4**	**72**	**40**	<1	<0.1	<25	<50	<100	**120**	<0.2	<0.5	<1	<3	<0.05
BH307	0.4-0.5	F: silty sandy clay	Fine	NA	NA	NA	**5**	**18**	**31**	**9**	**22**	**52**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH308	0.05-0.15	F: silty sandy clay	Fine	NA	NA	NA	**4**	**18**	**26**	**13**	**30**	**110**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH308	0.8-1.0	Silty clay	Fine	NA	NA	NA	**5**	**10**	**14**	**17**	**6**	**16**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH309	0.05-0.15	F: silty sandy clay	Fine	**10**	**12**	**9**	<4	**74**	**30**	**6**	**73**	**46**	<1	<0.1	<25	<50	<100	**230**	<0.2	<0.5	<1	<3	<0.05
BH309	0.8-1.0	Silty clay	Fine	NA	NA	NA	**6**	**22**	**10**	**14**	**5**	**11**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP301	-	Duplicate	Fine	NA	NA	NA	**13**	**17**	**17**	**17**	**1**	**6**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP302	-	Duplicate	Fine	NA	NA	NA	<4	**18**	**14**	**11**	**13**	**25**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP303	-	Duplicate	Coarse	NA	NA	NA	**6**	**19**	**21**	**110**	**7**	**120**	<1	NA	<25	**51**	**390**	**230**	<0.2	<0.5	<1	<1	<0.05
SDUP304	-	Duplicate	Fine	**7.6**	**98**	**21**	**9**	**25**	**150**	**130**	**16**	**440**	<1	NA	<25	<50	**360**	**190**	<0.2	<0.5	<1	<1	<0.05
SDUP304	-	Lab Duplicate	Fine	**7.6**	**98**	**21**	**9**	**25**	**170**	**110**	**12**	**440**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH301	0.15-0.3	Triplicate	Fine	NA	NA	NA	<4	**19**	**10**	**29**	**7**	**22**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				5	5	5	27	27	27	33	27	27	31	11	31	31	31	31	31	31	31	31	31
Maximum Value				10.3	98	21	13	74	480	130	73	440	<PQL	<PQL	66	86	720	300	<PQL	<PQL	<PQL	<PQL	0.3

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) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH301	0.15-0.3	F: gravelly clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH301	0.15-0.3	Lab duplicate	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH301	0.5-0.95	Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH301	1.6-1.8	Siltstone	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH301	2.2-2.4	Siltstone	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH302	0.16-0.4	F: silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH302	0.5-0.7	Siltstone	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH302	0.8-0.95	Siltstone	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH302	2.5-2.8	Siltstone	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH303	0-0.2	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH303	0-0.2	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH303	0.5-0.7	Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH303	0.8-0.95	Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH303	4.8-5.0	Siltstone	Fine	NA	NA	NA	--	--	--	2000	--	--	370	--	215	170	2500	6600	95	135	185	95	72
BH304	0-0.1	F: Silty sandy clay	Fine	7.6	98	21	160	670	370	2000	960	2100	370	640	215	170	2500	6600	95	135	185	95	72
BH304	0.1-0.2	F: silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH305	0-0.1	F: clayey silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH305	0.1-0.3	F: silty sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH306	0-0.1	F: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH306	0.1-0.2	F: silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH306	0.1-0.2	Lab duplicate	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH307	0.05-0.15	F: silty sandy clay	Fine	10.3	17	8	160	670	330	2000	460	1200	370	640	215	170	2500	6600	95	135	185	95	72
BH307	0.4-0.5	F: silty sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH308	0.05-0.15	F: silty sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH308	0.8-1.0	Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH309	0.05-0.15	F: silty sandy clay	Fine	10	12	9	160	670	330	2000	460	1200	370	640	215	170	2500	6600	95	135	185	95	72
BH309	0.8-1.0	Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
SDUP301	-	Duplicate	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
SDUP302	-	Duplicate	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
SDUP303	-	Duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
SDUP304	-	Duplicate	Fine	7.6	98	21	160	670	370	2000	960	2100	370	--	215	170	2500	6600	95	135	185	95	72
SDUP304	-	Lab Duplicate	Fine	7.6	98	21	160	670	370	2000	960	2100	--	--	--	--	--	--	--	--	--	--	--
BH301	0.15-0.3	Triplicate	Fine	NA	NA	NA	160	320	110	2000	60	230	--	--	--	--	--	--	--	--	--	--	--

TABLE S7
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total	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	PCBs	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**																									
BH301	0.15-0.3	F: gravelly clay	<4	<0.4	**14**	**7**	**18**	<0.1	**3**	**9**	<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
BH301	0.15-0.3	Lab duplicate	<4	<0.4	**16**	**9**	**21**	<0.1	**5**	**15**	<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
BH301	0.5-0.95	Silty clay	**10**	<0.4	**12**	**12**	**12**	<0.1	<1	**4**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH301	1.6-1.8	Siltstone	NA	NA	NA	NA	**4**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH301	2.2-2.4	Siltstone	NA	NA	NA	NA	**11**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH302	0.16-0.4	F: silty clay	<4	<0.4	**14**	**15**	**12**	<0.1	**12**	**20**	<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
BH302	0.5-0.7	Siltstone	NA	NA	NA	NA	**8**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH302	0.8-0.95	Siltstone	<4	<0.4	**2**	**8**	**5**	<0.1	<1	**8**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH302	2.5-2.8	Siltstone	NA	NA	NA	NA	**12**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH303	0-0.2	F: silty sand	<4	<0.4	**12**	**19**	**90**	<0.1	**4**	**80**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**390**	**420**	**810**	<0.2	<0.5	<1	<3	NA
BH303	0-0.2	Lab duplicate	<4	<0.4	**13**	**17**	**84**	<0.1	**4**	**71**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**410**	**450**	**860**	<0.2	<0.5	<1	<3	NA
BH303	0-0.2	F: silty sand	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
BH303	0.5-0.7	Silty clay	NA	NA	NA	NA	**11**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH303	0.8-0.95	Silty clay	**9**	<0.4	**8**	**7**	**14**	<0.1	<1	**4**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH303	4.8-5.0	Siltstone	NA	NA	NA	NA	**19**	NA	NA	NA	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH304	0-0.1	F: Silty sandy clay	**8**	**0.8**	**21**	**480**	**110**	**0.2**	**10**	**380**	<0.05	<0.05	<0.1	<0.1	<0.1	**1.3**	<0.1	<25	<50	<100	**190**	**190**	<0.2	<0.5	<1	<3	Not Detected
BH304	0.1-0.2	F: silty clay	**5**	<0.4	**14**	**29**	**28**	<0.1	**3**	**67**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH305	0-0.1	F: clayey silty sand	**4**	<0.4	**15**	**16**	**34**	<0.1	**9**	**70**	<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
BH305	0.1-0.3	F: silty sandy clay	<4	<0.4	**12**	**15**	**27**	**0.1**	**7**	**45**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	**52**	**450**	<100	**502**	<0.2	<0.5	<1	<3	Not Detected
BH306	0-0.1	F: silty clayey sand	**4**	<0.4	**16**	**73**	**50**	<0.1	**13**	**78**	**0.65**	**0.09**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**180**	**150**	**330**	<0.2	<0.5	<1	<3	Not Detected
BH306	0.1-0.2	F: silty clay	**5**	<0.4	**19**	**37**	**59**	<0.1	**18**	**76**	**2.8**	**0.3**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH306	0.1-0.2	Lab duplicate	**5**	<0.4	**20**	**35**	**58**	<0.1	**18**	**80**	**2.5**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH307	0.05-0.15	F: silty sandy clay	<4	<0.4	**73**	**29**	**4**	<0.1	**72**	**40**	**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
BH307	0.4-0.5	F: silty sandy clay	**5**	<0.4	**18**	**31**	**9**	<0.1	**22**	**52**	**0.1**	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH308	0.05-0.15	F: silty sandy clay	**4**	<0.4	**18**	**26**	**13**	<0.1	**30**	**110**	<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
BH308	0.8-1.0	Silty clay	**5**	<0.4	**10**	**14**	**17**	<0.1	**6**	**16**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH309	0.05-0.15	F: silty sandy clay	<4	<0.4	**74**	**30**	**6**	<0.1	**73**	**46**	**0.4**	<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
BH309	0.8-1.0	Silty clay	**6**	<0.4	**22**	**10**	**14**	<0.1	**5**	**11**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP301	-	Duplicate	**13**	<0.4	**17**	**17**	**17**	<0.1	**1**	**6**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP302	-	Duplicate	<4	<0.4	**18**	**14**	**11**	<0.1	**13**	**25**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP303	-	Duplicate	**6**	<0.4	**19**	**21**	**110**	<0.1	**7**	**120**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**210**	**300**	**510**	<0.2	<0.5	<1	<1	NA
SDUP304	-	Duplicate	**9**	**2**	**25**	**150**	**130**	**0.2**	**16**	**440**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**140**	**300**	**440**	<0.2	<0.5	<1	<1	NA
SDUP304	-	Lab Duplicate	**9**	**2**	**25**	**170**	**110**	**0.2**	**12**	**440**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH304	0-0.1AQ	FCF	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
BH304	Surface	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
BH301	0.15-0.3	Triplicate	<4	<0.4	**19**	**10**	**29**	<0.1	**7**	**22**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			27	27	27	27	33	27	27	27	31	31	11	11	11	11	11	31	31	31	31	31	31	31	31	31	15
Maximum Value			13	2	74	480	130	0.2	73	440	2.8	0.3	<PQL	<PQL	<PQL	1.3	<PQL	<PQL	52	450	450	860	<PQL	<PQL	<PQL	<PQL	Detected

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

TABLE S8
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**		
BH304	0-0.1	F: Silty sandy clay	<0.03	NA
BH307	0.05-0.15	F: silty sandy clay	NA	**0.07**
BH307	0.05-0.15	Lab duplicate	NA	**0.07**
BH309	0.05-0.15	F: silty sandy clay	NA	**0.06**
Total Number of samples			1	3
Maximum Value			<PQL	0.07

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

TABLE S9
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	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	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*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*	*0.05*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
	PQL Envirolab VIC		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1.0*	*2.0*	*1.0*	*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*	*4.0*	*0.4*	*1.0*	*1.0*	*1.0*	*0.1*	*1.0*	*1.0*
Intra laboratory duplicate	BH301	0.15-0.3	<25	<50	<100	<100	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	<4	<0.4	14	7	18	<0.1	3	9
	SDUP301	-	<25	<50	<100	<100	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	13	<0.4	17	17	17	<0.1	1	6
	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	7.5	nc	15.5	12	17.5	nc	2	7.5
	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	147%	nc	19%	83%	6%	nc	100%	40%
Intra laboratory duplicate	BH302	0.16-0.4	<25	<50	<100	<100	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	<4	<0.4	14	15	12	<0.1	12	20
	SDUP302	-	<25	<50	<100	<100	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	<4	<0.4	18	14	11	<0.1	13	25
	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	16	14.5	11.5	nc	12.5	22.5
	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	nc	nc	25%	7%	9%	nc	8%	22%
Inter laboratory duplicate	BH303	0-0.2	<25	86	680	250	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	<4	<0.4	12	19	90	<0.1	4	80
	SDUP303	-	<25	51	390	230	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	6	<0.4	19	21	110	<0.1	7	120
	MEAN		nc	68.5	535	240	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4	nc	15.5	20	100	nc	5.5	100
	RPD %		nc	51%	54%	8%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	100%	nc	45%	10%	20%	nc	55%	40%
Inter laboratory duplicate	BH304	0-0.1	<25	<50	210	110	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	8	0.8	21	480	110	0.2	10	380
	SDUP304	-	<25	<50	360	190	<0.2	<0.5	<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	<0.05	<0.1	<0.1	<0.1	9	2	25	150	130	0.2	16	440
	MEAN		nc	nc	285	150	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	8.5	1.4	23	315	120	0.2	13	410
	RPD %		nc	nc	53%	53%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	12%	86%	17%	105%	17%	0%	46%	15%
Trip Spike	TS-S1 6/07/21		-	-	-	-	104%	100%	98%	98%	97%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	TB-S1 6/07/21	-	<25	NA	NA	NA	<0.2	<0.5	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Rinsate	FR301 - SPT 6/07/21	-	NA	NA	NA	NA	<1	<1	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Result outside of QA/QC acceptance criteria

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ADWG: AustralianDrinking Water Guidelines
ANZG Australian and New Zealand Guidelines
B(a)P: Benzo(a)pyrene
CRC: Cooperative Research Centre
ESLs: Ecological Screening Levels
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 Tetrachloroethene)
PQL: Practical Quantitation Limit
RS: Rinsate Sample
RSL: Regional Screening Levels
SAC: Site Assessment Criteria
SSA: Site Specific Assessment
SSHSLs Site Specific Health Screening Levels
TB: Trip Blank
TCA: 1,1,1 Trichloroethane (methyl chloroform)
TCE: Trichloroethylene (Trichloroethene)
TS: Trip Spike
TRH: Total Recoverable Hydrocarbons
UCL: Upper Level Confidence Limit on Mean Value
USEPA United States Environmental Protection Agency
VOCC: Volatile Organic Chlorinated Compounds
WHO: World Health Organisation

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 Duplicate	MW103	MW302	MW307	MWDUP1
Inorganic Compounds and Parameters								
pH		6.5 - 8.5	6.4	NA	6.5	6.7	5.8	NA
Electrical Conductivity (µS/cm)	1	NSL	**12000**	NA	**8400**	**13000**	**18000**	NA
Metals and Metalloids								
Arsenic (As III)	1	24	<1	NA	<1	**3**	<1	**3**
Cadmium	0.1	0.2	<0.1	NA	**0.1**	**0.8**	**0.7**	**0.9**
Chromium (SAC for Cr III adopted)	1	3.3	<1	NA	<1	<1	<1	<1
Copper	1	1.4	<1	NA	<1	<1	<1	<1
Lead	1	3.4	<1	NA	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	NA	<0.05	<0.05	<0.05	<0.05
Nickel	1	11	**20**	NA	**5**	**61**	**72**	**62**
Zinc	1	8	**18**	NA	**13**	**73**	**86**	**75**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)								
Benzene	1	950	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	<2	<2	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs								
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	NA
Chloromethane	10	NSL	<10	<10	<10	<10	<10	NA
Vinyl Chloride	10	100	<10	<10	<10	<10	<10	NA
Bromomethane	10	NSL	<10	<10	<10	<10	<10	NA
Chloroethane	10	NSL	<10	<10	<10	<10	<10	NA
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	NA
1,1-Dichloroethene	1	700	<1	<1	<1	<1	<1	NA
Trans-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	NA
1,1-dichloroethane	1	90	<1	<1	<1	<1	<1	NA
Cis-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	NA
Bromochloromethane	1	NSL	<1	<1	<1	<1	<1	NA
Chloroform	1	370	<1	<1	<1	<1	<1	NA
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichloroethane	1	1900	<1	<1	<1	<1	<1	NA
1,1,1-trichloroethane	1	270	<1	<1	<1	<1	<1	NA
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	NA
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	NA
Carbon tetrachloride	1	240	<1	<1	<1	<1	<1	NA
Benzene	1	950	<1	<1	<1	<1	<1	NA
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichloropropane	1	900	<1	<1	<1	<1	<1	NA
Trichloroethene	1	330	<1	<1	<1	<1	<1	NA
Bromodichloromethane	1	NSL	<1	<1	<1	<1	<1	NA
trans-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	NA
cis-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	NA
1,1,2-trichloroethane	1	6500	<1	<1	<1	<1	<1	NA
Toluene	1	180	<1	<1	<1	<1	<1	NA
1,3-dichloropropane	1	1100	<1	<1	<1	<1	<1	NA
Dibromochloromethane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	NA
Tetrachloroethene	1	70	<1	<1	<1	<1	<1	NA
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	NA
Chlorobenzene	1	55	<1	<1	<1	<1	<1	NA
Ethylbenzene	1	80	<1	<1	<1	<1	<1	NA
Bromoform	1	NSL	<1	<1	<1	<1	<1	NA
m+p-xylene	2	75	<2	<2	<2	<2	<2	NA
Styrene	1	NSL	<1	<1	<1	<1	<1	NA
1,1,2,2-tetrachloroethane	1	400	<1	<1	<1	<1	<1	NA
o-xylene	1	350	<1	<1	<1	<1	<1	NA
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
Isopropylbenzene	1	30	<1	<1	<1	<1	<1	NA
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	NA
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	NA
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	NA
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,3-dichlorobenzene	1	260	<1	<1	<1	<1	<1	NA
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,4-dichlorobenzene	1	60	<1	<1	<1	<1	<1	NA
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichlorobenzene	1	160	<1	<1	<1	<1	<1	NA
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	NA
1,2,4-trichlorobenzene	1	85	<1	<1	<1	<1	<1	NA
Hexachlorobutadiene	1	NSL	<1	<1	<1	<1	<1	NA
1,2,3-trichlorobenzene	1	3	<1	<1	<1	<1	<1	NA
Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	0.2	16	<0.2	NA	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<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
Chrysene	0.1	NSL	<0.1	NA	<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
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<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
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<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

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

TABLE G2
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 Duplicate	MW103	MW302	MW307	MWDUP1
Inorganic Compounds and Parameters								
pH		6.5 - 8.5	6.4	NA	6.5	6.7	5.8	NA
Electrical Conductivity (µS/cm)	1	NSL	**12000**	NA	**8400**	**13000**	**18000**	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA
Metals and Metalloids								
Arsenic (As III)	1	100	<1	NA	<1	**3**	<1	**3**
Cadmium	0.1	20	<0.1	NA	**0.1**	**0.8**	**0.7**	**0.9**
Chromium (total)	1	500	<1	NA	<1	<1	<1	<1
Copper	1	20000	<1	NA	<1	<1	<1	<1
Lead	1	100	<1	NA	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	NA	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	**20**	NA	**5**	**61**	**72**	**62**
Zinc	1	30000	**18**	NA	**13**	**73**	**86**	**75**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)								
Benzene	1	10	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	<2	<2	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs								
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	NA
Chloromethane	10	NSL	<10	<10	<10	<10	<10	NA
Vinyl Chloride	10	3	<10	<10	<10	<10	<10	NA
Bromomethane	10	NSL	<10	<10	<10	<10	<10	NA
Chloroethane	10	NSL	<10	<10	<10	<10	<10	NA
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	NA
1,1-Dichloroethene	1	300	<1	<1	<1	<1	<1	NA
Trans-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	NA
1,1-dichloroethane	1	NSL	<1	<1	<1	<1	<1	NA
Cis-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	NA
Bromochloromethane	1	2500	<1	<1	<1	<1	<1	NA
Chloroform	1		<1	<1	<1	<1	<1	NA
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichloroethane	1	30	<1	<1	<1	<1	<1	NA
1,1,1-trichloroethane	1	NSL	<1	<1	<1	<1	<1	NA
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	NA
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	NA
Carbon tetrachloride	1	30	<1	<1	<1	<1	<1	NA
Benzene	1	10	<1	<1	<1	<1	<1	NA
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
Trichloroethene	1	NSL	<1	<1	<1	<1	<1	NA
Bromodichloromethane	1	NSL	<1	<1	<1	<1	<1	NA
trans-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	NA
cis-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	NA
1,1,2-trichloroethane	1	NSL	<1	<1	<1	<1	<1	NA
Toluene	1	8000	<1	<1	<1	<1	<1	NA
1,3-dichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
Dibromochloromethane	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	NA
Tetrachloroethene	1	500	<1	<1	<1	<1	<1	NA
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	NA
Chlorobenzene	1	3000	<1	<1	<1	<1	<1	NA
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	NA
Bromoform	1	NSL	<1	<1	<1	<1	<1	NA
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	NA
Styrene	1	300	<1	<1	<1	<1	<1	NA
1,1,2,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	NA
o-xylene	1	NSL	<1	<1	<1	<1	<1	NA
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	NA
Isopropylbenzene	1	NSL	<1	<1	<1	<1	<1	NA
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	NA
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	NA
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	NA
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,3-dichlorobenzene	1	200	<1	<1	<1	<1	<1	NA
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,4-dichlorobenzene	1	400	<1	<1	<1	<1	<1	NA
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dichlorobenzene	1	15000	<1	<1	<1	<1	<1	NA
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	NA
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	NA
1,2,4-trichlorobenzene	1	300	<1	<1	<1	<1	<1	NA
1,2,3-trichlorobenzene	1		<1	<1	<1	<1	<1	NA
Hexachlorobutadiene	1	7	<1	<1	<1	<1	<1	NA
Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<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
Chrysene	0.1	NSL	<0.1	NA	<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
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<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
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<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

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

TABLE G3
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-D: COMMERCIAL/INDUSTRIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW101	4.47	2m to <4m	Clay	<10	<50	<1	<1	<1	<2	<1	0.4
MW101	4.47	2m to <4m	Clay	<10	NA	<1	<1	<1	<2	<1	0.4
MW103	4.12	2m to <4m	Clay	<10	<50	<1	<1	<1	<2	<1	0.3
MW302	1.53	2m to <4m	Clay	<10	<50	<1	<1	<1	<2	<1	12.7
MW307	4.44	2m to <4m	Clay	<10	<50	<1	<1	<1	<2	<1	1.4
MWDUP1	1.53	2m to <4m	Clay	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				6	5	6	6	6	6	6	0
Maximum Value				<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0

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	4.47	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL
MW101	4.47	2m to <4m	Clay	NL	NA	30000	NL	NL	NL	NL
MW103	4.12	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL
MW302	1.53	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL
MW307	4.44	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL
MWDUP1	1.53	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL

TABLE G4
GROUNDWATER 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	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	MW302	<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	0.8	<1	<1	<1	<0.05	61	73
laboratory	MWDUP1	<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	0.9	<1	<1	<1	<0.05	62	75
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	0.85	nc	nc	nc	nc	61.5	74
	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%	12%	nc	nc	nc	nc	2%	3%
Trip	TSW1	-	-	-	-	105%	108%	118%	108%	109%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spike	13/07/2021																																
Field	TBW1	<10	NA	NA	NA	<1	<1	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	13/07/2021																																

Result outside of QA/QC acceptance criteria Value

Appendix D: Borehole Logs

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH301 1/1

SDUP301: 0.5-0.95m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** Team Legends,

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: 150mm.t				
									-	FILL: Gravelly clay, low to medium plasticity, brown, sub-angular, igneous, trace of ironstone gravel and asphaltic concrete fragments.	w<PL			SCREEN: 1.2kg 0.15-0.3m NO FCF
						N = 13 4,6,7			CI-CH		w<PL			RESIDUAL
							1			Silty CLAY: medium to high plasticity, bred brown mottled grey.				
						N > 23 9,11, 12/ 100mm REFUSAL			-	Extremely Weathered siltstone: silty CLAY, medium to high plasticity, grey mottled red brown.	XW			BRINGELLY SHALE
							2			Extremely Weathered siltstone: silty CLAY, low to medium plasticity, grey, with ironstone bands.	DW			LOW 'TC' BIT RESISTANCE WITH MODERATE BANDS
										SILTSTONE: grey and brown, with iron indurated bands.				
							3			SILTSTONE: grey.				MODERATE RESISTANCE
							4							
							5			END OF BOREHOLE AT 5.0m				
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH302 1/1

SDUP302: 0.16-0.4m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** C.R./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			CONCRETE: 150mm.t				
	■								-	FILL: Silty clay, medium to high plasticity, brown mottled red and grey, with igneous gravel, trace of ash and root fibres.	w<PL			SCREEN: 4.68kg 0.16-0.4m
						N = 24 6,11,13			-	Extremely Weathered siltstone: silty CLAY, medium to high plasticity, yellow brown mottled grey.	XW			NO FCF BRINGELLY SHALE
							1			Extremely Weathered siltstone: silty CLAY, medium to high plasticity, grey, with iron indurated bands.				LOW TO MODERATE 'TC' BIT RESISTANCE
						N > 24 8,13, 11/ 100mm REFUSAL				as above, but grey.				
							2			SILTSTONE: grey.	DW			LOW TO MODERATE RESISTANCE
							3							
							4							MODERATE RESISTANCE
							5							GROUNDWATER MONITORING WELL INSTALLED TO 5.6m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.6m TO 2.6m. CASING 2.6m TO 0m. 2mm SAND FILTER PACK 5.6m TO 2.5m. BENTONITE SEAL
							6			END OF BOREHOLE AT 6.0m				2.5m TO 1.6m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH303 1/1

SDUP303: 0-0.2m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** C.R./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 igneous gravel and root fibres.	D			SCREEN: 9.92kg 0-0.2m NO FCF
									CL-CI	Silty CLAY: low to medium plasticity, brown mottled red brown, trace of ash.	w<PL			RESIDUAL
	■					N = 14 5,7,7	1		CI-CH	Silty CLAY: medium to high plasticity, red brown mottled grey.				
	■					N > 14 14/ 100mm REFUSAL	2		-	Extremely Weathered siltstone: Silty CLAY: medium to high plasticity, red brown mottled grey.	XW			BRINGELLY SHALE
	■									SILTSTONE: light grey.	DW			LOW 'TC' BIT RESISTANCE WITH MODERATE BANDS
	■						3			as above, but grey.				MODERATE RESISTANCE
	■						4							MODERATE RESISTANCE WITH HIGH BANDS
							5			END OF BOREHOLE AT 5.0m				
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH304 1/1

SDUP304: 0-0.1m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: - **Logged/Checked by:** N.M./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 sandy clay, medium to high plasticity, dark brown, fine to medium grained sand, trace of igneous gravel, leaf matter and FCF fragments.	w≈PL			NO COVER, FCF FRAGMENTS FOUND ON SURFACE (FCF1-SURFACE)
										FILL: Silty clay, medium to high plasticity, red brown, trace of igneous gravel and leaf matter.				SCREEN: 10.36kg 0-0.1m FCF1 FCF2
							1			END OF BOREHOLE AT 0.2m				SCREEN: 8.19kg 0.1-0.2m NO FCF
														HAND AUGER REFUSAL
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH305 1/1

SDUP305: 0-0.1m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: - **Logged/Checked by:** N.M./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: Clayey silty sand, fine to medium grained, brown, trace of igneous and ironstone gravel, brick fragments and root fibres.	M w<PL			MULCH COVER SCREEN: 11.21m 0-0.1m NO FCF
										FILL: Silty sandy clay, low to medium plasticity, brown, fine grained sand, trace of igneous and ironstone gravel, PVC pipe and root fibres.				SCREEN: 6.18kg 0.1-0.4m NO FCF
							1			END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH306 1/1

SDUP306: 0-0.1m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: - **Logged/Checked by:** N.M./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 clayey sand, fine to medium grained, brown, trace of igneous and ironstone gravel, porcelain fragments, cigarette butts and root fibres,	M w<PL			MULCH COVER SCREEN: 10.83kg 0-0.1m NO FCF
							1			FILL: Silty clay, low to medium plasticity, brown mottled orange brown and grey, trace of igneous and ironstone gravel, ash and root fibres. END OF BOREHOLE AT 0.2m				SCREEN: 7.22kg 0.1-0.2m NO FCF HAND AUGER REFUSAL
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH307 1/1

SDUP307: 0.05-0.15m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** N.M./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 sandy clay, low to medium plasticity, grey, fine grained sand, trace of igneous gravel and asphaltic concrete fragments.	w<PL			SCREEN: 12.52kg 0.05-0.15m NO FCF
	■		■			N = 16 4,6,6	1		CI-CH	Silty CLAY: medium to high plasticity, red brown mottled grey.	w≈PL			RESIDUAL
						N = 11 2,4,5	2			as above, but grey mottled brown.				
						N = 22 4,8,10	3							
							4			as above, but brown mottled grey.				
						N = 14 4,4,6	5							GROUNDWATER MONITORING WELL INSTALLED TO 6.0m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 6.0m TO 3.0m. CASING 3.0m TO 0.1m. 2mm SAND FILTER PACK 6.0m TO 2.8m. BENTONITE SEAL
							6			END OF BOREHOLE AT 6.0m				2.8m TO 1.8m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH308 1/1

SDUP308: 0.05-0.15m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** N.M./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 sandy clay, low to medium plasticity, grey, fine grained sand, trace of igneous gravel and asphaltic concrete fragments.	w<PL			SCREEN: 10.13kg 0.05-0.8m NO FCF
	■		■			N = 16 6,6,4								
							1		CI-CH	Silty CLAY: medium to high plasticity, yellow brown mottled red brown.	w<PL			RESIDUAL
	■					N = 9 3,3,3				as above, but red brown mottled grey.				
							2			END OF BOREHOLE AT 2.0m				
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH309 1/1

SDUP309: 0.05-0.15m

Client: ERILYAN

Project: PROPOSED NORTHSIDE WEST CLINIC STAGE 2 DEVELOPMENT

Location: 23-27 LYTTON STREET, WENTWORTHVILLE, NSW

Job No.: E27318PH **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 6/7/21 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** N.M./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 sandy clay, low to medium plasticity, grey, fine to medium grained sand, trace of igneous gravel and asphaltic concrete fragments.	w<PL			SCREEN: 10.36kg 0.05-0.8m NO FCF
	■		■				1		CI-CH	Silty CLAY: medium to high plasticity, brown mottled red brown.	w<PL			RESIDUAL
	■									as above, but red brown mottled grey.				
										END OF BOREHOLE AT 1.5m				
							2							
							3							
							4							
							5							
							6							
							7							

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:

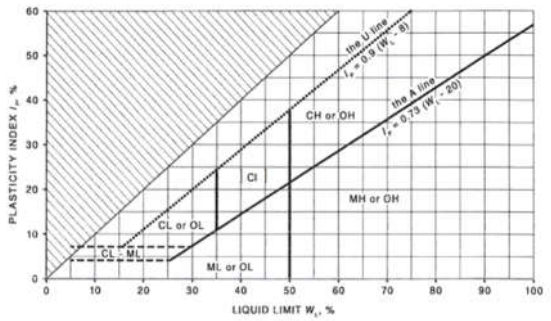
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

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 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.

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.

Appendix E: Laboratory Report(s) & 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 273765

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E27318PH, Wentworthville**
Number of Samples	57 Soil, 1 Water, 2 Material
Date samples received	09/07/2021
Date completed instructions received	12/07/2021

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	16/07/2021
Date of Issue	16/07/2021

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 ***

Asbestos Approved By
Analysed by Asbestos Approved Identifier: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Lucy Zhu, Asbestos Supervisor
Steven Luong, Organics Supervisor
Thomas Beenie, Lab Technician

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		273765-1	273765-2	273765-3	273765-5	273765-9
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0.15-0.3	0.5-0.95	1.6-1.8	2.2-2.4	0.16-0.4
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	%	98	82	90	90	87

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		273765-10	273765-11	273765-14	273765-18	273765-20
Your Reference	UNITS	BH302	BH302	BH302	BH303	BH303
Depth		0.5-0.7	0.8-0.95	2.5-2.8	0-0.2	0.5-0.7
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	%	92	86	97	99	94

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		273765-21	273765-25	273765-26	273765-27	273765-28
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.8-0.95	4.8-5.0	0-0.1	0.1-0.2	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	29
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	29
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	%	88	81	101	102	82

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		273765-29	273765-30	273765-31	273765-32	273765-33
Your Reference	UNITS	BH305	BH306	BH306	BH307	BH307
Depth		0.1-0.3	0-0.1	0.1-0.2	0.05-0.15	0.4-0.5
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	66	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	66	<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	%	82	89	109	102	109

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		273765-42	273765-43	273765-46	273765-47	273765-49
Your Reference	UNITS	BH308	BH308	BH309	BH309	SDUP301
Depth		0.05-0.15	0.8-1.0	0.05-0.15	0.8-1.0	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	%	96	103	97	104	88

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		273765-50	273765-56	273765-57
Your Reference	UNITS	SDUP302	TS-S1	TB-S1
Depth		-	-	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021
TRH C_6 - C_9	mg/kg	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	104%	<0.2
Toluene	mg/kg	<0.5	100%	<0.5
Ethylbenzene	mg/kg	<1	98%	<1
m+p-xylene	mg/kg	<2	98%	<2
o-Xylene	mg/kg	<1	97%	<1
naphthalene	mg/kg	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	86	98	83

svTRH (C10-C40) in Soil						
Our Reference		273765-1	273765-2	273765-3	273765-5	273765-9
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0.15-0.3	0.5-0.95	1.6-1.8	2.2-2.4	0.16-0.4
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	<100
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	%	70	71	68	77	77

svTRH (C10-C40) in Soil						
Our Reference		273765-10	273765-11	273765-14	273765-18	273765-20
Your Reference	UNITS	BH302	BH302	BH302	BH303	BH303
Depth		0.5-0.7	0.8-0.95	2.5-2.8	0-0.2	0.5-0.7
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	390	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	420	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	86	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	86	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	680	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	250	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	1,000	<50
Surrogate o-Terphenyl	%	71	66	74	93	69

svTRH (C10-C40) in Soil						
Our Reference		273765-21	273765-25	273765-26	273765-27	273765-28
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.8-0.95	4.8-5.0	0-0.1	0.1-0.2	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
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
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	210	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	110	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	320	<50	<50
Surrogate o-Terphenyl	%	67	66	67	67	64

svTRH (C10-C40) in Soil						
Our Reference		273765-29	273765-30	273765-31	273765-32	273765-33
Your Reference	UNITS	BH305	BH306	BH306	BH307	BH307
Depth		0.1-0.3	0-0.1	0.1-0.2	0.05-0.15	0.4-0.5
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
TRH C_{10} - C_{14}	mg/kg	52	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	450	180	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	150	<100	<100	<100
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	520	300	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	120	<100
Total +ve TRH (>C10-C40)	mg/kg	520	300	<50	120	<50
Surrogate o-Terphenyl	%	73	66	66	71	63

svTRH (C10-C40) in Soil						
Our Reference		273765-42	273765-43	273765-46	273765-47	273765-49
Your Reference	UNITS	BH308	BH308	BH309	BH309	SDUP301
Depth		0.05-0.15	0.8-1.0	0.05-0.15	0.8-1.0	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
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	130	<100	<100
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	230	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	230	<50	<50
Surrogate o-Terphenyl	%	69	67	71	64	69

svTRH (C10-C40) in Soil		
Our Reference		273765-50
Your Reference	UNITS	SDUP302
Depth		-
Date Sampled		06/07/2021
Type of sample		Soil
Date extracted	-	13/07/2021
Date analysed	-	14/07/2021
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
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	%	64

PAHs in Soil						
Our Reference		273765-1	273765-2	273765-3	273765-5	273765-9
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0.15-0.3	0.5-0.95	1.6-1.8	2.2-2.4	0.16-0.4
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	<0.1	<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	<0.05	<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	%	95	85	91	95	94

PAHs in Soil						
Our Reference		273765-10	273765-11	273765-14	273765-18	273765-20
Your Reference	UNITS	BH302	BH302	BH302	BH303	BH303
Depth		0.5-0.7	0.8-0.95	2.5-2.8	0-0.2	0.5-0.7
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	<0.1	<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	<0.05	<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	%	96	95	94	88	101

PAHs in Soil						
Our Reference		273765-21	273765-25	273765-26	273765-27	273765-28
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.8-0.95	4.8-5.0	0-0.1	0.1-0.2	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	<0.1	<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	<0.05	<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	%	90	83	96	91	90

PAHs in Soil						
Our Reference		273765-29	273765-30	273765-31	273765-32	273765-33
Your Reference	UNITS	BH305	BH306	BH306	BH307	BH307
Depth		0.1-0.3	0-0.1	0.1-0.2	0.05-0.15	0.4-0.5
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Naphthalene	mg/kg	<0.1	<0.1	0.1	0.2	<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	0.3	0.2	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.4	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	0.4	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	0.3	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.4	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.09	0.3	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<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	0.2	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.65	2.8	0.4	0.1
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	%	92	97	97	96	89

PAHs in Soil						
Our Reference		273765-42	273765-43	273765-46	273765-47	273765-49
Your Reference	UNITS	BH308	BH308	BH309	BH309	SDUP301
Depth		0.05-0.15	0.8-1.0	0.05-0.15	0.8-1.0	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	12/07/2021	12/07/2021	12/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Naphthalene	mg/kg	<0.1	<0.1	0.2	<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	<0.05	<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	<0.05	<0.05	0.4	<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	%	92	91	89	99	93

PAHs in Soil		
Our Reference		273765-50
Your Reference	UNITS	SDUP302
Depth		-
Date Sampled		06/07/2021
Type of sample		Soil
Date extracted	-	12/07/2021
Date analysed	-	13/07/2021
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		273765-1	273765-9	273765-18	273765-26	273765-28
Your Reference	UNITS	BH301	BH302	BH303	BH304	BH305
Depth		0.15-0.3	0.16-0.4	0-0.2	0-0.1	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	0.2	<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	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	%	91	95	92	92	93

Organochlorine Pesticides in soil					
Our Reference		273765-30	273765-32	273765-42	273765-46
Your Reference	UNITS	BH306	BH307	BH308	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	12/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	95	95	95

Organophosphorus Pesticides in Soil						
Our Reference		273765-1	273765-9	273765-18	273765-26	273765-28
Your Reference	UNITS	BH301	BH302	BH303	BH304	BH305
Depth		0.15-0.3	0.16-0.4	0-0.2	0-0.1	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	%	91	95	92	92	93

Organophosphorus Pesticides in Soil					
Our Reference		273765-30	273765-32	273765-42	273765-46
Your Reference	UNITS	BH306	BH307	BH308	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	12/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	95	95	95

PCBs in Soil						
Our Reference		273765-1	273765-9	273765-18	273765-26	273765-28
Your Reference	UNITS	BH301	BH302	BH303	BH304	BH305
Depth		0.15-0.3	0.16-0.4	0-0.2	0-0.1	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
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	%	91	95	92	92	93

PCBs in Soil					
Our Reference		273765-30	273765-32	273765-42	273765-46
Your Reference	UNITS	BH306	BH307	BH308	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	13/07/2021	13/07/2021	13/07/2021	12/07/2021
Date analysed	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	95	95	95

Acid Extractable metals in soil						
Our Reference		273765-1	273765-2	273765-3	273765-5	273765-9
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0.15-0.3	0.5-0.95	1.6-1.8	2.2-2.4	0.16-0.4
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Arsenic	mg/kg	<4	10	[NA]	[NA]	<4
Cadmium	mg/kg	<0.4	<0.4	[NA]	[NA]	<0.4
Chromium	mg/kg	14	12	[NA]	[NA]	14
Copper	mg/kg	7	12	[NA]	[NA]	15
Lead	mg/kg	18	12	4	11	12
Mercury	mg/kg	<0.1	<0.1	[NA]	[NA]	<0.1
Nickel	mg/kg	3	<1	[NA]	[NA]	12
Zinc	mg/kg	9	4	[NA]	[NA]	20

Acid Extractable metals in soil						
Our Reference		273765-10	273765-11	273765-14	273765-18	273765-20
Your Reference	UNITS	BH302	BH302	BH302	BH303	BH303
Depth		0.5-0.7	0.8-0.95	2.5-2.8	0-0.2	0.5-0.7
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Arsenic	mg/kg	[NA]	<4	[NA]	<4	[NA]
Cadmium	mg/kg	[NA]	<0.4	[NA]	<0.4	[NA]
Chromium	mg/kg	[NA]	2	[NA]	12	[NA]
Copper	mg/kg	[NA]	8	[NA]	19	[NA]
Lead	mg/kg	8	5	12	90	11
Mercury	mg/kg	[NA]	<0.1	[NA]	<0.1	[NA]
Nickel	mg/kg	[NA]	<1	[NA]	4	[NA]
Zinc	mg/kg	[NA]	8	[NA]	80	[NA]

Acid Extractable metals in soil						
Our Reference		273765-21	273765-25	273765-26	273765-27	273765-28
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.8-0.95	4.8-5.0	0-0.1	0.1-0.2	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Arsenic	mg/kg	9	[NA]	8	5	4
Cadmium	mg/kg	<0.4	[NA]	0.8	<0.4	<0.4
Chromium	mg/kg	8	[NA]	21	14	15
Copper	mg/kg	7	[NA]	480	29	16
Lead	mg/kg	14	19	110	28	34
Mercury	mg/kg	<0.1	[NA]	0.2	<0.1	<0.1
Nickel	mg/kg	<1	[NA]	10	3	9
Zinc	mg/kg	4	[NA]	380	67	70

Acid Extractable metals in soil						
Our Reference		273765-29	273765-30	273765-31	273765-32	273765-33
Your Reference	UNITS	BH305	BH306	BH306	BH307	BH307
Depth		0.1-0.3	0-0.1	0.1-0.2	0.05-0.15	0.4-0.5
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Arsenic	mg/kg	<4	4	5	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	16	19	73	18
Copper	mg/kg	15	73	37	29	31
Lead	mg/kg	27	50	59	4	9
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	13	18	72	22
Zinc	mg/kg	45	78	76	40	52

Acid Extractable metals in soil						
Our Reference		273765-42	273765-43	273765-46	273765-47	273765-49
Your Reference	UNITS	BH308	BH308	BH309	BH309	SDUP301
Depth		0.05-0.15	0.8-1.0	0.05-0.15	0.8-1.0	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Arsenic	mg/kg	4	5	<4	6	13
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	10	74	22	17
Copper	mg/kg	26	14	30	10	17
Lead	mg/kg	13	17	6	14	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	30	6	73	5	1
Zinc	mg/kg	110	16	46	11	6

Acid Extractable metals in soil			
Our Reference		273765-50	273765-61
Your Reference	UNITS	SDUP302	BH301 - [TRIPLICATE]
Depth		-	0.15-0.3
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date prepared	-	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	18	19
Copper	mg/kg	14	10
Lead	mg/kg	11	29
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	13	7
Zinc	mg/kg	25	22

Moisture						
Our Reference		273765-1	273765-2	273765-3	273765-5	273765-9
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0.15-0.3	0.5-0.95	1.6-1.8	2.2-2.4	0.16-0.4
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Moisture	%	17	19	11	10	16

Moisture						
Our Reference		273765-10	273765-11	273765-14	273765-18	273765-20
Your Reference	UNITS	BH302	BH302	BH302	BH303	BH303
Depth		0.5-0.7	0.8-0.95	2.5-2.8	0-0.2	0.5-0.7
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Moisture	%	13	11	7.4	11	20

Moisture						
Our Reference		273765-21	273765-25	273765-26	273765-27	273765-28
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.8-0.95	4.8-5.0	0-0.1	0.1-0.2	0-0.1
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Moisture	%	18	6.9	18	15	11

Moisture						
Our Reference		273765-29	273765-30	273765-31	273765-32	273765-33
Your Reference	UNITS	BH305	BH306	BH306	BH307	BH307
Depth		0.1-0.3	0-0.1	0.1-0.2	0.05-0.15	0.4-0.5
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Moisture	%	13	16	8.3	6.6	8.8

Moisture						
Our Reference		273765-42	273765-43	273765-46	273765-47	273765-49
Your Reference	UNITS	BH308	BH308	BH309	BH309	SDUP301
Depth		0.05-0.15	0.8-1.0	0.05-0.15	0.8-1.0	-
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Date analysed	-	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Moisture	%	8.2	16	6.4	20	18

Moisture		
Our Reference		273765-50
Your Reference	UNITS	SDUP302
Depth		-
Date Sampled		06/07/2021
Type of sample		Soil
Date prepared	-	13/07/2021
Date analysed	-	14/07/2021
Moisture	%	16

Asbestos ID - soils NEPM - ASB-001						
Our Reference		273765-1	273765-9	273765-19	273765-26	273765-27
Your Reference	UNITS	BH301	BH302	BH303	BH304	BH304
Depth		0.15-0.3	0.16-0.4	0-0.2	0-0.1	0.1-0.2
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Sample mass tested	g	668.88	489.89	533.35	542	448.41
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		273765-28	273765-29	273765-30	273765-31	273765-32
Your Reference	UNITS	BH305	BH305	BH306	BH306	BH307
Depth		0-0.1	0.1-0.3	0-0.1	0.1-0.2	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Sample mass tested	g	739.71	758.59	624.08	813.42	959.01
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		273765-33	273765-42	273765-46
Your Reference	UNITS	BH307	BH308	BH309
Depth		0.4-0.5	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date analysed	-	15/07/2021	15/07/2021	15/07/2021
Sample mass tested	g	390.29	867.44	1,019.63
Sample Description	-	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
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<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
ACM >7mm Estimation*	g	–	–	–
FA and AF Estimation*	g	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Asbestos ID - materials			
Our Reference		273765-59	273765-60
Your Reference	UNITS	BH304	BH304
Depth		0-0.1AQ	Surface
Date Sampled		06/07/2021	06/07/2021
Type of sample		Material	Material
Date analysed	-	15/07/2021	15/07/2021
Mass / Dimension of Sample	-	46.52g	11.83g
Sample Description	-	A)Grey fibre cement B)Beige fibre cement	Grey fibre cement material
Asbestos ID in materials	-	A)Chrysotile asbestos detected Amosite asbestos detected B)No asbestos detected Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected
Trace Analysis	-	No asbestos detected	[NT]

BTEX in Water		
Our Reference		273765-58
Your Reference	UNITS	FR301 - SPT
Depth		-
Date Sampled		06/07/2021
Type of sample		Water
Date extracted	-	13/07/2021
Date analysed	-	13/07/2021
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	%	107
Surrogate toluene-d8	%	102
Surrogate 4-BFB	%	104

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-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	93	80
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	93	80
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	93	80
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	89	77
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	95	81
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	93	80
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	93	81
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	106	1	98	92	6	98	85

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	273765-33
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	18	<25	<25	0	105	101
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	18	<25	<25	0	105	101
Benzene	mg/kg	0.2	Org-023	[NT]	18	<0.2	<0.2	0	105	101
Toluene	mg/kg	0.5	Org-023	[NT]	18	<0.5	<0.5	0	101	98
Ethylbenzene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	107	104
m+p-xylene	mg/kg	2	Org-023	[NT]	18	<2	<2	0	105	102
o-Xylene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	105	103
naphthalene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	18	99	90	10	106	103

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]	31	13/07/2021	13/07/2021		[NT]	[NT]
Date analysed	-			[NT]	31	13/07/2021	13/07/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	31	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	31	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	31	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	31	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	31	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	31	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	31	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	31	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	31	109	106	3	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			14/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	76	76
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	84	86
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	67	79
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	76	76
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	84	86
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	67	79
Surrogate o-Terphenyl	%		Org-020	67	1	70	69	1	83	84

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	273765-33
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			[NT]	18	14/07/2021	14/07/2021		14/07/2021	14/07/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	76	79
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	18	390	410	5	84	88
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	18	420	450	7	67	77
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	18	86	85	1	76	79
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	18	680	720	6	84	88
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	18	250	300	18	67	77
Surrogate o-Terphenyl	%		Org-020	[NT]	18	93	89	4	84	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]	31	13/07/2021	13/07/2021		[NT]	[NT]
Date analysed	-			[NT]	31	14/07/2021	14/07/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	31	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	31	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	31	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	31	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	31	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	31	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	31	66	69	4	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	94
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	84	82
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	91
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	123	90
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	100	96
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	95
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	80	82
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	95	97
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	99	1	95	93	2	104	96

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	273765-33
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	97	94
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	86	86
Fluorene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	96	96
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	127	105
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	<0.1	<0.1	0	107	105
Pyrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	102	102
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	82	82
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	18	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	18	<0.05	<0.05	0	103	100
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	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	18	88	90	2	110	108

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	31	13/07/2021	13/07/2021		[NT]	[NT]
Date analysed	-			[NT]	31	13/07/2021	13/07/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	31	0.1	0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	31	0.3	0.2	40	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	31	0.4	0.4	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	31	0.4	0.4	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	31	0.3	0.3	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	31	0.3	0.3	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	31	0.4	0.4	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	31	0.3	0.2	40	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	31	0.2	0.1	67	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	31	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	31	97	90	7	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	90
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	89	79
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	99	93
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	108	106
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	101
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	108	99
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	89
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	70
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	103	101
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	105	86
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	97	1	91	100	9	94	93

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
Date analysed	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	92	[NT]
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	87	[NT]
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	73	[NT]
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	112	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	109	[NT]
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	113	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	111	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	84	[NT]
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	110	[NT]
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	74	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	18	92	92	0	98	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	#
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	102	95
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	73
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	105
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	73	73
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	89	75
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	97	1	91	100	9	94	93

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
Date analysed	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	112	[NT]
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	105	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	77	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	94	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	118	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	75	[NT]
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	99	[NT]
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	92	92	0	98	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date extracted	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
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	108	116
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	97	1	91	100	9	94	93

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
Date analysed	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	[NT]
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	112	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	18	92	92	0	98	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	273765-9
Date prepared	-			13/07/2021	1	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			14/07/2021	1	14/07/2021	14/07/2021		14/07/2021	14/07/2021
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	102	75
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	97	74
Chromium	mg/kg	1	Metals-020	<1	1	14	16	13	96	87
Copper	mg/kg	1	Metals-020	<1	1	7	9	25	98	94
Lead	mg/kg	1	Metals-020	<1	1	18	21	15	95	77
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	95	98
Nickel	mg/kg	1	Metals-020	<1	1	3	5	50	99	84
Zinc	mg/kg	1	Metals-020	<1	1	9	15	50	102	81

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	273765-33
Date prepared	-			[NT]	18	13/07/2021	13/07/2021		13/07/2021	13/07/2021
Date analysed	-			[NT]	18	14/07/2021	14/07/2021		14/07/2021	14/07/2021
Arsenic	mg/kg	4	Metals-020	[NT]	18	<4	<4	0	112	94
Cadmium	mg/kg	0.4	Metals-020	[NT]	18	<0.4	<0.4	0	105	76
Chromium	mg/kg	1	Metals-020	[NT]	18	12	13	8	105	85
Copper	mg/kg	1	Metals-020	[NT]	18	19	17	11	106	104
Lead	mg/kg	1	Metals-020	[NT]	18	90	84	7	104	81
Mercury	mg/kg	0.1	Metals-021	[NT]	18	<0.1	<0.1	0	101	98
Nickel	mg/kg	1	Metals-020	[NT]	18	4	4	0	108	80
Zinc	mg/kg	1	Metals-020	[NT]	18	80	71	12	111	72

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	31	13/07/2021	13/07/2021		[NT]	[NT]
Date analysed	-			[NT]	31	14/07/2021	14/07/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	31	5	5	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	31	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	31	19	20	5	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	31	37	35	6	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	31	59	58	2	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	31	18	18	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	31	76	80	5	[NT]	[NT]

QUALITY CONTROL: BTEX in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			13/07/2021	[NT]	[NT]	[NT]	[NT]	13/07/2021	[NT]
Date analysed	-			13/07/2021	[NT]	[NT]	[NT]	[NT]	13/07/2021	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate toluene-d8	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	103	[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.

Report Comments

OP's in Soil - # Percent recovery for the matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample 273765-9.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 273765-1 for Zn. Therefore a triplicate result has been issued as laboratory sample number 273765-61.

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.

Sample 273765-59; The supplied sample was sub-sampled (A & B) in order to accurately report the analytical results representative of the entire sample, as per AS4964-2004.

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	Todd Hore

Sample Login Details

Your reference	E27318PH, Wentworthville
Envirolab Reference	273765
Date Sample Received	09/07/2021
Date Instructions Received	12/07/2021
Date Results Expected to be Reported	16/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	57 Soil, 1 Water, 2 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Asbestos ID - materials	BTEX in Water	On Hold
BH301-0.15-0.3	✓	✓	✓	✓	✓	✓	✓	✓			
BH301-0.5-0.95	✓	✓	✓				✓				
BH301-1.6-1.8	✓	✓	✓				✓				
BH301-1.8-1.85											✓
BH301-2.2-2.4	✓	✓	✓				✓				
BH301-3.0-3.2											✓
BH301-3.8-4.0											✓
BH301-4.8-5.0											✓
BH302-0.16-0.4	✓	✓	✓	✓	✓	✓	✓	✓			
BH302-0.5-0.7	✓	✓	✓				✓				
BH302-0.8-0.95	✓	✓	✓				✓				
BH302-1.3-1.5											✓
BH302-1.8-1.9											✓
BH302-2.5-2.8	✓	✓	✓				✓				
BH302-3.8-4.0											✓
BH302-4.8-5.0											✓
BH302-5.8-6.0											✓
BH303-0-0.2	✓	✓	✓	✓	✓	✓	✓				
BH303-0-0.2								✓			
BH303-0.5-0.7	✓	✓	✓				✓				
BH303-0.8-0.95	✓	✓	✓				✓				
BH303-1.6-1.75											✓
BH303-2.5-2.8											✓
BH303-3.5-3.8											✓
BH303-4.8-5.0	✓	✓	✓				✓				
BH304-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			
BH304-0.1-0.2	✓	✓	✓				✓	✓			
BH305-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			
BH305-0.1-0.3	✓	✓	✓				✓	✓			
BH306-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			
BH306-0.1-0.2	✓	✓	✓				✓	✓			
BH307-0.05-0.15	✓	✓	✓	✓	✓	✓	✓	✓			

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	Asbestos ID - materials	BTEX in Water	On Hold
BH307-0.4-0.5	✓	✓	✓				✓	✓			
BH307-0.9-1.0											✓
BH307-1.3-1.5											✓
BH307-1.8-2.0											✓
BH307-2.8-3.0											✓
BH307-3.3-3.5											✓
BH307-3.8-4.0											✓
BH307-4.8-5.0											✓
BH307-5.8-6.0											✓
BH308-0.05-0.15	✓	✓	✓	✓	✓	✓	✓	✓			
BH308-0.8-1.0	✓	✓	✓				✓				
BH308-1.3-1.5											✓
BH308-1.8-2.0											✓
BH309-0.05-0.15	✓	✓	✓	✓	✓	✓	✓	✓			
BH309-0.8-1.0	✓	✓	✓				✓				
BH309-1.3-1.5											✓
SDUP301	✓	✓	✓				✓				
SDUP302	✓	✓	✓				✓				
SDPU305											✓
SDUP306											✓
SDUP307											✓
SDUP308											✓
SDUP309											✓
TS-S1	✓										
TB-S1	✓										
FR301 - SPT										✓	
BH304-0-0.1AQ									✓		
BH304-Surface									✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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

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: E27318PH 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: Todd Hore

Location:	Wentworthville	Sample Preserved in Esky on Ice
Sampler:	NM/CH	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 WA			
6/07/2021	1	BH301	0.15-0.3	G, A	1.2	F: gravelly clay			X						X			
6/07/2021	2	BH301	0.5-0.95	G	0	Silty clay		X										
6/07/2021	3	BH301	1.6-1.8	G	0	Siltstone	X											
6/07/2021	4	BH301	1.8-1.85	G	0	Siltstone												
6/07/2021	5	BH301	2.2-2.4	G	0	Siltstone	X											
6/07/2021	6	BH301	3.0-3.2	G	0	Siltstone												
6/07/2021	7	BH301	3.8-4.0	G	0	Siltstone												
6/07/2021	8	BH301	4.8-5.0	G	0	Siltstone												
6/07/2021	9	BH302	0.16-0.4	G, A	0	F: silty clay			X						X			
6/07/2021	10	BH302	0.5-0.7	G	0	Siltstone	X											
6/07/2021	11	BH302	0.8-0.95	G	0	Siltstone		X										
6/07/2021	12	BH302	1.3-1.5	G	0	Siltstone												
6/07/2021	13	BH302	1.8-1.9	G	0	Siltstone												
6/07/2021	14	BH302	2.5-2.8	G	0	Siltstone	X											
6/07/2021	15	BH302	3.8-4.0	G	0	Siltstone												
6/07/2021	16	BH302	4.8-5.0	G	0	Siltstone												
6/07/2021	17	BH302	5.8-6.0	G	3.2	Siltstone												
6/07/2021	18	BH303	0-0.2	G	0	F: silty sand			X									
6/07/2021	19	BH303	0-0.2	A	0	F: silty sand									X			
6/07/2021	20	BH303	0.5-0.7	G	0	Silty clay	X											
6/07/2021	21	BH303	0.8-0.95	G	0	Silty clay		X										
6/07/2021	22	BH303	1.6-1.75	G	0	Siltstone												
6/07/2021	23	BH303	2.5-2.8	G	0	Siltstone												
6/07/2021	24	BH303	3.5-3.8	G	0	Siltstone												
6/07/2021	25	BH303	4.8-5.0	G	0	Siltstone	X											
6/07/2021	26	BH304	0-0.1	G, A	0	F: Silty sandy clay			X						X			

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	Ref: 273765

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By:	Date:
Hore				09/07/2021 14:50

Updated COC 12/07/2021 06:23

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: E27318PH 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: Todd Hore

Location: Wentworthville

Sampler: NM/CH

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 WA	Asbetsos		
6/07/2021	27	BH304	0.1-0.2	G, A	0	F: silty clay		X							X			
6/07/2021	28	BH305	0-0.1	G, A	0.8	F: clayey silty sand			X						X			
6/07/2021	29	BH305	0.1-0.3	G, A	0	F: silty sandy clay		X							X			
6/07/2021	30	BH306	0-0.1	G, A	0	F: silty clayey sand			X						X			
6/07/2021	31	BH306	0.1-0.2	G, A	0	F: silty clay		X							X			
6/07/2021	32	BH307	0.05-0.15	G, A	0.4	F: silty sandy clay			X						X			
6/07/2021	33	BH307	0.4-0.5	G, A	0	F: silty sandy clay		X							X			
6/07/2021	34	BH307	0.9-1.0	G, A	0	F: silty sandy clay												
6/07/2021	35	BH307	1.3-1.5	G	0	Silty clay												
6/07/2021	36	BH307	1.8-2.0	G	0	Silty clay												
6/07/2021	37	BH307	2.8-3.0	G	0.4	Silty clay												
6/07/2021	38	BH307	3.3-3.5	G	0	Silty clay												
6/07/2021	39	BH307	3.8-4.0	G	0.2	Silty clay												
6/07/2021	40	BH307	4.8-5.0	G	0	Silty clay												
6/07/2021	41	BH307	5.8-6.0	G	0	Silty clay												
6/07/2021	42	BH308	0.05-0.15	G, A	0	F: silty sandy clay			X						X			
6/07/2021	43	BH308	0.8-1.0	G, A	0	Silty clay		X										
6/07/2021	44	BH308	1.3-1.5	G	0	Silty clay												
6/07/2021	45	BH308	1.8-2.0	G	0	Silty clay												
6/07/2021	46	BH309	0.05-0.15	G,A	0.1	F: silty sandy clay			X						X			
6/07/2021	47	BH309	0.8-1.0	G, A	0	Silty clay		X										
6/07/2021	48	BH309	1.3-1.5	G	0	Silty clay												
6/07/2021	59	BH304	0-0.1AQ	A	-	FCF										X		
6/07/2021	60	BH304	Surface	A	-	FCF										X		
6/07/2021	49	SDUP301	-	G	-	Duplicate		X										

Remarks (comments/detection limits required):

Please forward SDUP303 and SDUP304 to Melbourne

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

273765

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By:	Date:
Hore				

Updated COC

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: E27318PH 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: Todd Hore

Location:	Wentworthville	Sample Preserved in Esky on Ice
Sampler:	NM/CH	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 WA			
6/07/2021	S0	SDUP302	-	G	-	Duplicate		X										
6/07/2021	—	SDUP303	-	G, A	-	Duplicate		X										
6/07/2021	—	SDUP304	-	G, A	-	Duplicate		X										
6/07/2021	S1	SDPU305	-	G, A	-	Duplicate												
6/07/2021	S2	SDUP306	-	G, A	-	Duplicate												
6/07/2021	S3	SDUP307	-	G, A	-	Duplicate												
6/07/2021	S4	SDUP308	-	G, A	-	Duplicate												
6/07/2021	S5	SDUP309	-	G, A	-	Duplicate												
6/07/2021	S6	TS-S1	-	G	-	Spike								X				
6/07/2021	S7	TB-S1	-	G	-	Blank								X				
6/07/2021	S8	FR301 - SPT	-	Vx2	-	Rinsate								X				

Remarks (comments/detection limits required):	Sample Containers:	273765
Please forward SDUP303 and SDUP304 to Melbourne	G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	Updated CoC V - Vial

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By:	Date:
Hore			Ming Yan To.	

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: E27318PH 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: Todd Hore

Location:	Wentworthville	Sample Preserved in Esky on Ice
Sampler:	NM/CH	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 WA			
6/07/2021	1	BH301	0.15-0.3	G, A	1.2	F: gravelly clay			X						X			
6/07/2021	2	BH301	0.5-0.95	G	0	Silty clay		X										
6/07/2021	3	BH301	1.6-1.8	G	0	Siltstone	X											
6/07/2021	4	BH301	1.8-1.85	G	0	Siltstone												
6/07/2021	5	BH301	2.2-2.4	G	0	Siltstone	X											
6/07/2021	6	BH301	3.0-3.2	G	0	Siltstone												
6/07/2021	7	BH301	3.8-4.0	G	0	Siltstone												
6/07/2021	8	BH301	4.8-5.0	G	0	Siltstone												
6/07/2021	9	BH302	0.16-0.4	G, A	0	F: silty clay			X						X			
6/07/2021	10	BH302	0.5-0.7	G	0	Siltstone	X											
6/07/2021	11	BH302	0.8-0.95	G	0	Siltstone		X										
6/07/2021	12	BH302	1.3-1.5	G	0	Siltstone												
6/07/2021	13	BH302	1.8-1.9	G	0	Siltstone												
6/07/2021	14	BH302	2.5-2.8	G	0	Siltstone	X											
6/07/2021	15	BH302	3.8-4.0	G	0	Siltstone												
6/07/2021	16	BH302	4.8-5.0	G	0	Siltstone												
6/07/2021	17	BH302	5.8-6.0	G	3.2	Siltstone												
6/07/2021	18	BH303	0-0.2	G	0	F: silty sand			X									
6/07/2021	19	BH303	0-0.2	A	0	F: silty sand									X			
6/07/2021	20	BH303	0.5-0.7	G	0	Silty clay	X											
6/07/2021	21	BH303	0.8-0.95	G	0	Silty clay		X										
6/07/2021	22	BH303	1.6-1.75	G	0	Siltstone												
6/07/2021	23	BH303	2.5-2.8	G	0	Siltstone												
6/07/2021	24	BH303	3.5-3.8	G	0	Siltstone												
6/07/2021	25	BH303	4.8-5.0	G	0	Siltstone	X											
6/07/2021	26	BH304	0-0.1	G, A	0	F: Silty sandy clay			X						X			

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag 8 C

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By: ELS SYD Emma Carroll	Date: 9/7/21 1450

Envirolab Services
72 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 273765
Date Received: 9/7/21
Time Received: 1450
Received By: EC
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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: E27318PH 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: Todd Hore

Location:	Wentworthville						Sample Preserved in Esky on Ice										
Sampler:	NM/CH						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 WA		
6/07/2021	27	BH304	0.1-0.2	G, A	0	F: silty clay		X							X		
6/07/2021	28	BH305	0-0.1	G, A	0.8	F: clayey silty sand			X						X		
6/07/2021	29	BH305	0.1-0.3	G, A	0	F: silty sandy clay		X							X		
6/07/2021	30	BH306	0-0.1	G, A	0	F: silty clayey sand			X						X		
6/07/2021	31	BH306	0.1-0.2	G, A	0	F: silty clay		X							X		
6/07/2021	32	BH307	0.05-0.15	G, A	0.4	F: silty sandy clay			X						X		
6/07/2021	33	BH307	0.4-0.5	G, A	0	F: silty sandy clay		X							X		
6/07/2021	34	BH307	0.8-1.0	G, A	0	F: silty sandy clay											
6/07/2021	35	BH307	1.3-1.5	G	0	Silty clay											
6/07/2021	36	BH307	1.8-2.0	G	0	Silty clay											
6/07/2021	37	BH307	2.8-3.0	G	0.4	Silty clay											
6/07/2021	38	BH307	3.3-3.5	G	0	Silty clay											
6/07/2021	39	BH307	3.8-4.0	G	0.2	Silty clay											
6/07/2021	40	BH307	4.8-5.0	G	0	Silty clay											
6/07/2021	41	BH307	5.8-6.0	G	0	Silty clay											
6/07/2021	42	BH308	0.05-0.15	G, A	0	F: silty sandy clay			X						X		
6/07/2021	43	BH308	0.8-1.0	G, A	0	Silty clay		X									
6/07/2021	44	BH308	1.3-1.5	G	0	Silty clay											
6/07/2021	45	BH308	1.8-2.0	G	0	Silty clay											
6/07/2021	46	BH309	0.05-0.15	G,A	0.1	F: silty sandy clay			X						X		
6/07/2021	47	BH309	0.8-1.0	G, A	0	Silty clay		X									
6/07/2021	48	BH309	1.3-1.5	G	0	Silty clay											
6/07/2021	49	SDUP301	-	G	-	Duplicate		X									
6/07/2021	50	SDUP302	-	G	-	Duplicate		X									
6/07/2021	51	SDUP303	-	G, A	-	Duplicate		X									

Remarks (comments/detection limits required):	Sample Containers:
Please forward SDUP303 and SDUP304 to Melbourne	G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By:	Date:
Hore				

273765

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: E27318PH 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: Todd Hore

Location:	Wentworthville	Sample Preserved in Esky on Ice
Sampler:	NM/CH	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 WA			
	6/07/2021	52	SDUP304	-	G, A	-	Duplicate		X										
S1	6/07/2021	53	SDPU305	-	G, A	-	Duplicate												
S2	6/07/2021	54	SDUP306	-	G, A	-	Duplicate												
S3	6/07/2021	55	SDUP307	-	G, A	-	Duplicate												
S4	6/07/2021	56	SDUP308	-	G, A	-	Duplicate												
S5	6/07/2021	57	SDUP309	-	G, A	-	Duplicate												
S6	6/07/2021	58	TS-S1	-	G	-	Spike								X				
S7	6/07/2021	59	TB-S1	-	G	-	Blank								X				
S8	6/07/2021	60	FR301 - SPT	-	Vx2	-	Rinsate								X				
S9	Extra	61	BH304 FCF 0-0.1 AQ		material														
S10	Extra	62	BH304 FCF Surface		material														

TS

Remarks (comments/detection limits required):	Sample Containers:
Please forward SDUP303 and SDUP304 to Melbourne	G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag V - Vial

Relinquished By:	Date: 9/7/21	Time: 12pm	Received By:	Date:
ttore				

273765

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 273765-A

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E27318PH, Wentworthville**
Number of Samples	additional analysis
Date samples received	09/07/2021
Date completed instructions received	19/07/2021

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

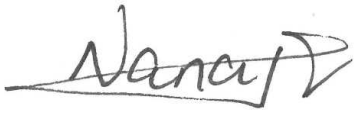
Date results requested by	26/07/2021
Date of Issue	23/07/2021

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
Diego Bigolin, Team Leader, Inorganics
Giovanni Agosti, Group Technical Manager
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Misc Inorg - Soil				
Our Reference		273765-A-26	273765-A-32	273765-A-46
Your Reference	UNITS	BH304	BH307	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	21/07/2021	21/07/2021	21/07/2021
Date analysed	-	21/07/2021	21/07/2021	21/07/2021
pH 1:5 soil:water	pH Units	7.6	10.3	10.0

CEC				
Our Reference		273765-A-26	273765-A-32	273765-A-46
Your Reference	UNITS	BH304	BH307	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	22/07/2021	22/07/2021	22/07/2021
Date analysed	-	22/07/2021	22/07/2021	22/07/2021
Exchangeable Ca	meq/100g	77	7.2	5.8
Exchangeable K	meq/100g	1.3	0.2	0.2
Exchangeable Mg	meq/100g	19	2.6	2.8
Exchangeable Na	meq/100g	0.67	7.0	3.6
Cation Exchange Capacity	meq/100g	98	17	12

Clay 50-120g				
Our Reference		273765-A-26	273765-A-32	273765-A-46
Your Reference	UNITS	BH304	BH307	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	20/07/2021	20/07/2021	20/07/2021
Date analysed	-	21/07/2021	21/07/2021	21/07/2021
Clay in soils <2µm	% (w/w)	21	8	9

Metals from Leaching Fluid pH 2.9 or 5				
Our Reference		273765-A-26	273765-A-32	273765-A-46
Your Reference	UNITS	BH304	BH307	BH309
Depth		0-0.1	0.05-0.15	0.05-0.15
Date Sampled		06/07/2021	06/07/2021	06/07/2021
Type of sample		Soil	Soil	Soil
Date extracted	-	21/07/2021	21/07/2021	21/07/2021
Date analysed	-	21/07/2021	21/07/2021	21/07/2021
pH of soil for fluid# determ.	pH units	8.6	10.0	10.0
pH of soil TCLP (after HCl)	pH units	1.8	2.0	1.9
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	5.0	5.2	5.3
Lead	mg/L	<0.03	[NA]	[NA]
Nickel	mg/L	[NA]	0.07	0.06

Method ID	Methodology Summary
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2µm reported.
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-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 2019. Extraction Fluid 1 refers to 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.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/07/2021	[NT]	[NT]	[NT]	[NT]	21/07/2021	[NT]
Date analysed	-			21/07/2021	[NT]	[NT]	[NT]	[NT]	21/07/2021	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			22/07/2021	[NT]	[NT]	[NT]	[NT]	22/07/2021	[NT]
Date analysed	-			22/07/2021	[NT]	[NT]	[NT]	[NT]	22/07/2021	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			[NT]	[NT]	[NT]	[NT]	[NT]	22/07/2021	[NT]
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	22/07/2021	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	83	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	105	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	88	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	90	[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	273765-A-46
Date extracted	-			21/07/2021	32	21/07/2021	21/07/2021		21/07/2021	21/07/2021
Date analysed	-			21/07/2021	32	21/07/2021	21/07/2021		21/07/2021	21/07/2021
Lead	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	91	92
Nickel	mg/L	0.02	Metals-020	<0.02	32	0.07	0.07	0	97	95

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	Todd Hore

Sample Login Details

Your reference	E27318PH, Wentworthville
Envirolab Reference	273765-A
Date Sample Received	09/07/2021
Date Instructions Received	19/07/2021
Date Results Expected to be Reported	26/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11
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	Misc Inorg - Soil	CEC	Clay 50-120g	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Lead	Nickel	On Hold
BH301-0.15-0.3										✓
BH301-0.5-0.95										✓
BH301-1.6-1.8										✓
BH301-1.8-1.85										✓
BH301-2.2-2.4										✓
BH301-3.0-3.2										✓
BH301-3.8-4.0										✓
BH301-4.8-5.0										✓
BH302-0.16-0.4										✓
BH302-0.5-0.7										✓
BH302-0.8-0.95										✓
BH302-1.3-1.5										✓
BH302-1.8-1.9										✓
BH302-2.5-2.8										✓
BH302-3.8-4.0										✓
BH302-4.8-5.0										✓
BH302-5.8-6.0										✓
BH303-0-0.2										✓
BH303-0-0.2										✓
BH303-0.5-0.7										✓
BH303-0.8-0.95										✓
BH303-1.6-1.75										✓
BH303-2.5-2.8										✓
BH303-3.5-3.8										✓
BH303-4.8-5.0										✓
BH304-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓		
BH304-0.1-0.2										✓
BH305-0-0.1										✓
BH305-0.1-0.3										✓
BH306-0-0.1										✓
BH306-0.1-0.2										✓
BH307-0.05-0.15	✓	✓	✓	✓	✓	✓	✓		✓	

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	Misc Inorg - Soil	CEC	Clay 50-120g	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Lead	Nickel	On Hold
BH307-0.4-0.5										✓
BH307-0.9-1.0										✓
BH307-1.3-1.5										✓
BH307-1.8-2.0										✓
BH307-2.8-3.0										✓
BH307-3.3-3.5										✓
BH307-3.8-4.0										✓
BH307-4.8-5.0										✓
BH307-5.8-6.0										✓
BH308-0.05-0.15										✓
BH308-0.8-1.0										✓
BH308-1.3-1.5										✓
BH308-1.8-2.0										✓
BH309-0.05-0.15	✓	✓	✓	✓	✓	✓	✓		✓	
BH309-0.8-1.0										✓
BH309-1.3-1.5										✓
SDUP301										✓
SDUP302										✓
SDPU305										✓
SDUP306										✓
SDUP307										✓
SDUP308										✓
SDUP309										✓
TS-S1										✓
TB-S1										✓
FR301 - SPT										✓
BH304-0-0.1AQ										✓
BH304-Surface										✓
BH301 - [TRIPLICATE]-0.15-0.3										✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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

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: 273765

Ref: 273765-A.
TAT: Standard.
Due: 26/07/2021
MT

From: Todd Hore <THore@jkenvironments.com.au>
Sent: Monday, 19 July 2021 11:48 AM
To: Aileen Hie <AHie@envirolab.com.au>
Cc: Jessica Hie <JHie@envirolab.com.au>
Subject: 273765

Hey Aileen,
Can you please schedule the following additional analyses for E27318PH, Wentworthville:

26. • 273765-26 – pH, CEC, clay content, TCLP lead;
32. • 273765-32 – pH, CEC, clay content, TCLP nickel; and
46. • 273765-46 – pH, CEC, clay content, TCLP nickel.

Please undertake the above on a standard turnaround.

Regards
Todd Hore
Senior Associate | Environmental Engineer

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: 0414 863 307
E: THore@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

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 26795

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E27318PH**
Number of Samples	2 Soil
Date samples received	13/07/2021
Date completed instructions received	13/07/2021

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	20/07/2021
Date of Issue	20/07/2021

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
Chris De Luca, Operations Manager

Authorised By

Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		26795-1	26795-2
Your Reference	UNITS	SDUP303	SDUP304
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date extracted	-	17/07/2021	17/07/2021
Date analysed	-	19/07/2021	19/07/2021
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	%	90	96

TRH Soil C10-C40 NEPM			
Our Reference	UNITS	26795-1	26795-2
Your Reference		SDUP303	SDUP304
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date extracted	-	17/07/2021	17/07/2021
Date analysed	-	19/07/2021	19/07/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	210	140
TRH C_{29} - C_{36}	mg/kg	300	300
Total +ve TRH (C10-C36)	mg/kg	510	440
TRH >C_{10} -C_{16}	mg/kg	51	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	51	<50
TRH >C_{16} -C_{34}	mg/kg	390	360
TRH >C_{34} -C_{40}	mg/kg	230	190
Total +ve TRH (>C10-C40)	mg/kg	670	560
Surrogate o-Terphenyl	%	105	107

PAHs in Soil			
Our Reference	UNITS	26795-1	26795-2
Your Reference		SDUP303	SDUP304
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date extracted	-	17/07/2021	17/07/2021
Date analysed	-	20/07/2021	20/07/2021
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	<0.1
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	<0.05	<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}	%	136	134

Acid Extractable metals in soil			
Our Reference		26795-1	26795-2
Your Reference	UNITS	SDUP303	SDUP304
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date digested	-	17/07/2021	17/07/2021
Date analysed	-	19/07/2021	19/07/2021
Arsenic	mg/kg	6	9
Cadmium	mg/kg	<0.4	2
Chromium	mg/kg	19	25
Copper	mg/kg	21	150
Lead	mg/kg	110	130
Mercury	mg/kg	<0.1	0.2
Nickel	mg/kg	7	16
Zinc	mg/kg	120	440

Moisture			
Our Reference		26795-1	26795-2
Your Reference	UNITS	SDUP303	SDUP304
Date Sampled		06/07/2021	06/07/2021
Type of sample		Soil	Soil
Date prepared	-	17/07/2021	17/07/2021
Date analysed	-	19/07/2021	19/07/2021
Moisture	%	11	18

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg 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.

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	-			17/07/2021	[NT]	[NT]	[NT]	[NT]	17/07/2021	[NT]
Date analysed	-			19/07/2021	[NT]	[NT]	[NT]	[NT]	19/07/2021	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	77	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	77	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	80	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	75	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	93	[NT]	[NT]	[NT]	[NT]	90	[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	-			17/07/2021	[NT]	[NT]	[NT]	[NT]	17/07/2021	[NT]
Date analysed	-			19/07/2021	[NT]	[NT]	[NT]	[NT]	19/07/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[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]	88	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-020	104	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/07/2021	[NT]	[NT]	[NT]	[NT]	17/07/2021	[NT]
Date analysed	-			20/07/2021	[NT]	[NT]	[NT]	[NT]	20/07/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Acenaphthylene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Acenaphthene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Phenanthrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	92	[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]	96	[NT]
Pyrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[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]	76	[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]	88	[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	128	[NT]	[NT]	[NT]	[NT]	126	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	26795-1
Date digested	-			17/07/2021	2	17/07/2021	17/07/2021		17/07/2021	17/07/2021
Date analysed	-			19/07/2021	2	19/07/2021	19/07/2021		19/07/2021	19/07/2021
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	2	9	9	0	91	91
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	2	2	2	0	97	81
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	2	25	25	0	103	84
Copper	mg/kg	1	Metals-020 ICP-AES	<1	2	150	170	12	105	99
Lead	mg/kg	1	Metals-020 ICP-AES	<1	2	130	110	17	103	72
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	2	0.2	0.2	0	99	81
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	2	16	12	29	98	83
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	2	440	440	0	100	110

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	Todd Hore

Sample Login Details

Your reference	E27318PH
Envirolab Reference	26795
Date Sample Received	13/07/2021
Date Instructions Received	13/07/2021
Date Results Expected to be Reported	20/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	2 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	9.5
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
SDUP303	✓	✓	✓	✓
SDUP304	✓	✓	✓	✓

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.

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 274175

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E27318PH, Wentworthville**
Number of Samples	7 Water
Date samples received	15/07/2021
Date completed instructions received	15/07/2021

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	22/07/2021
Date of Issue	21/07/2021

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
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		274175-1	274175-2	274175-3	274175-4
Your Reference	UNITS	MW101	MW103	MW302	MW307
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water
Date extracted	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		274175-1	274175-2	274175-3	274175-4
Your Reference	UNITS	MW101	MW103	MW302	MW307
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	98	98	98	98
Surrogate toluene-d8	%	97	97	97	98
Surrogate 4-BFB	%	101	101	102	101

vTRH(C6-C10)/BTEXN in Water						
Our Reference		274175-1	274175-2	274175-3	274175-4	274175-5
Your Reference	UNITS	MW101	MW103	MW302	MW307	MWDUP1
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<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	%	98	98	98	98	97
Surrogate toluene-d8	%	97	97	97	98	97
Surrogate 4-BFB	%	101	101	102	101	101

vTRH(C6-C10)/BTEXN in Water			
Our Reference		274175-6	274175-7
Your Reference	UNITS	TBW1	TSW1
Date Sampled		13/07/2021	13/07/2021
Type of sample		Water	Water
Date extracted	-	16/07/2021	16/07/2021
Date analysed	-	16/07/2021	16/07/2021
TRH C_6 - C_9	µg/L	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]
Benzene	µg/L	<1	105%
Toluene	µg/L	<1	108%
Ethylbenzene	µg/L	<1	118%
m+p-xylene	µg/L	<2	108%
o-xylene	µg/L	<1	109%
Naphthalene	µg/L	<1	[NA]
Surrogate Dibromofluoromethane	%	98	[NA]
Surrogate toluene-d8	%	97	104
Surrogate 4-BFB	%	101	100

svTRH (C10-C40) in Water						
Our Reference		274175-1	274175-2	274175-3	274175-4	274175-5
Your Reference	UNITS	MW101	MW103	MW302	MW307	MWDUP1
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-	17/07/2021	17/07/2021	17/07/2021	17/07/2021	17/07/2021
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
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
Surrogate o-Terphenyl	%	77	75	73	75	75

PAHs in Water - Low Level						
Our Reference		274175-1	274175-2	274175-3	274175-4	274175-5
Your Reference	UNITS	MW101	MW103	MW302	MW307	MWDUP1
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
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	<0.1
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	<0.1
Surrogate p-Terphenyl-d14	%	85	75	82	87	70

HM in water - dissolved						
Our Reference	UNITS	274175-1	274175-2	274175-3	274175-4	274175-5
Your Reference		MW101	MW103	MW302	MW307	MWDUP1
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-	16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Arsenic-Dissolved	µg/L	<1	<1	3	<1	3
Cadmium-Dissolved	µg/L	<0.1	0.1	0.8	0.7	0.9
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	20	5	61	72	62
Zinc-Dissolved	µg/L	18	13	73	86	75

Miscellaneous Inorganics					
Our Reference		274175-1	274175-2	274175-3	274175-4
Your Reference	UNITS	MW101	MW103	MW302	MW307
Date Sampled		13/07/2021	13/07/2021	13/07/2021	13/07/2021
Type of sample		Water	Water	Water	Water
Date prepared	-	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Date analysed	-	15/07/2021	15/07/2021	15/07/2021	15/07/2021
pH	pH Units	6.4	6.5	6.7	5.8
Electrical Conductivity	µS/cm	12,000	8,400	13,000	18,000

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.
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			16/07/2021	1	16/07/2021	19/07/2021		16/07/2021	[NT]
Date analysed	-			16/07/2021	1	16/07/2021	19/07/2021		16/07/2021	[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	85	[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	<1	<1	0	93	[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	90	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	84	[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	110	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	82	[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	78	[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	83	[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-W2	[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	98	1	98	104	6	99	[NT]
Surrogate toluene-d8	%		Org-023	97	1	97	102	5	100	[NT]
Surrogate 4-BFB	%		Org-023	100	1	101	102	1	101	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			16/07/2021	1	16/07/2021	19/07/2021		16/07/2021	[NT]
Date analysed	-			16/07/2021	1	16/07/2021	19/07/2021		16/07/2021	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	89	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	89	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	86	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	86	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	91	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	91	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	88	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	1	98	104	6	99	[NT]
Surrogate toluene-d8	%		Org-023	97	1	97	102	5	100	[NT]
Surrogate 4-BFB	%		Org-023	100	1	101	102	1	101	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	16/07/2021	[NT]
Date analysed	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	17/07/2021	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
Surrogate o-Terphenyl	%		Org-020	79	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	16/07/2021	[NT]
Date analysed	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	16/07/2021	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
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	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
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]	72	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
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]	74	[NT]
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]	85	[NT]
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	104	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	16/07/2021	[NT]
Date analysed	-			16/07/2021	[NT]	[NT]	[NT]	[NT]	16/07/2021	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			15/07/2021	[NT]	[NT]	[NT]	[NT]	15/07/2021	[NT]
Date analysed	-			15/07/2021	[NT]	[NT]	[NT]	[NT]	15/07/2021	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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
Samples were out of the recommended holding time for this analysis.

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	Todd Hore

Sample Login Details

Your reference	E27318PH, Wentworthville
Envirolab Reference	274175
Date Sample Received	15/07/2021
Date Instructions Received	15/07/2021
Date Results Expected to be Reported	22/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	7 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6
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	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	HM in water - dissolved	pH	Electrical Conductivity
MW101	✓	✓	✓	✓	✓	✓	✓
MW103	✓	✓	✓	✓	✓	✓	✓
MW302	✓	✓	✓	✓	✓	✓	✓
MW307	✓	✓	✓	✓	✓	✓	✓
MWDUP1		✓	✓	✓	✓		
TBW1		✓					
TSW1		✓					

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: E27318PH Date Results Required: STANDARD Page: 1 / 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore

Location:	Wentworthville					Sample Preserved in Esky on Ice										
Sampler:	HW					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		
13/07/2021	1	MW101	G1x2, Vx4, H, PVC		Water		X	X	X							
13/07/2021	2	MW103	G1x2, Vx4, H, PVC		Water		X	X	X							
13/07/2021	3	MW302	G1x2, Vx4, H, PVC		Water		X	X	X							
13/07/2021	4	MW307	G1x2, Vx4, H, PVC		Water		X	X	X							
13/07/2021	5	MWDUP1	G1x2, Vx4, H		Water		X									
13/07/2021	6	TBW1	V		Water								X			
13/07/2021	7	TSW1	V		Water								X			

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 274175
Date Received: 15-7-21
Time Received: 12-00
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):	Sample Containers:
All analysis PQLs to ANZECC (2000) Detection Limits Please	G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles

Relinquished By:	Date: 15/7/21	Time: 9:30am	Received By:	Date:
Hore			ENS	15-7-21 12-00

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)[18] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[19]. 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;

[18] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[19] 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 5.1 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)	SDUP301 (primary sample BH301 0.15-0.3m)	Approximately 10% of primary samples	Heavy metals, TRH/BTEX and PAHs
Intra-laboratory duplicate (soil)	SDUP302 (primary sample BH302 0.16-0.4m)	As above	Heavy metals, TRH/BTEX and PAHs
Intra-laboratory duplicate (groundwater)	MWDUP1 (primary sample MW302)	Approximately 33% of primary samples	Heavy metals, TRH/BTEX and PAHs
Inter-laboratory duplicate (soil)	SDUP303 (primary sample BH303 0-0.2m)	Approximately 10% of primary samples	Heavy metals, TRH/BTEX and PAHs
Inter-laboratory duplicate (soil)	SDUP304 (primary sample BH304 0-0.1m)	As above	Heavy metals, TRH/BTEX and PAHs
Trip spike (soil)	TS-S1 (6/7/21)	One per day of soil sampling	BTEX
Trip spike (groundwater)	TSW1 (13/7/21)	One per day of groundwater sampling	BTEX
Trip blank (soil)	TB-S1 (6/7/21)	One per day of soil sampling	TRH (F1) and BTEX
Trip blank (groundwater)	TBW1 (13/7/21)	One per day of groundwater	TRH (F1) and BTEX

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Rinsate (soil SPT)	FR301- SPT 1 (6/7/21)	One per day of soil sampling	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table S9 and Table G4) 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.

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. Field sampling procedures were 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.

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 anthracene PQL for groundwater analysis which was 10 times greater than the ecological SAC. In light of the PAH concentrations reported for soil and 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 arsenic, copper, nickel and zinc in SDUP301/BH301 (0.15-0.3m);
- Elevated RPDs were reported for TRH F2 and F3, arsenic, chromium, nickel and zinc in SDUP303/BH303 (0-0.2m); and
- Elevated RPDs were reported for TRH F3 and F4, cadmium, copper and nickel in SDUP304/BH304 (0-0.1m).

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 less than the SAC (with the exception of copper in the BH304 sample), the exceedances are not considered to have had an adverse impact on the data set as a whole. The variability of copper in BH304 has been adequately considered as part of the Tier 1 risk assessment.

Field/Trip Blanks

During the investigation, one and one groundwater soil trip blank was placed in the esky 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 118% and 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:

- The percent recovery for a matrix spike for OPPs in soil was not possible due to interference from analytes (other than those being tested) in sample 273765-9 (SDUP301);
- The laboratory RPD acceptance criterion was exceeded for sample 273765-1 (BH301 0.15-0.3m) for zinc. Therefore, a triplicate result was issued as laboratory sample number 273765-61; and
- The supplied sample from BH304 (0-0.1m) was sub-sampled (A & B) in order to accurately report the analytical results representative of the entire sample, as per AS4964-2004. This was due to the sample containing two different fragments of FCF, each of which was analysed separately.

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.

Appendix H: Field Work Documents

JKEnvironments

Client:	Erilyan	**Job No.:**	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	**Well No.:**	MW103
Location:	23-27 Lytton Street, Wentworthville, NSW	**Depth (m):**	

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	**SWL – Before (m):**	4.15m
Date:	7/6/21	**Time – Before:**	8:40
Undertaken By:	NM	**SWL – After (m):**	well dry
Total Vol. Removed:	20L	**Time – After:**	9:21
PID Reading (ppm):	0		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0	19	5.3	8118	6.62	207.0
5	20	1.1	8378	6.47	154.8
10	20.5	0.8	8759	6.25	128.7
15	20.5	0.5	9069	6.25	110.7
20L	20.5	0.4	9030	6.27	100.1
well dry					

Comments: Odours (YES / (NO)) NAPL/PSH (YES / (NO)) Sheen (YES / (NO)) Steady State Achieved (YES / (NO))

YSI Used: 4

very heavy silt load at start, cleared up after approx 5L

Tested By:	NM
Date Tested:	7/6/21
Checked By:	TH
Date:	2/8/21

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:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW302
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	

WELL FINISH DETAILS

	Gatic Cover [X]	Standpipe [ ]	Other (describe) [ ]

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	SWL – Before (m):	3.70 m
Date:	7/7/21	Time – Before:	11:10
Undertaken By:	NM	SWL – After (m):	Well Dry
Total Vol. Removed:	7L	Time – After:	11:32
PID Reading (ppm):	50.2		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0	15.9	12.6	9626	7.41	48.9
5	20.6	4.8	12966	6.75	37.4
7	19.1	5.6	12867	6.68	38.7
Well dry					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

YSI Used: 4

low silt load, poor recharge.

Tested By:	NM
Date Tested:	7/7/21
Checked By:	TH
Date:	2/8/21

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:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW101
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	

WELL FINISH DETAILS

Gatic Cover [X] Standpipe [ ] Other (describe) [ ]

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	SWL – Before (m):	4.50m
Date:	7/7/21	Time – Before:	10:21
Undertaken By:	NM	SWL – After (m):	Well dry
Total Vol. Removed:		Time – After:	11:00
PID Reading (ppm):	0		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0	21.4	17.8	11014	7.70	77.8
5	20.8	0.6	11926	6.34	52.0
10	20.8	0.4	12532	6.30	39.7
15	20.8	0.3	12669	6.31	32.4
20	20.7	0.9	12739	6.27	45.0
25	20.9	0.5	12637	6.29	22.4
Well dry				[illegible]	12.9

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4

Heavy silt load, medium - good recharge, slight organic odour

Tested By:	NM
Date Tested:	7/7/21
Checked By:	TH
Date:	2/8/21

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:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW307
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	

WELL FINISH DETAILS

	Gatic Cover [X]	Standpipe [ ]	Other (describe) [ ]

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	SWL – Before (m):	4.49m
Date:	7/7/21	Time – Before:	11:45
Undertaken By:	NM	SWL – After (m):	well dry
Total Vol. Removed:	5L	Time – After:	11:57
PID Reading (ppm):	2.6		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0	17.5	7.5	5031	7.5	71.2
5	20.5	3.7	19777	6.00	54.0

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4

light silt load, poor recharge

Tested By:	NM
Date Tested:	7/7/21
Checked By:	TH
Date:	2/8/21

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:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW103
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	6.0

WELL FINISH

	Gatic Cover ✓		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic Pump	SWL – Before:	4.12m
Date:	13.07.21	Time – Before:	9:00am
Undertaken By:	HW	Total Vol Removed:	~3.0L
Pump Program No:	4.05	PID (ppm):	0.3

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
4	4.14	0.5	clear	18.2	2.8	8052	5.95	18.5
8	4.14	1.0	"	18.5	1.8	8171	5.88	15.4
12	4.14	1.5	"	18.4	1.5	8168	5.86	15.3
16	4.14	2.0	"	18.5	1.1	8175	5.85	15.1
20	4.14	2.5	"	18.4	1.0	8180	5.85	15.0
24	4.14	3.0	"	18.5	0.9	8204	5.85	14.4
			start Sampling					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved ((YES) / NO)

Sampling Containers Used: 2x glass amber, 4x BTEX vials, 1 x HNO3 plastic, —x H2SO4 plastic, 1 x unpreserved plastic

YSI used: 4

Tested By: ~~Todd Hore~~ HW	**Remarks:**
Date Tested:	- Steady state conditions - difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Checked By: TH	
Date: 2/8/21	

JKEnvironments

Client:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW302
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	6.0

WELL FINISH

	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic Pump	SWL – Before:	1.53
Date:	13.07.21	Time – Before:	9:45am
Undertaken By:	HW	Total Vol Removed:	~2.30
Pump Program No:	1.57	PID (ppm):	12.7

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	1.94	0.6	clear	17.7	3.9	12558	6.05	38.2
10	2.07	1.0	"	17.6	3.6	12566	6.01	38.5
15	2.17	1.5	"	17.4	3.2	12511	6.00	39.1
20	2.21	1.7	"	16.5	3.0	12387	6.01	39.8
25	2.27	2.0	"	16.2	3.0	12333	6.01	40.9
30	2.29	2.1	"	16.1	2.9	12359	6.01	41.3
35	2.31	2.2	"	16.1	2.8	12346	6.01	41.6
40	2.33	2.3	"	16.0	2.7	12346	6.02	42.0
			start sampling					

Comments: Odours (YES / (NO)) NAPL/PSH (YES / (NO)) Sheen (YES / (NO)) Steady State Achieved (YES / (NO))

Field Duplicates: WDUP1

Sampling Containers Used: 4x glass amber, 8x BTEX vials, 2x HNO3 plastic, -x H2SO4 plastic, 2x unpreserved plastic

YSI used: 4

Tested By: ~~Todd Hore~~ HW	**Remarks:**
Date Tested: 13/7/21	- Steady state conditions
Checked By: TH	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 2/8/21	

JKEnvironments

Client:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW101
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	6.0

WELL FINISH

	Gatic Cover ✓		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic Pump	SWL – Before:	4.47
Date:	13-07-21	Time – Before:	8:05
Undertaken By:	HW	Total Vol Removed:	~2.5L
Pump Program No:	3.55	PID (ppm):	0.4

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	4.57	0.6	clear	17.0	1.2	10817	5.76	31.0
10	4.57	1.0	"	17.1	1.0	10985	5.78	28.7
15	4.57	1.5	"	17.2	0.9	11076	5.79	25.1
20	4.57	2.0	"	17.4	0.8	11155	5.79	20.6
25	4.57	2.5	"	17.4	0.8	11182	5.80	17.7
			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, 4 x BTEX vials, / x HNO3 plastic, - x H2SO4 plastic, / x unpreserved plastic

YSI used: 4

Tested By: ~~Todd Hore~~ HW	**Remarks:**
Date Tested: 13/7/21	- Steady state conditions
Checked By: TH	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 2/8/21	

JKEnvironments

Client:	Erilyan	Job No.:	E27318PH
Project:	Proposed Northside West Clinic Stage 2 Development	Well No.:	MW307
Location:	23-27 Lytton Street, Wentworthville, NSW	Depth (m):	6.0

WELL FINISH

	Gatic Cover ✓		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic pump	SWL – Before:	4.44
Date:	13/7/21	Time – Before:	11:20am
Undertaken By:	HW	Total Vol Removed:	~1.80L
Pump Program No:	1.53	PID (ppm):	1.4

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	4.62	0.6	clear	18.5	4.3	18290	5.64	56.6
10	4.69	0.8	"	18.2	3.6	18305	5.44	55.1
15	4.74	1.0	"	18.0	3.3	18137	5.41	54.7
20	4.78	1.2	"	17.9	3.6	17962	5.41	54.7
25	4.81	1.4	"	17.8	3.3	17869	5.40	54.8
30	4.82	1.5	"	17.7	3.2	17795	5.38	55.1
35	4.85	1.6	"	17.7	3.0	17773	5.36	55.2
40	4.86	1.7	"	17.6	3.8	17795	5.32	56.0
45	4.88	1.8	"	17.7	2.9	17859	5.29	56.0

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)) Sheen (YES / (NO)), Steady State Achieved (YES / (NO))

Sampling Containers Used: 2x glass amber, 4x BTEX vials, /x HNO3 plastic, –x H2SO4 plastic, /x unpreserved plastic

YSI used: 4

Tested By: ~~Todd Hore~~ HW

Date Tested: 13/7/21

Checked By: TH

Date: 2/8/21

Remarks:

- Steady state conditions
- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown

Appendix I: 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), (2018). 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 No.55 – Remediation of Land 1998 (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, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia