REPORT TO

HEALTH INFRASTRUCTURE

ON

REMEDIATION ACTION PLAN

FOR

PROPOSED HOSPITAL DEVELOPMENT

AT

FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Date: 15 October 2024

Ref: E35821PRrpt4.Rev1-RAP

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Executive Summary

Health Infrastructure ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed hospital development at Finley Hospital, 24 Dawe Avenue, Finley, NSW ('the site'). The site location is shown on Figure 1 and the RAP applies to the land within the site boundaries as shown on Figure 2 attached in Appendix A.

This RAP has been prepared to demonstrate that the site can be made suitable for the proposed hospital development via remediation, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021. It is understood that the RAP will support the Review of Environmental Factors (REF) for the proposed development.

JKE has previously undertaken a Preliminary Site Investigation (PSI) and a Detailed Site Investigation (DSI) at the site in 2023. A summary of these investigations and other relevant information is provided in Section 2 of this RAP.

JKE understand that the proposed development involves a minor extension to the existing Finley Health Service building to deliver six new inpatient beds (as replacement of existing beds) and an expanded Front of House. The works will also provide a new main entrance, internal refurbishment of the emergency department and relocation and enhancement of medical imaging, services upgrade, landscaping, and the replacement of the existing roof. At the completion of the project, the existing 16 bed capacity will reduce to 14 inpatient beds. Based on the provided information, JKE expect that only minor earthworks (cut/fill) would be required to accommodate the proposed development. Selected development plans provided to JKE are attached in Appendix B.

Investigations have identified redundant underground storage tanks (USTs) and odorous fill soils in the south of the site. The investigations concluded that there was potential for localised impacts to be encountered in the vicinity of the USTs and associated infrastructure, and that these may pose risk to receptors. The USTs and infrastructure will be decommissioned during the remediation process and the residual risks assessed by the validation process.

The RAP outlines requirements for remediation of the UST area by in-situ abandonment of the tanks and removing any associated infrastructure to the extent practicable. Where associated infrastructure cannot be removed, it is to be decommissioned in-situ. The RAP also includes contingencies for excavation and disposal of material, or for capping and containing contaminated soils on-site. These contingencies relate to validation failures and any unexpected finds identified during the development of the site. The application of these contingencies triggers additional requirements for reporting, prior to the implementation.

We are of the opinion that the potential risks associated with the USTs can be mitigated via remediation and the implementation of this RAP. A validation report is to be prepared on completion of remediation activities and submitted to the determining authority to demonstrate that the remediation/validation was successful. If contaminated material is capped on site (e.g. if the capping contingency needs to be implemented), a long-term Environmental Management Plan (EMP) will also be prepared as part of the validation documentation.

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

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Abbreviations

Ambient Background Concentrations	**ABC**
Asphaltic Concrete	**AC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Asbestos Fines/Fibrous Asbestos	**AF/FA**
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**
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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**
Health Investigation Level	**HIL**
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	**PCB**
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**
Validation Assessment Criteria	**VAC**
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

Health Infrastructure ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed hospital development at Finley Hospital, 24 Dawe Avenue, Finley, NSW ('the site'). The site location is shown on Figure 1 and the RAP applies to the land within the site boundaries as shown on Figure 2 attached in Appendix A.

This RAP has been prepared to demonstrate that the site can be made suitable for the proposed hospital development via remediation, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021[1]. It is understood that the RAP will support the Review of Environmental Factors (REF) for the proposed development.

JKE has previously undertaken a Preliminary Site Investigation (PSI) and a Detailed Site Investigation (DSI) at the site. A summary of these investigations and other relevant information is provided in Section 2. The investigations identified redundant underground storage tanks (USTs) and odorous fill soils in the south of the site which may potentially pose risk to receptors.

Our geotechnical division, JK Geotechnics (JKG), has undertaken a geotechnical investigation for the proposed development[2]. The JKG report should be read in conjunction with this RAP.

1.1 Proposed Development Details

The proposed development involves a minor extension to the existing Finley Health Service building to deliver six new inpatient beds (as replacement of existing beds), and an expanded Front of House. The works will also provide a new main entrance, internal refurbishment of the emergency department and relocation and enhancement of medical imaging, services upgrade, landscaping, and the replacement of the existing roof. At the completion of the project, the existing 16 bed capacity will reduce to 14 inpatient beds.

Based on the provided details, JKE expect that only minor earthworks (cut/fill) would be required to accommodate the proposed development. Selected development plans provided to JKE are attached in Appendix B.

1.2 Aims and Objectives

The goal of the remediation is to reduce contamination-related risks to human health and the environment, and to render the site suitable for the proposed development from a contamination viewpoint.

The primary aims of the remediation are to mitigate potential contamination-related risks associated with the USTs and any associated infrastructure and localised impacted soil within the vicinity of the USTs.

[1] *State Environmental Planning Policy (Resilience and Hazards) 2021* (NSW) (referred to as SEPP Resilience and Hazards 2021)
[2] JKG, (2023). *Report to Health Infrastructure on Geotechnical Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley NSW.* (Ref: 35821YFrpt, dated 14 June 2023) (referred to as JKG report)

The objectives of this RAP are to:

- Provide a rationale to support the extent of the proposed remediation and the remedial/site validation approach based on the current dataset;
- Document a methodology that is to be implemented to remediate and validate the site; and
- Document a strategy that can be implemented in the event of uncovering any unexpected, contamination-related finds, and provide other relevant contingency plans.

1.3 Scope of Work

The RAP was prepared generally in accordance with a JKE proposal (Ref: EP58924PR) of 28 June 2023, the consultancy agreement (Ref: HI22656) and written acceptance from the client of the variation dated 30 September 2024. The scope of work included a review of the previous JKE reports and Conceptual Site Model (CSM), consultation with the client's nominated project manager, and preparation of a RAP.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[3], Consultants Reporting on Contaminated Land (2020)[4] guidelines, other guidelines made under or with regards to the Contaminated Land Management Act (1997)[5] and SEPP Resilience and Hazards 2021. A list of reference documents/guidelines is included in Appendix F.

[3] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)
[4] NSW EPA, (2020a). *Consultants reporting on contaminated land, Contaminated Land Guidelines.* (referred to as Consultants Reporting Guidelines)
[5] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

2 SITE INFORMATION

2.1 Background

2.1.1 Preliminary Site Investigation (PSI)

JKE previously prepared a PSI for the proposed hospital redevelopment at the site in 2023[6]. The scope of the PSI included a desktop review of historical information, a site walkover inspection, and soil sampling from 12 locations (BH1 to BH9 and TP10 to TP12 inclusive) as shown on the figures attached in Appendix A. The site was historically used for public recreation until circa 1960, and has been used for a hospital since. Potential contamination sources identified at the site and the immediate surrounds included:

- Historic filling activities;
- USTs present within the site;
- Use of pesticides;
- Hazardous building materials present within existing and/or former structures;
- On-site generator and associated fuel storage; and
- Maintenance workshop/gardeners shed and associated flammable good store.

The PSI identified fill (i.e. historically imported or placed soils) to depths of approximately 0.2m to 0.8m below ground level (BGL), underlain by sandy, silty and clayey alluvial soils. Groundwater seepage was encountered in boreholes BH2 to BH5 inclusive at depths of approximately 3.5m to 4.5m below ground level (BGL). On completion of auger drilling, the standing water level (SWL) in the boreholes was measured to range from approximately 3.8m to 4.8mBGL. The fill typically comprised silty sand, sandy and/or clayey silt and silty clay with inclusions of ash, gravel and root fibres. No stained or odorous fill soils were encountered.

The PSI identified fill soils at one location impacted by hydrocarbons (total recoverable hydrocarbons – TRHs) at concentrations that were above the adopted site assessment criteria (SAC).

The PSI did not identify contamination that would preclude the proposed development and a trigger for remediation was not identified. The following was recommended:

- Undertake a DSI to better assess the risks associated with the areas of environmental concern (AEC)/potential sources of contamination and to assess whether remediation is required; and
- If required (based on the findings of the DSI), a RAP is to be prepared. Any requirements documented in a RAP are to be implemented and the site is to be remediated and validated.

2.1.2 Detailed Site Investigation (DSI)

A DSI was undertaken by JKE in 2023[7]. The DSI included a review of site information and site history information presented in the PSI, soil sampling from an additional 32 locations and groundwater sampling from five monitoring wells installed within the site.

[6] JKE, (2023a). *Report to Health Infrastructure on Preliminary (Stage 1) Site Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley, NSW.* (Ref: E35821PRrpt) (Referred to as PSI)
[7] JKE, (2023b). *Report to Health Infrastructure on Detailed (Stage 2) Site Investigation for Proposed Hospital Development at Finley Hospital, 24 Dawe Avenue, Finley, NSW.* (Ref: E35821PRrpt3) (Referred to as DSI)

The DSI identified fill to depths of approximately 0.2m to 1mBGL, underlain by alluvial silty clay and silty sandy clay. The fill typically comprised of silty clay and silty clayey sand with inclusions of ash, slag, gravel, building rubble (asphalt, brick, ceramic and plastic fragments), roots and root fibres. A hydrocarbon odour was noted within fill soils in BH103 to a depth of approximately 0.6mBGL. BH103 was located within close proximity to the USTs in the south of the site as shown on Figure 2 attached in Appendix A.

During drilling, groundwater seepage was encountered in three boreholes (BH101, BH103 and BH104) at depths of approximately 4.4m to 4.8mBGL. The SWLs recorded in the monitoring wells installed at the site ranged from approximately 3.6mBGL to 3.7mBGL.

The DSI identified TRHs in soil above the human health and ecological SAC. However, the SAC selected were conservative and the concentrations detected were not considered to pose an unacceptable risk to human health and ecological receptors in the context of the proposed development.

The DSI identified heavy metals (copper, nickel and zinc) in groundwater at concentrations above the ecological SAC. The zinc results were relatively consistent between all of the groundwater samples. The copper and nickel concentrations in the sample collected from MW1 were notably higher than the other samples. The concentrations of copper, nickel and zinc recorded within the soil samples collected from these locations were generally consistent with the expected ambient conditions, indicating the soils at the site were unlikely to be the source of the heavy metals. On this basis, JKE considered the zinc impacts were likely a regional issue. The occurrence of marginally elevated copper and nickel in MW1 was considered to be attributed to grey water impacts, most likely associated with a leaking sewer and the discharge of laundry water containing detergent. This was supported by elevated electrical conductivity (EC) results in MW1 and the observations during development.

Based on the proximity of ecological receptors relevant to groundwater and the marginally elevated copper and nickel concentrations associated with MW1, JKE was of the opinion that the elevated concentrations did not pose an unacceptable risk to ecological receptors.

The DSI identified USTs and odorous fill soils which may potentially pose risk to receptors. Though unacceptable risks that warranted remediation were not identified, due to the sampling data gaps beneath buildings and the potential for localised impacts in the UST pit, a RAP was recommended to be prepared to provide a framework to manage the removal of the USTs and potential risks associated with contamination.

The DSI concluded that the site was suitable for the proposed development, subject to implementation of a suitable RAP. The following was recommended:

- Prepare a RAP to outline the framework for the removal, remediation and validation of the USTs and associated infrastructure; and
- Undertake a validation assessment documenting the works.

2.1.3 Other Reports Reviewed by JKE

As part of the historical information review for the PSI, JKE also reviewed the following reports:

- Hazardous building materials (hazmat) survey, prepared by Environmental and Safety Professionals (ESP) in 2015[8];
- A due diligence report, prepared by Northrop Consulting Engineers in 2022[9]; and
- An Aboriginal heritage due diligence assessment, prepared by NGH in 2023[10].

The hazmat survey identified friable asbestos materials within the main hospital building and bonded/non-friable asbestos materials (i.e. ACM) within several buildings across the site. Synthetic mineral fibres (SMF) were identified in all buildings and potential polychlorinated biphenyls (PCBs) containing capacitors were noted in the lift shaft work area. Ozone depleting substances were identified in three air conditioning and refrigerant systems on the site. Lead-based paint systems were not identified on the site. JKE noted that the version of the report supplied only included odd-numbered pages and was therefore incomplete.

The due diligence report identified the following:

- Friable asbestos was identified in the boiler room and was considered to be 'medium' risk. ESP recommended the asbestos was managed under an asbestos management plan (AMP) and should be removed as soon as practicable; and
- Bonded/non-friable asbestos was identified in the health services, community health, staff accommodation, gardener's shed and mortuary buildings and was generally considered to be 'low' risk. ESP recommended management of the asbestos under a suitable AMP.

The Aboriginal heritage due diligence assessment considered it was unlikely that Aboriginal heritage objects or areas of archaeological potential were present within the site and recommended the development could proceed with caution.

2.1.4 Structural Advice Memorandum

In preparation of this revised RAP, JKE were provided with a memorandum from Tonkin, the project structural engineer, prepared in 2024[11]. The advice indicated that due to the proximity of the USTs to the existing shed, Tonkin was of the opinion that the removal of the USTs would likely undermine the foundation system of the shed structure. Considering this and to maintain the structural integrity of the shed, Tonkin recommended that the USTs remain in place until such time in future that both the shed and tanks can be demolished and removed concurrently. A copy of the memorandum is attached in Appendix E.

JKE is of the opinion that if the USTs are no longer in use, and they cannot be decommissioned in a reasonable timeframe via removal/off-site disposal, then the USTs must be abandoned in-situ. Refer to Section 6.3 for further details.

[8] Environmental and Safety Professionals, (2015). *Report for Murrumbidgee LHD Asset Services. Hazardous Materials Survey: Finley Hospital, 23 Dawe Street, Finley NSW 2713*. (Ref: J30414)

[9] Northrop Consulting Engineers, (2022). *Finley Hospital – Site Due Diligence Report* (Ref: SU221522-01-MD-1, Revision 2)

[10] NGH Pty Ltd, (2023). *Aboriginal Heritage Due Diligence Assessment; Finley Hospital Redevelopment*. (Ref: 22-611, draft issued 31 January 2023)

[11] Tonkin, (2024). *Memorandum. Finley Hospital Redevelopment – Existing underground storage tanks* (Ref: 222359, dated 24 July 2024)

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Health Administration Corporation
Site Address:	24 Dawe Avenue, Finley, NSW
Lot & Deposited Plan:	Lot 246 in DP1016411
Current Land Use:	Hospital
Proposed Land Use:	Hospital
Local Government Area (LGA):	Berrigan Shire Council
Current Zoning:	RU5: Village
Site Area (a) (approx.):	20,000
RL (AHD in m) (approx.):	108-109
Geographical Location (decimal degrees) (approx. centre of site):	Latitude: -35.641713 Longitude: 145.568239
Site Plans:	Appendix A

2.3 Summary of Site Setting and Description

The site is located in a predominantly residential area of Finley and is bound by Dawe Avenue to the North and Scoullar Street to the south. The site is located approximately 1km to the south-west of Finley Lake (a man-made lake). The regional topography is characterised by a typical flood plain with near level topography. The site itself has similar topography as the surround with near level terrain.

A walkover inspection of the site was undertaken by JKE as part of the PSI on 11 May 2023. Observations made during the course of the DSI confirmed that the site remained generally unchanged since the PSI. A summary of the key observations is provided below:

- Several single-storey buildings of brick and fibre cement construction with metal roofing were observed across the site;
- A stand-alone garage/shed of metal sheet construction was located in the west of the site and several metal carport and shade structures were observed across the site;
- A crescent-shaped asphaltic concrete (AC) paved driveway provided vehicular ingress/egress from Dawe Avenue. A second AC driveway extended in a southerly direction along the western site boundary from Dawe Avenue which provided vehicular access to the neighbouring property. AC pavement connected these two driveways and was used for ambulance transfers;
- A gravel driveway was located in the south of the site, extending north-westerly from the south-eastern corner of the site. A gravel carpark was also located in the south of the site;

- Minor quantities of paints, fuel, solvents (mineral turpentine), lubricants and grease were typically stored within the maintenance building. The products were stored in appropriate containers;
- Two redundant USTs were observed to the west of the maintenance shed and there was a generator to the north-east of the USTs (see Figure 2);
- Mature native trees were observed in the north, east and south-east of the site. Flowering plants in formed gardens and shrubbery were observed in the north of the site near the main hospital entrance, and within the west of the site. The vegetation appeared to be generally healthy based on a cursory inspection; and
- Sensitive environments such as wetlands, ponds, creeks or extensive areas of native vegetation were not observed on site or in the immediate surrounds.

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

- North – Dawe Avenue, with low-density residential and agricultural land use beyond;
- South – Scoullar Street with low-density residential and retirement living (Alumuna) beyond;
- East – Diggers Park (recreational space) with Donaldson Street and low-density residential beyond; and
- West – residential care facility and medical centre (Finley Regional Care), with Hamilton Street and agricultural land use beyond.

3 SUMMARY OF GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information reviewed for the previous investigations indicated that the site is underlain by alluvial floodplain deposits, which typically consists of silt, very fine to medium grained lithic to quartz rich sand and clay.

ASS information reviewed for the previous investigation indicated that the site is not located in an ASS risk area.

A summary of the subsurface conditions encountered during the DSI is presented in the following table:

Table 3-1: Summary of Subsurface Conditions - DSI

Profile	Description
Pavement	AC pavement was encountered at the surface in BH101 to BH103 and BH105. The pavement ranged in thickness from approximately 20mm to 100mm.
Fill	Fill was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.2m to 1mBGL. TP107 was terminated in the fill at a maximum depth of approximately 0.9m due to an obstruction (i.e. underground services). The fill typically comprised silty clay and silty clayey sand with inclusions of ash, slag, gravel, building rubble (asphalt, brick, ceramic and plastic fragments), roots and root fibres. A surficial gravel layer (i.e. road base) was encountered at the surface in BH122 and extended to a maximum depth of 0.1mBGL. A hydrocarbon odour was noted within the fill soils in BH103, to a depth of approximately 0.6mBGL. JKE note that BH103 was located within close proximity to the USTs in the south of the site.
Natural Soil	With the exception of TP107, alluvial silty clay and silty sandy clay was encountered in all boreholes and test pits and extended to maximum terminal depth of the investigation at approximately 6mBGL.
Groundwater	Groundwater seepage was encountered in BH101, BH103 and BH104 at depths of approximately 4.4m to 4.8mBGL. All other boreholes and test pits remained dry on completion of drilling/excavation and a short time after.

3.2 Hydrogeology and Surface Water Bodies

Hydrogeological information reviewed for the previous investigations 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 42 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 110m to the south of the site. However, this bore had been decommissioned;
- The nearest functioning borehole was located approximately 160m to the east of the site. JKE note this bore is located within a residential property and is assumed to be used for irrigation purposes;
- The drillers log information from the closest registered bores typically identified fill, sand and clay soils with some silt and gravel to terminal depths of approximately 7.3m to 75mBGL. SWLs were not

recorded in the nearest bores, though ranged from approximately 5.6m to 8.8mBGL in the bores located approximately 600m to 800m to the south-east of the site; and

- The nearest bore to encounter bedrock was approximately 1.2km to the north-east of the site and encountered granite bedrock at a depth of approximately 180mBGL.

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Finley Lake (a man-made water body) located approximately 1km to the north-east of the site. The nearest natural surface water body is the Tuppal Creek, located approximately 12km to the south-west of the site.

A summary of the groundwater conditions during the DSI is provided below:

Table 3-2: Summary of Groundwater Conditions

<table>
<tr><th>Aspect</th><th>Details</th></tr>
<tr><td>Groundwater Depth & Flow</td><td>SWLs measured in the monitoring wells installed at the site ranged from approximately 3.6mBGL to 3.7mBGL during the DSI. Inferred surface elevations of the wells ranged from approximately 108.6mAHD to 108.8mAHD. Groundwater RLs calculated on these measurements ranged from approximately 104.9mAHD to 105.2mAHD.

<table>
<tr><th>MW reference</th><th>Reduced Level (mAHD) (Approx.)</th><th>SWLs</th><th>SWL (mAHD) (Approx.)</th></tr>
<tr><td>MW1</td><td>108.7</td><td>3.64</td><td>105.1</td></tr>
<tr><td>MW3</td><td>108.8</td><td>3.69</td><td>105.1</td></tr>
<tr><td>MW101</td><td>108.6</td><td>3.67</td><td>104.9</td></tr>
<tr><td>MW103</td><td>108.8</td><td>3.69</td><td>105.1</td></tr>
<tr><td>MW104</td><td>108.8</td><td>3.64</td><td>105.2</td></tr>
</table>

The groundwater levels were generally consistent between the monitoring wells and the direction of flow could not be confirmed from the measured SWLs.</td></tr>
<tr><td>Groundwater Field Parameters</td><td>Field measurements recorded during sampling were as follows:
- pH ranged from 6.12 to 6.61;
- EC ranged from 1,443µS/cm to 15,916µS/cm;
- Eh ranged from -4.6mV to 239.4mV; and
- DO ranged from 0.4mg/L to 2mg/L.

The PID readings in the monitoring well headspace recorded during sampling ranged from 0ppm in MW1 and MW3 to 1.5ppm in MW101.</td></tr>
<tr><td>Light non-aqueous phase liquids (LNAPL)</td><td>Phase separated product (i.e. LNAPL) was not detected using the interphase probe during groundwater sampling or visibly observed using a dedicated disposable bailer.</td></tr>
<tr><td>Groundwater contaminants</td><td>The groundwater samples collected for the DSI encountered concentrations of zinc, copper and nickel above the ecological SAC (refer to Figure 3). The zinc exceedances were generally consistent across the monitoring well network and are considered to be associated with regional factors.

The copper and nickel concentrations in MW1 was considered to be attributed to grey water impacts, most likely associated with a leaking sewer and the discharge of laundry water containing detergent. This was supported by the high EC reading in MW1 and the observations during development.</td></tr>
</table>

Aspect	Details
	The DSI noted that the exceedances of the ecological SAC were minor and there are no nearby receiving waterbodies which could be easily impacted. There was not considered to be a valid and complete source-pathway-receptor (SPR) linkage due to the distance of nearby water bodies and ecological risks from copper and nickel are considered to be low and acceptable.

4 REVIEW OF 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 and investigation data to date. Reference should also be made to the figures attached in Appendix A.

4.1 Summary of Contamination (Site Characterisation)

A copy of the soil and groundwater data summary tables and borehole logs from the previous investigations is included in Appendix B and Appendix C. The SAC exceedances are shown on Figure 3 attached in Appendix A. The following exceedances of the SAC were reported:

- TRH F2 concentrations above the human health and ecological SACs in shallow fill soils in BH7 and BH118;
- A TRH F3 concentration above the ecological SAC in shallow fill soil in BH118;
- A TRH F3 concentration above the ecological SAC in underlying natural soils in TP115;
- Zinc concentrations above the ecological SAC in groundwater in all monitoring wells;
- Copper concentrations above the ecological SAC in groundwater in MW1 and MW3; and
- A nickel concentration above the ecological SAC in groundwater in MW1.

It is noted that the above SAC exceedances were assessed to not pose an unacceptable risk to receptors and did not warrant remediation.

USTs and odorous fill soils in the vicinity of the USTs, were identified during the DSI. Due to the sampling data gaps beneath buildings and the potential for localised impacts in the UST pit, JKE considered that the USTs and odorous fill soils may potentially pose risk to receptors. A RAP was recommended to provide a framework to manage the removal of the USTs and potential risks associated with contamination. JKE was subsequently provided advice from the project structural engineer (Tonkin) that due to the proximity of the UST to the buildings, the removal of the UST would likely undermine the foundations of the shed structure. Based on this advice and in light of the findings of the previous investigations, in-situ decommissioning of the USTs was considered a suitable alternative approach.

4.2 CSM

The table below includes a review of the CSM which has been used to design the soil remediation strategy. The CSM will require further review once additional site data becomes available.

Table 4-1: CSM

Contaminant source(s) and contaminants of concern	**Contamination sources:** USTs and associated infrastructure. The contaminants in groundwater were associated with background sources and leaking sewer infrastructure. **Contaminants of concern for the RAP include:** TRHs; monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylene – BTEX) and the polycyclic aromatic hydrocarbon (PAH) compound naphthalene (BTEXN).

	<u>The Contamination of Potential Concern (CoPC) for the DSI included:</u> heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); BTEX; TRHs; PAHs; organochlorine and organophosphate pesticides (OCPs and OPPs); PCBs; and asbestos.
Affected media	Soil is the affected medium for this RAP. The groundwater has been impacted by heavy metals (copper, nickel and zinc). The source of the zinc in groundwater is likely associated with regional issues, whilst the copper and nickel concentrations were attributed to grey water impacts, most likely associated with a leaking sewer and laundry water. Groundwater has not been identified as a medium requiring remediation under this RAP as the contaminants are not considered to pose a risk to receptors.
Receptor identification	Human receptors include site occupants/users (including adults and children) in a healthcare setting, construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users in a residential and retirement-living setting. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the landscaped areas).
Exposure pathways and mechanisms	Potential exposure pathways relevant to the human receptors include direct contact (ingestion, dermal absorption) and inhalation of dust and vapours (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. Exposure to human receptors during future site use could occur via inhalation of vapours within enclosed spaces, such as buildings, and during soil disturbance. Exposure to ecological receptors could occur via primary contact and ingestion of soils in unpaved areas and during soil disturbance. The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into confined spaces, including service trenches and buildings; • Contact (dermal or ingestion) exposure to TRH/BTEX and/or PAHs in soil (in the vicinity of the USTs); • Contact (dermal or ingestion) exposure during soil disturbance; and • Contact (dermal, ingestion, plant uptake) exposure to ecological receptors to TRHs.

The remedial/management actions proposed in this RAP focus on the in-situ abandonment of the USTs, removal of associated infrastructure (to the extent practicable), and in-situ decommissioning of associated infrastructure that cannot reasonably be removed. The RAP also provides provisions for removal of any associated impacted soils in the vicinity of the USTs and associated infrastructure.

5 EXTENT OF REMEDIATION AND REMEDIATION OPTIONS

5.1 Extent of Remediation

As the RAP includes provisions for managing unexpected finds, and for remediating the UST area, the RAP applies to the whole site as shown on the figures attached in Appendix A.

The extent of remediation associated with the USTs is expected to include the USTs themselves and any contents, associated infrastructure such as pipework, impacted tank pit backfill, and any unacceptably impacted soils in the vicinity of the USTs and associated infrastructure. It is noted that results to date suggest that any associated impacts will be relatively localised.

5.2 Soil Remediation Options Assessment

The NSW EPA follows the hierarchy set out in NEPM 2013 for the remediation of contaminated sites. The preferred order for soil remediation and management is as follows:

1. On-site treatment of soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level;
2. Off-site treatment of excavated material so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site;

Or if the above are not practicable:

3. Consolidation and isolation of the soil by on-site containment within a properly designed barrier; and
4. Removal of contaminated material to an approved site or facility, followed where necessary by replacement with clean material; or
5. Where the assessment indicates that remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

For simplicity herein, the above hierarchy are respectively referred to as Option 1, Option 2, Option 3 etc.

The NSW EPA Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd Edition) (2017)[12] provides the following additional requirements to be taken into consideration:

- Remediation should not proceed in the event that it is likely to cause a greater adverse effect than leaving the site undisturbed; and
- Where there are large quantities of soil with low levels of contamination, alternative strategies should be considered or developed.

The table below discusses a range of remediation options applicable to soil. It is noted that these options relate only to the remediation of soil contamination and do not consider the abandonment of the USTs.

[12] NSW EPA, (2017). *Contaminated land Management, Guidelines for the NSW Site Auditor Scheme (3rd ed.).* (referred to as Site Auditor Guidelines 2017)

Table 5-1: Consideration of Soil Remediation Options

Option	Discussion	Applicability
<u>Option 1</u> **On-site treatment of contaminated soil**	On-site treatment can provide a mechanism to reuse the processed material, and in some instances, avoid the need for large scale earthworks. Treatment options are contaminant-specific and can include bio-remediation, soil washing, air sparging and soil vapour extraction and thermal desorption. Depending on the treatment option, licenses may be necessary for specific individual waste streams due to the potential for air pollution and the formation of harmful by-products during incineration processes. Licences for re-use of treated material/waste may also be required.	Bioremediation is potentially applicable for hydrocarbon impacted soil associated with the UST area. However, bioremediation can be slow for aged TRH impacts and heavier fraction TRHs. This would not be the preferred method if small quantities of soil are involved as the costs for handling, managing and validating this process would likely exceed costs for disposal of the material as waste.
<u>Option 2</u> **Off-site treatment of contaminated soil**	Contaminated soils are excavated, transported to an approved/licensed treatment facility, treated to remove/stabilise the contaminants then returned to the subject site, transported to an alternative site or disposed to an approved landfill facility. This option is also contaminant-specific. The cost per tonne for transport to and from the site and for treatment is considered to be relatively high. The material would also have to be assessed in terms of suitability for reuse as part of the proposed development works under the waste and resource recovery regulatory framework.	Not considered to be applicable for asbestos and for the small-scale remediation of hydrocarbon impacts associated with the USTs at the site.
<u>Option 3</u> **Consolidation and isolation of impacted soil by cap and containment**	This would include capping material in-situ beneath appropriate barriers, or the consolidation of contaminated soil within an appropriately designed cell, followed by the placement of an appropriate barrier over the material to reduce the potential for future disturbance. The capping and/or containment must be appropriate for the specific contaminants of concern. Depending on the concentrations of contaminants being encapsulated, an ongoing Environmental Management Plan (EMP) may be required and an EMP would need to be publicly notified and made to be legally enforceable (e.g. via listings in the Section 10.7 planning certificate and on the land title).	This is not the preferred method if the contaminants are volatile (i.e. BTEX, TRH F1, TRH F2) and/or relatively small quantities of contaminated soils are involved.

Option	Discussion	Applicability
<u>Option 4</u> Removal of contaminated material to an appropriate facility and reinstatement with clean material	Contaminated soils would be classified in accordance with NSW EPA guidelines for waste disposal, excavated and disposed of off-site to a licensed landfill. The material would have to meet the requirements for landfill disposal. Landfill gate fees would apply in addition to transport costs.	Most applicable considering the relatively small quantities of soil expected to be remediated for the USTs and associated infrastructure.
<u>Option 5</u> Implementation of management strategy	Contaminated soils would be managed in such a way to reduce risks to the receptors and monitor the conditions over time so that there is an on-going minimisation of risk. This may occur via the implementation of monitoring programs, potentially also involving capping systems.	This option is applicable for in-situ abandonment of the USTs, associated infrastructure and any impacted soils, if there is low-level residual contamination in this vicinity.

5.3 Rationale for the Preferred Option for Remediation

The preferred option for remediation of any contaminated soil and UST associated infrastructure is Option 4 (excavation and off-site disposal). This will include decommissioning and removal of the UST associated infrastructure (to the extent practicable), and excavation and off-site disposal of any localised contaminated soils in the vicinity of the USTs, should it be identified during the decommissioning process.

Removal of the tanks is not the preferred option at this time due to the potential risks to the foundation systems of the nearby shed structure.

The RAP includes contingencies for alternative remediation approaches, where the preferred options are not reasonably able to be completed, or in situations where there are unexpected finds. The contingencies are outlined in Section 8.2 of this RAP.

6 REMEDIATION DETAILS

Prior to commencement of demolition and any soil disturbance, the client, project manager and remediation contractor must review and make arrangements to meet the remediation site management requirements for the project as outlined in Section 9 of this RAP.

The following general sequence of works is anticipated:

- Pre-commencement meeting;
- Decommissioning of the USTs;
- Validation of remedial works and validation of imported soil materials. This includes materials imported to reinstate the remedial excavations, together with engineering material such as sub-base and drainage materials (e.g. recovered aggregate etc), landscaping materials or any other materials imported for service trenches etc, to the point in time that the validation report is issued.

Details in relation to the above are outlined in the respective subsection below.

6.1 Roles and Responsibilities

Table 6-1: Roles and Responsibilities

Role	Responsibility
Developer/ client	Health Infrastructure. The client (or their nominated project manager) is required to appoint the project team for the remediation/validation and must provide all investigation reports including this RAP to the project manager, remediation contractor/principal contractor, and any other relevant parties involved in the project.
Project Manager	Capital Insight Pty Limited. The project manager is required to review all documents prepared for the project and manage the implementation of the procedures outlined in this RAP. The project manager is to take reasonable steps so that the remediation contractor and others have understood the RAP and will implement it in its totality. The project manager will review the RAP and other documents and will update the parties involved of any changes to the development or remediation sequence (in consultation with the validation consultant).
Principal Contractor / Remediation Contractor	To be confirmed. The principal contractor is required to review all documents prepared for the project and manage the implementation of the procedures outlined in this RAP. The principal contractor is to take reasonable steps so that the remediation contractor and others have understood the RAP and will implement it in its totality. The principal contractor will review the RAP and other documents and will update the parties involved of any changes to the development or remediation sequence (in consultation with the validation consultant).

Role	Responsibility
Remediation Contractor	To be confirmed. The remediation contractor (this may be the same entity as the principal contractor) is required to review all relevant documents prepared for the project, apply for any relevant removal licences or permits and implement the remediation requirements and relevant validation requirements (that are the remediation contractor's responsibility) outlined in this RAP. The remediation contractor is required to collect all documentation associated with the remediation activities and forward this documentation onto the principal contractor, client and project manager as they become available.
Validation Consultant	To be confirmed. The validation consultant[13] provides consulting advice and validation services in relation to the remediation. The validation consultant prepares the validation report, as required. The validation consultant is required to review any deviation to this RAP or any unexpected finds if and when encountered during the site work. The validation consultant is required to liaise with the principal contractor, client, project manager and remediation contractor on all matters pertaining to the site contamination, remediation and validation, validation sampling and inspections.

6.2 Pre-commencement Meeting

The project team is to have a pre-commencement meeting to discuss the sequence of remediation, and the remediation and validation tasks. The site management plan for remediation works (see Section 9) must be reviewed by project manager and remediation contractor, and appropriate steps are to be taken to ensure the adequate implementation of the plan.

6.3 Abandonment (decommissioning) of USTs

The abandonment of the USTs and associated infrastructure is to be undertaken in accordance with the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation (2019)[14], the Australian Standard for The Removal and Disposal of Underground Petroleum Storage Tanks (AS4976-2008)[15] and the Guidelines for the Implementation of the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 (2020)[16].

AS4976-2008 indicates that abandonment of a UST in-situ should only be considered in special circumstances, e.g. where removal will cause serious risk to adjoining tanks or underground structures. The

[13] The validation consultant must be a certified practitioner (specialising in site contamination), under one of the NSW EPA endorsed certification schemes, i.e. CEnvP SC or equivalent

[14] *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019* (NSW). (referred to as UPSS Regulation 2019)

[15] Standards Australia, (2008). *The Removal and Disposal of Underground Petroleum Storage Tanks.* (referred to as AS4976-2008)

[16] NSW EPA, (2020b). *Underground Petroleum Storage Systems, Guidelines for implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019.* (referred to as UPSS Guidelines 2020)

UPSS Guidelines 2020 indicate that a tank must be removed unless it is not reasonably practicable to do so, e.g. where the removal would present an unacceptable risk of damage to:

- A supporting foundation of an existing building or structure;
- An in-service tank;
- Sub-surface pipework, services infrastructure or assets which are unrelated to the UST;
- A sensitive receiving environment.

In these circumstances, it is recommended that a duly qualified person (i.e. a structural or electrical engineer) confirmed that it is impractical to remove the UST. As discussed previously in this RAP, the project structural engineer (Tonkin) considers that it is impractical to remove the USTs due to the potential structural implications on the existing shed structure.

Reference is to be made to the following table for the remediation and validation steps. The validation consultant is to be on site during all works associated with the abandonment of the USTs. The detailed validation plan is outlined in Section 7.

Table 6-2: Contingency – Abandonment of USTs

Step	Primary Role/ Responsibility	Procedure
1.	Remediation contractor	<u>Personal Protective Equipment (PPE) and Work Health and Safety (WHS):</u> Confirm PPE and WHS requirements prior to commencement of remediation works, noting that all works must occur with regards to the Work Health and Safety Regulation (2017). A work permit should be prepared and issued prior to decommissioning works proceeding. The minimum PPE required for the remediation includes the following: • Disposable gloves; • Hard hat; • Covered clothing; and • Steel toed boots. Depending on the levels of odours or vapours, appropriate half or full-face respirations may be required and should be made available.
2.	Remediation contractor (or their nominated sub-contractors)	<u>Initial Preparation:</u> The pavement in the area is to be cut and removed with care using an excavator, or similar. These materials can be disposed of to a licenced facility for recycling. An experienced contractor is to be engaged for the abandonment of the USTs. Liquid and/or sludge within the USTs and associated pipe work is to be pumped out (by suction hose or spear reaching the bottom of the tank) and disposed of lawfully by a licensed liquid waste operator. All documents including liquid waste disposal etc. must be retained by the remediation contractor and forwarded to the client and validation consultant. This documentation forms a key part of the validation process and is to be included in the validation report. The tank must then be adequately purged of product vapour in accordance with AS4976-2008. Confirmation of the tank vapours being less than 5% of the lower explosive limit (LEL) is required. All pipework is to be drained, disconnected and removed to the extent practicable, and all connections to the tank must be sealed off. Any pipe that cannot be

Step	Primary Role/ Responsibility	Procedure
		removed is to be isolated, drained and plugged at both ends (or at least at one end if both ends are not accessible).
3.	Validation Consultant	In-situ Validation: Validation samples must be collected to the extent practicable as outlined in Section 7.1. In the event that risks are identified, the client and the validation consultant must establish an appropriate course of action to address these risks, which may include excavation and off-site disposal of impacted and/or odorous soils. An addendum RAP must be prepared if such actions vary considerably from the scope of this RAP.
4.	Remediation contractor (or their nominated sub-contractors)	Filling of Tank: The USTs are to be filled with an appropriate, free-flowing, inert solid material. Following filling of the tank, all remaining tank openings are to be plugged and the proposed development can continue in accordance with the projects engineering requirements and the development consent.

6.4 Remediation Documentation

The remediation contractor must retain all documentation associated with the site management and remediation, including but not limited to:

- Photographs of remediation works;
- Waste disposal dockets and waste tracking documentation (see below and the example waste tracking form in Appendix F);
- Contractor documentation confirming the decommissioning process for the USTs; and
- Imported materials documentation (see below and the example imported material tracking form in Appendix F).

Copies of these documents must be forwarded to the project manager and the validation consultant for assessment and inclusion in the validation report.

6.4.1 Waste

All waste removed from the site is to be appropriately classified, tracked and managed in accordance with the relevant guidelines and regulations. The remediation contractor (and/or their nominated licensed asbestos removalist) is to maintain adequate records and retain all documentation for waste disposal activities including:

- A summary register (in Microsoft Excel format) including details such as waste disposal dates, waste materials descriptions, disposal locations (i.e. facility details) and reconciliation of this information with the associated waste classification documentation and the waste disposal docket numbers;
- Waste tracking records and transport certificates (where waste is required to be tracked/transported in accordance with the regulations). This includes consignment details via the NSW EPA-endorsed tracking system for asbestos waste; and
- Disposal dockets for the waste (i.e. weighbridge dockets for each load).

Any soil waste classification documentation is to be prepared in accordance with the reporting requirements specified by the NSW EPA.

A review of the disposal facility's Environment Protection Licence (EPL) issued under the Protection of the Environment Operations (POEO) Act (1997)[17] is to be undertaken to assess whether the facility is appropriately licensed to receive the waste.

The above information is to be provided to the validation consultant for inclusion in the validation report. The register must be set up at the beginning of the project and provided to the validation consultant regularly so the details can be checked and any rectification of the record keeping process can occur in a timely manner.

6.4.2 Imported Materials Register

The remediation contractor (and/or their nominated construction contractor) is to maintain, for the duration of the project, an imported material register. This must include a register (in Microsoft Excel format) with details of each imported material type, supplier details, summary record of where the imported materials were placed on site, and importation docket numbers and a tally of quantities (separated for each import stream). Dockets for imported materials are to be provided electronically so these can be reconciled with the register.

Examples of imported materials for this project may include but would not be limited to: site preparation materials (e.g. DGB, 40/70, material to create the pavement base or piling platforms etc); clean backfill material such as virgin excavated natural material (VENM); and landscaping materials such as topsoil garden mixes, mulches etc.

The above information is to be provided to the validation consultant for inclusion in the validation report. The register be set up at the beginning of the project and provided to the validation consultant regularly so the details can be checked and any rectification of the record keeping process can occur in a timely manner.

[17]NSW Government, (1997). *Protection of Environment Operations Act.* (referred to as POEO Act 1997)

7 VALIDATION PLAN

Validation is necessary to demonstrate that remedial measures described in the RAP have been successful and that the site is suitable for the intended land use. The sampling program for the validation is outlined in Section 7.1. This is the minimum requirement based on the remedial strategies provided. Additional validation sampling may be required based on observations made during remediation.

7.1 Validation Sampling and Documentation

The validation requirements for the site are outlined below:

7.1.1 UST Removal and Soil Validation

Table 7-1: Validation Requirements – UST and Associated Soils

Aspect	Sampling	Analysis	Observations and Documentation
Tank pit backfill	For in-situ validation purposes: Samples are to be collected from accessible backfill exposed on each of the four sides of the UST, using a hand auger. Sampling is to occur to the extent practicable, with an aim of sampling to the suspected tank depth. A minimum of two samples should be collected and analysed per location (i.e. eight total) from depths of 1mBGL and 2mBGL, if possible. For waste classification purposes: One sample per 25m^3, collected using hand equipment. Minimum three samples. Samples to be collected from at least 0.5m below the surface and evenly spaced across/around the stockpile to be representative of the backfill.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRH/BTEXN, PAHs, OCPs, PCBs and asbestos. Toxicity characteristic leachate procedure (TCLP) analysis as required.	**Validation consultant:** Samples to be screened using PID. Observations of soil/material type, staining and odour to be recorded. Photographs to be taken. Disposal dockets to be retained by the **remediation contractor**. Waste classification report to be prepared in accordance with the Consultants Reporting Guidelines and NSW EPA Waste Classification Guidelines to facilitate off-site waste disposal.
UST pit chase out spoil (if required)	For waste classification purposes: One sample per 25m^3, collected using hand equipment. Minimum three samples.	As above.	As above.
Pipe trenches	One sample per 5m lineal, obtained from the base of the trench. Additional samples to target any areas of staining or odours.	As above.	**Validation consultant:** Samples to be screened using PID. Observations of staining and odour to be recorded.

Aspect	Sampling	Analysis	Observations and Documentation
			Photographs to be taken. Lithology on pit walls and base to be logged. Groundwater observations to be recorded.
Beneath Bowser Plinth (if location is identified/suspected)	One sample per suspected bowser plinth location. Additional samples to target any areas of staining or odours.	As above.	As above.

7.1.2 Imported Materials

The table below outlines the validation requirements for material imported onto the site:

Table 7-2: Validation Requirements – Imported Materials

Aspect	Sampling	Analysis	Observations and Documentation
Imported VENM backfill (if required)	Minimum of three samples per source	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml NEPM 2013 analysis). Additional analysis may be required depending on the site history of the source property.	**Remediation contractor** to supply existing VENM documentation/report (report to be prepared in accordance with the NSW EPA waste classification reporting requirements). A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Material is to be inspected upon importation by the **validation consultant** to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation. Photographic documentation and an inspection log are to be maintained. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing VENM documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the Validation Assessment Criteria (VAC). -

Aspect	Sampling	Analysis	Observations and Documentation
Imported engineering materials such as recycled aggregate, road base etc **Excavated Natural Material (ENM)**	Minimum of three samples per source/material type. ENM testing must meet the specification within the ENM Order. If the analysis is not compliant, the validation consultant must carry out an ENM assessment and prepare a report in accordance with the ENM Order/Exemption prior to material being imported.	Heavy metals (as above), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml quantification). As required in the ENM Order.	**Remediation contractor** to provide product specification and documentation to confirm the material has been classified with reference to a relevant Resource Recovery Order/Exemption. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Review of the facility's EPL, where applicable. Material is to be inspected by the **validation consultant** upon importation to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.
Imported engineering materials comprising only natural quarried products	At the validation consultant's discretion based on robustness of supplier documentation.	At the validation consultant's discretion based on robustness of supplier documentation.	**Remediation contractor** to provide documentation from the supplier confirming the material is a product comprising only natural quarried material. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Review of the quarry's EPL. Material is to be inspected by the **validation consultant** upon importation to confirm it is free of anthropogenic materials, visible and olfactory indicators of contamination, and is consistent with documentation. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling;

Aspect	Sampling	Analysis	Observations and Documentation
			- Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.
Imported garden mix/turf underlay/topsoil (if required)	Minimum of three samples per source.	Heavy metals (as above), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml).	**Remediation contractor** to provide documentation from the supplier confirming the product specification. This must include a description of the Australian Standard or other relevant product specification under which the material is produced, and the components. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Material is to be inspected by the **validation consultant** upon importation to confirm it is free of anthropogenic materials, visible and olfactory indicators of contamination, and is consistent with documentation. The validation consultant is to review any existing/available analysis results for the materials. A minimum of one batch for each imported material type (from each individual supplier) must be inspected by the validation consultant. This inspection must be repeated for each material type from each supplier, a minimum of once per month thereafter. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.
Mulch (if required)	Minimum of three samples per source.	Asbestos (500ml) and visual observations to confirm there are no anthropogenic materials.	As above.

7.2 Validation Assessment Criteria and Data Assessment

The VAC to be adopted for the validation assessment are outlined in the table below:

Table 7-3: Validation Assessment Criteria (VAC)

Validation Aspect	VAC
USTs and soils removal	The VAC for soil validation of the pipe trenches, tank backfill and tank pit chase out (if required) are as follows: • Analytical results for TRH/BTEXN below the Health Screening Level A (HSL-A) criteria for soils as presented in Schedule B1 (Table 1A[3]) of NEPM 2013, applying the respective depth of the sample in relation to the ground surface level and conservatively adopting a sand soil type; and • Analytical results below the Management Limits for TRHs in an 'residential, parkland and public open space', as presented in Schedule B1 (Table 1B[7]) of NEPM 2013, selected based on the soil type. Any assessment of materials for on-site re-use associated with the UST validation process must consider whether there are any unacceptable aesthetic issues with the material and all results must also be below the land use Type A thresholds presented in Schedule B1 of NEPM (2013).
Imported materials	The validation of imported materials is two-fold: the validation is to demonstrate that the imported material will not pose a risk in the context of the proposed land use; and also, that the imported material meets the requirements where applicable under a relevant resource recovery exemption/order under which they are produced. ENM and recycled materials are to meet the criteria of the relevant exemption/order under which they are produced. Analytical results for VENM and other imported materials will need to be consistent with expectations for those materials. For VENM, it is expected that: - Heavy metal concentrations are to be less than the most conservative Added Contaminant Limit (ACL) concentrations for an 'urban residential and public open space' (URPOS) exposure setting presented in Schedule B1 of the NEPM 2013, except for lead which should be nominally less than 100mg/kg; and - Organic compounds are to be less than the laboratory PQLs and asbestos to be absent. The lower lead VAC nominated above is based on the fact that the lead ACL is quite high and is not consistent with expectations for natural material in the area. The concentration of 100mg/kg is nominal and is considered to be protective of human health and the environment in the proposed land use setting. Whilst a lead concentration of 100mg/kg may still be relatively high for natural material from some areas, it is well below the Health Investigation Level (HIL-A) criteria applicable to sensitive land uses and is deemed to be appropriate considering the other validation requirements for imported materials. All materials imported onto the site must also be adequately assessed as being appropriate for the final use of the site. A risk-based assessment approach is to be adopted with regards to the tier 1 screening criteria presented in Schedule B1 of NEPM 2013, consistent with the approach taken for the DSI. Aesthetics: all imported materials are to be free of staining and odours.

Laboratory data are to be assessed as above or below the VAC. Statistical analysis is not proposed. Notwithstanding, statistical analysis can be applied by the validation consultant if deemed appropriate and if the analysis occurs with regards to the relevant guidelines.

7.3 Validation Sampling, Analysis and Quality Plan (SAQP)

Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) should be clearly outlined and assessed as part of the validation process. A framework for the DQO and DQI process is outlined below and should be reflected in the validation report. These relate to the remediation only and it is anticipated that the SAQP for the DGI will include this information in the context of those works.

DQOs have been broadly established for the validation with regards to the seven-step process outlined NEPM (2013). The seven steps include the following which are detailed further in the following subsections:

- State the problem;
- Identify the decisions/goal of the study;
- Identify information inputs;
- Define the study boundary;
- Develop the analytical approach/decision rule;
- Specify the performance/acceptance criteria; and
- Optimise the design for obtaining the data.

DQIs are to be assessed based on field and laboratory considerations for precision, accuracy, representativeness, completeness and comparability.

7.3.1 Step 1 - State the Problem

Validation data is required to demonstrate that the in-situ abandonment of the USTs and remediation of associated infrastructure and soils is successful.

7.3.2 Step 2 - Identify the Decisions of the Study

The remediation goal, aims and objectives are defined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Were the relevant reports prepared prior to commencement of the remediation (e.g. DGI [if required], revised/addendum RAP where applicable, waste classification, etc)?
- Was the remediation undertaken in accordance with the RAP and any supplementary reports?
- If there were any deviations, what were these and how do they impact the outcome of the validation?
- Are any of the validation results above the VAC and what is the implication of this in relation to the remediation/validation and future site management?
- Is the site suitable for the proposed development from a contamination viewpoint?

7.3.3 Step 3 - Identify Information Inputs

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

- Existing relevant data from previous reports;
- Site information, including site observations, inspections, asbestos clearance certificates (where applicable), waste and imported materials registers;
- Validation sampling and laboratory analysis results for remedial excavations and imported materials;
- Laboratory analysis (as required); and
- Field and laboratory QA/QC data.

7.3.4 Step 4 - Define the Study Boundary

The RAP applies to the site. However, it is anticipated that the remediation will be limited to the UST area (estimated broadly to be less than 10m by 5m in area) and less than 3m deep. The UST locations are shown on the figures attached in Appendix A. The final remediation extent will be confirmed via the validation process.

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

7.3.5.1 VAC

The validation data will be assessed in accordance with the requirements outlined in Section 7.1.

7.3.5.2 Field and Laboratory QA/QC

Field QA/QC is required for the UST validation and for imported materials. This is to include:

- Analysis of inter-laboratory duplicates (5% frequency) and intra-laboratory duplicates (5% frequency), analysed for the same analytical suite as the primary samples;
- Trip blank samples (one per batch/day of sampling), analysed for the same analytical suite as the primary samples excluding asbestos;
- Trip spike samples (one per batch/day of sampling), analysed for BTEXN, only where samples within that batch have been scheduled for analysis of TRH or BTEXN; and
- Rinsate samples (one per batch), analysed for the same analytical suite as the primary samples excluding asbestos, only where re-usable sampling equipment is utilised.

DQIs for field and laboratory QA/QC samples are defined below:

Field Duplicates

Acceptable targets for precision of field duplicates 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.

Trip Blanks
Acceptable targets for trip blank samples will be less than the PQL.

Trip Spikes
Acceptable targets for trip spike samples will be 70% to 130%.

Laboratory QA/QC
The suitability of the laboratory data will be assessed against the laboratory QA/QC criteria. These criteria are 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 typical limits 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; and
- 60-140% recovery acceptable for organics.

Surrogate Spikes
- 60-140% recovery acceptable for general organics.

Method Blanks
- All results less than PQL.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence will be reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is to be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, the validation consultant is to adopt the most conservative concentration reported.

7.3.5.3 Appropriateness of PQLs

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

7.3.6 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 to be undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected. Data will be assessed as above or below the VAC. Statistical analysis is not proposed, therefore there have been no limits on decision errors set for validation purposes.

7.3.7 Step 7 - Optimise the Design for Obtaining Data

The design is to be optimised via the collection of validation data to demonstrate the success of the key aspects of the remediation. Data collection will be via various methods including inspections and sampling.

The proposed sampling plan for the validation is described in Section 7.1.

7.4 Validation Report

As part of the site validation process, a validation report will be prepared by the validation consultant for each development stage. The reports will present the results of the validation assessment relevant to each stage and will be prepared in accordance with the Consultants Reporting Guidelines.

It should also be noted that any material changes to the remediation or validation strategy will require an updated or addendum RAP, which in turn must be approved by the determining authority.

8 CONTINGENCY PLAN

The contingency plan for the project in the context of the site remediation is provided in the following sub-sections:

8.1 Unexpected Finds

Residual hazards that may exist at the site would generally be expected to be detectable through visual or olfactory means. At this site, these types of hazards may include additional underground tanks, visible fibre cement fragments/asbestos containing material (FCF/ACM) in or on soil or suspected friable types of asbestos such as rope or lagging, stained or odorous soils (other than in the vicinity of the USTs) etc. The procedure to be followed in the event of an unexpected find is presented below:

- In the event of an unexpected find, all work in the immediate vicinity should cease and the remediation contractor must contact the validation consultant and the client/project manager;
- Temporary barricades should be erected to isolate the area from access to workers;
- The validation consultant is to attend the site to inspect the find;
- The validation consultant is to adequately characterise the contamination and provide advice in relation to site management and remediation. In the event that remediation differs from that outlined in this RAP, an addendum RAP must be prepared in consultation with the project stakeholders and submitted to the determining authority; and
- Contamination is to be remediated and validated in accordance with the advice provided, and the results are to be included in the validation report.

The contingency approaches outlined in Section 8.2 is to be adopted for the remediation of any unexpected finds. Should an alternative remediation approach be required, this must be documented in an addendum RAP and submitted to the determining authority.

8.2 Remediation and Validation Failures

The VAC outlined in section 7.2 were selected based on conservative assumptions and to align with the Tier 1 risk assessment process adopted for the DSI. The contingency options for validation failure are outlined in the following sub-sections. The validation consultant should discuss the options with the project team to determine the preferred option.

8.2.1 Adoption of Alternative VAC and Further Risk Assessment

In the event of a validation failure, alternative VAC may be considered, such as HSL-D criteria for a commercial/industrial land use scenario. This may be appropriate given the nearby shed structure is used for maintenance, and on-grade parking nearby (as opposed to the general wards and other similarly sensitive areas). However, the extent and severity of the validation failure and the potential risks to nearby receptors must be considered by the validation consultant and a clear rationale for the adoption of alternative VAC must be provided in the validation report.

Further investigation should also be considered, such as a targeted soil vapour investigation if the failure is related to volatile/semi-volatile contaminants, to provide additional lines of evidence to support the justification for adopting alternative VAC.

A Tier 2 risk assessment prepared by a specialist risk assessor may also be required in order to assess the potential risks to human health and/or ecological receptors (as appropriate) and to establish what remedial and/or management actions are necessary. Such actions must be documented in an addendum RAP and submitted to the determining authority for approval.

It is noted that the adoption of alternative VAC may have implications for site use, should development for more sensitive receptors be considered in the vicinity of the USTs.

8.2.2 Excavation and Disposal

Depending on the extent and severity of the validation failure, additional material is to be 'chased out' from the area that failed and disposed off-site, then the area re-validated in accordance with the requirements outlined in Sections 7.1 and 7.2.

This option must be discussed with the project team, including the structural engineer) prior to proceeding. Where it is impractical to remove the soils associated with the validation failure (such as where doing so may compromise the foundation system of existing structures), the alternative approach outlined in Section 8.2.1 must be undertaken.

8.3 Capping Contingency

In the event that contaminated soil cannot be practicably removed, or if the quantity of contaminated material is cost-prohibitive to dispose of, an assessment must be made by the validation consultant regarding the risks posed by this material in the context of the proposed development. Where the quantity of contaminated material is relatively small, preference should be given to adopting the excavation and disposal contingency approach outlined in Section 8.2.2.

For hydrocarbon impacted material, it may not be possible to simply cap/contain and manage this material if it poses an unacceptable vapour risk. Therefore, further sampling, analysis and risk assessment will be required in this scenario in order to establish a suitable course of action, as discussed in Section 8.2.1. This contingency is well suited to asbestos contamination however.

In the event that this contingency is to be implemented, a rationale for applying it must be documented, the details below must be reviewed and updated for the situation, and approval must be sought from the project manager/client prior to proceeding with the remedial works (i.e. within an addendum RAP). A validation plan must also be documented.

In relation to asbestos, if all asbestos-contaminated fill cannot be practicably removed and disposed off-site, the fill must be capped with a robust capping layer and consequently the site and this area will be managed under a long-term EMP. The minimum capping requirements in such a circumstance are as follows:

- Installation of a brightly coloured (i.e. orange) geotextile marker layer over the contaminated fill;

- Installation of a minimum of 500mm of clean (validated) materials if the area is to be landscaped, and all landscaping must be shallow and must not penetrate the geotextile. If shallow landscaping is not achievable, then the capping thickness must be increased accordingly to meet this requirement; and
- In areas that are to be paved with hardstand (e.g. pavements, new building slabs etc), there is no need for 500mm of clean material and the pavements can be constructed directly over the top of the geotextile marker in accordance with the engineering requirements for the project.

The proposed remediation and validation steps associated with in-situ capping are outlined in the following table.

Table 8-1: Remediation Details – In-situ Capping Contingency

Step	Primary Role/ Responsibility	Procedure
1.	Remediation contractor/principal contractor	Service Trenching, Piling/Footing Excavations and Establishment of Pre-Capping Site Levels: The principal contractor/remediation contractor are to undertake the relevant site preparation works, piling/footing excavations and any excavations required to facilitate the capping procedures. Any surplus excavated materials must be managed and (if required) disposed off-site appropriately in accordance with the relevant requirements outlined previously in this RAP.
2.	Remediation contractor	Installation of Marker Layers and Survey of site levels: After the bulk excavation levels are achieved to facilitate the minimum capping requirements, the geotextile marker is to be installed over the fill and secured appropriately using 'U' nails, pegs or other means. A pre-capping levels survey is to be completed by the remediation contractor prior to the placement of any overlying clean capping layers or construction of pavements etc. The purpose of the survey is to provide factual information of the site levels, and the horizontal extent of the geotextile marker, prior to installation of the clean capping layers. Survey points must be taken at appropriate frequencies (say every 5m lineal for narrow areas, a 5m grid for broader areas, at the corners/edges of the geotextile, and more frequently for significant change in surface elevation. The pre-capping levels survey is to be provided to the client/project manager and the validation consultant prior to any further capping works commencing.
3.	Validation consultant and remediation contractor	Importation of Capping Materials: Imported materials are to be validated in accordance with Section 7. Validated materials can then be used to achieve the minimum capping requirements for the project.
4.	Remediation contractor	Post-Capping Survey of site levels: After completion of capping, a post-capping levels survey is to be completed by the remediation contractor. The purpose of the survey is to provide factual information regarding the capping thickness and confirm that the minimum capping requirements have been achieved. Survey points must be taken at appropriate frequencies as noted for the pre-capping survey. The post-capping levels survey is to be provided to the client/project manager and the validation consultant.

Where contaminated soil is capped on site, a long-term EMP will be required to manage the contamination capped at the site and the long-term EMP will be documented as part of the overall validation process. Public notification and enforcement mechanisms for the long-term EMP are to be arranged and the determining authority (and local council, if applicable) is to be provided with a draft copy of the long-term EMP for consultation prior to finalisation of the document.

The notification and enforcement mechanisms are to include notation on the planning certificate under Section 10.7 of the Environmental Planning and Assessment Act (1979) and a covenant registered on the title to land under Section 88B of the Conveyancing Act (1919).

The long-term EMP will include requirements for passive management of the capping system that will focus on maintaining the capping layers to minimise the potential of exposure to the underlying contaminated soil. The long-term EMP will also include contingencies for managing minor intrusive works in the event that the capping system is breached.

8.4 Importation Failure for VENM or other Imported Materials

Where material to be imported onto the site does not meet the importation VAC, the material should not be imported. Alternative material must be sourced that meets the importation requirements.

8.5 Remediation Strategy Changes

Any material change to the proposed remediation strategy will require an addendum to or a revision of the RAP. This must not occur without appropriate consultation and approvals from the client/determining authority and other relevant parties.

9 SITE MANAGEMENT PLAN FOR REMEDIATION WORKS

The information outlined in this section of the RAP is for the remediation work only. The client and project manager must also make reference to the development consent for specific site management requirements for the overall development of the site.

9.1 Interim Site Management

Interim site management measures are not considered necessary at this stage. The surface in the vicinity of the USTs is sealed with pavement prohibiting access to the soils and JKE understand that soil disturbance is not proposed until commencement of the proposed development and/or remediation.

9.2 Project Contacts

Emergency procedures and contact telephone numbers should be displayed in a prominent position at the site entrance gate and within the main site working areas. The contact details of key project personnel are summarised in the following table:

Table 9-1: Project Contacts

Role	Company	Contact Details
Client	Health Infrastructure	Katrina Walsh katrina.walsh@health.nsw.gov.au T: 0438 645 463
Project Manager	Capital Insight Pty Limited	Louise Coote Louise.Coote@capitalinsight.com.au T: (02) 9955 2300
Principal Contractor	To be appointed	-
Remediation Contractor	To be appointed	-
Validation Consultant	To be appointed	-
Certifier	To be appointed	-
NSW EPA	Pollution Line	131 555
Emergency Services	Ambulance, Police, Fire	000

9.3 Security

Appropriate fencing should be installed as required to secure the site and to isolate the remediation areas. Warning signs should be erected, which outline the PPE required for remediation work.

9.4 Timing and Sequencing of Remediation Works

The anticipated sequence of remediation works is outlined at the beginning of Section 6 of this RAP. Remediation will occur concurrently with the demolition/development works to facilitate the implementation of the requirements under this RAP. The works will be staged to align with the proposed development stages.

9.5 Site Soil and Water Management Plan

The remediation contractor should prepare a detailed soil and water management plan prior to the commencement of site works. Silt fences should be used to control the surface water runoff at all appropriate locations of the site and appropriate measures are to be implemented to manage soil/water disturbance to the satisfaction of the regulator/determining authority. Reference should be made to the REF for further details.

All stockpiled materials should be placed within an erosion containment boundary with silt fences and sandbags employed to limit sediment movement. The containment area should be located away from drainage lines/low-points, gutters, stormwater pits and inlets and the site boundary. No liquid waste or runoff should be discharged to the stormwater or sewerage system without the approval of the appropriate authorities.

9.6 Noise and Vibration Control Plan

The guidelines for minimisation of noise on construction sites outlined in AS-2460 (2002)[18] should be adopted. Other measures specified in the consent conditions should also be complied with. Noise producing machinery and equipment should only be operated between the hours approved by the determining authority (refer to REF).

All practicable measures should be taken to reduce the generation of noise and vibration to within acceptable limits. In the event that short-term noisy operations are necessary, and where these are likely to affect residences, notifications should be provided to the relevant authorities and the residents by the project manager, specifying the expected duration of the noisy works.

9.7 Dust Control Plan

All practicable measures should be taken to reduce dust emanating from the site. Factors that contribute to dust production are:

- Wind over a cleared surface;
- Wind over stockpiled material; and
- Movement of machinery in unpaved areas.

Visible dust should not be present at the site boundary. Measures to minimise the potential for dust generation include:

- Use of water sprays on unsealed or exposed soil surfaces;

[18] Australian Standard, (2002). *AS2460: Acoustics - Measurement of the Reverberation Time in Rooms.*

- Covering of stockpiled materials and excavation faces (particularly during periods of site inactivity and/or during windy conditions) or alternatively the erection of hessian fences around stockpiled soil or large exposed areas of soil;
- Establishment of dust screens consisting of a 2m high shade cloth or similar material secured to a chain wire fence;
- Maintenance of dust control measures to keep the facilities in good operating condition;
- Stopping work during strong winds;
- Loading or unloading of dry soil as close as possible to stockpiles to prevent spreading of loose material around the development area; and
- Geofabric could be placed over exposed soils in the event that excavation is staged.

If stockpiles are to remain on-site or soil remains exposed for a period of longer than several days, dust monitoring should be undertaken at the site. If excessive dust is generated all site activities should cease until either wind conditions are more acceptable or a revised method of excavation/remediation is developed.

Dust is also produced during the transfer of material to and from the site. All material should be covered during transport and should be properly disposed of on delivery. No material is to be left in an exposed, un-monitored condition.

All equipment and machinery should be brushed or washed down before leaving the site to limit dust and sediment movement off-site. In the event of prolonged rain and lack of paved areas all vehicles should be washed down prior to exit from the site, and any soil or dirt on the wheels of the vehicles removed. Water used to clean the vehicles should be collected and tested prior to appropriate disposal under the relevant waste classification guidelines.

9.8 Dewatering

Temporary dewatering is not anticipated to be required as part of the scope of remediation works. If a rain event occurs during the construction, this water should be managed appropriately on site in accordance with the remediation contractor's soil and water management plan. This water should not be pumped to stormwater or sewer unless a prior application is made and this is approved by the relevant authorities.

9.9 Odour Control Plan

All activities undertaken at the site should be completed in a manner that minimises emissions of smoke, fumes and vapour into the atmosphere and any odours arising from the works or stockpiled material should be controlled. Control measures may include:

- Maintenance of construction equipment so that exhaust emissions comply with the Clean Air Regulations issued under the POEO Act 1997;
- Demolition materials and other combustible waste should not be burnt on site;
- The spraying of a suitable proprietary product to suppress any odours that may be generated by excavated materials; and
- Use of protective covers (e.g. builder's plastic).

All practicable measures should be taken to reduce fugitive emissions emanating from the site so that associated odours do not constitute a nuisance and that the ambient air quality is not adversely impacted. The following odour management plan should be implemented to limit the exposure of site personnel and surrounding residents to unpleasant odours:

- Excavation and stockpiling of material should be scheduled during periods with low winds if possible;
- A suitable proprietary product could be sprayed on material during excavation and following stockpiling to reduce odours (subject to an appropriate assessment of the product by the validation consultant);
- All complaints from workers and neighbours should be logged and a response provided. Work should be rescheduled as necessary to minimise odour problems;
- The site foreman should consider the following odour control measures as outlined in NEPM:
  - reduce the exposed surface of the odorous materials;
  - time excavation activities to reduce off-site nuisance (particularly during strong winds); and
  - cover exposed excavation faces overnight or during periods of low excavation activity.
- If continued complaints are received, alternative odour management strategies should be considered and implemented.

9.10 WHS Plan

A site specific WHS plan must be prepared by the remediation contractor for all work to be undertaken at the site. The WHS plan should meet all the requirements outlined in SafeWork NSW WHS regulations.

As a minimum requirement, personnel must wear appropriate protective clothing, including long sleeve shirts, long trousers, steel cap boots and hard hats. Washroom and lunchroom facilities should also be provided to allow workers to remove potential contamination from their hands and clothing prior to eating or drinking.

9.11 Waste Management

Prior to commencement of remedial works and excavation for the proposed development, the remediation contractor should develop a waste management plan to minimise the amount of waste produced from the site and promote recycling of building materials such as concrete pavement to the extent practicable.

9.12 Incident Management Contingency

The validation consultant should be contacted if any unexpected conditions are encountered at the site. This should enable the scope of remedial/validation works to be adjusted as required. Similarly, if any incident occurs at the site (e.g. a fuel spill during refuelling of machinery), the validation consultant should be advised to assess potential impacts on contamination conditions and the remediation/validation timetable.

9.13 Hours of Operation

Hours of operation should be between those approved by the determining authority under the development approval process (refer to the REF).

9.14 Community Consultation and Complaints

The remediation contractor should provide details for managing community consultation and complaints within their construction plans.

10 CONCLUSIONS

Investigations have identified redundant USTs and odorous fill soils in the south of the site. The investigations concluded that there was potential for localised impacts to be encountered in the vicinity of the USTs and associated infrastructure, and that these may pose risk to receptors. The USTs and infrastructure will be decommissioned during the remediation process and the residual risks assessed by the validation process.

The investigations identified TRHs in soil above the human health and ecological SAC. However, the SAC selected were conservative and the concentrations detected were not considered to pose an unacceptable risk to human health and ecological receptors in the context of the proposed development and did not trigger a need for remediation.

The investigation identified copper, nickel and zinc in groundwater above the ecological SAC. The zinc concentrations were considered likely to be a regional issue, whilst the copper and nickel concentrations were attributed to grey water impacts (i.e. leaking sewer pipe and discharge of laundry water). The concentrations were assessed to not pose an unacceptable risk to receptors and remediation of groundwater is not included within the scope of this RAP.

The RAP outlines requirements for remediation of the UST area by in-situ abandonment of the tanks and removing any associated infrastructure to the extent practicable. Where associated infrastructure cannot be removed, it is to be decommissioned in-situ.

The RAP also includes contingencies for excavation and disposal of material, or for capping and containing contaminated soils on-site. The application of these contingencies triggers additional requirements for reporting, prior to their implementation.

We are of the opinion that the potential risks associated with the USTs can be mitigated via remediation and the implementation of this RAP. A validation report is to be prepared on completion of remediation activities and submitted to the determining authority to demonstrate that the remediation/validation was successful. If contaminated material is capped on site (e.g. if the capping contingency needs to be implemented), a long-term EMP will also be prepared as part of the validation documentation.

The RAP has met the objectives outlined in Section 1.2.

10.1 Remediation Category

JKE has undertaken a preliminary assessment of the remediation Category with regards to the Category 1 remediation triggers in Clause 4.8 of SEPP Resilience and Hazards 2021. We consider that none of the Category 1 triggers have been met and therefore we have assessed that the remediation falls within Category 2. This should be confirmed by the client's expert planner.

10.2 Regulatory Requirements

The regulatory requirements applicable for the remediation are discussed in the following table:

Table 10-1: Regulatory Requirement

Guideline / Legislation / Policy	Applicability
SEPP Resilience and Hazards 2021	Prior notice of Category 2 remediation work is required with regards to Clauses 4.13 at least 30 days before the commencement of work. A notice of completion of remediation work is to be given to the local council within 30 days of completion of the work, in accordance with Clauses 4.14 and 4.15 of SEPP Resilience and Hazards 2021.
POEO Act 1997	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner. Appropriate waste tracking is required for all waste that is disposed off-site. Activities should be carried out in a manner which does not result in the pollution of waters.
POEO (Waste) Regulation 2014	Part 7 of the POEO Waste Regulation 2014 set outs the requirements for the transportation and management of asbestos waste and Clause 79 of the POEO Waste Regulation requires waste transporters to provide information to the NSW EPA regarding the movement of any load in NSW of more than 10 square meters of asbestos sheeting, or 100 kilograms of asbestos waste. To fulfil these legal obligations, asbestos waste transporters must use WasteLocate.
Work Health and Safety Regulation (2017)	Sites with asbestos become a 'workplace' when work is carried out there and require a register and AMP. Appropriate SafeWork NSW notification will be required for licensed asbestos removal works or handling. Reference is to be made to the remediation/construction-phase AMP for further details regarding the regulatory requirements for managing asbestos during remediation. JKE note this will be relevant in the event that the buildings are not retained and/or asbestos is identified within the remediation works.
SafeWork NSW Code of Practice: How to manage and control asbestos in the workplace (2019)	Sites with asbestos become a 'workplace' when work is carried out there and require a register and AMP. Appropriate SafeWork NSW notification will be required for licensed asbestos removal works or handling.
UPSS Regulation 2019	The client must notify the relevant local authority of the decommissioning no later than 30 days prior to the decommissioning. The validation report must be submitted to the local authority within 60 days of completion of the decommissioning work.
NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997	The requirement to notify the EPA should be assessed as part of the site validation process. In our opinion the results obtained by JKE to date do not trigger a need to notify the EPA.

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 land use. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

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

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

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

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

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

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

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

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

Misinterpretation of Site Investigations by Design Professionals

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

Logs Should not be Separated from the Investigation Report

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

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

Read Responsibility Clauses Closely

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

Appendix A: Report Figures

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

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

Title: **SITE LOCATION PLAN**

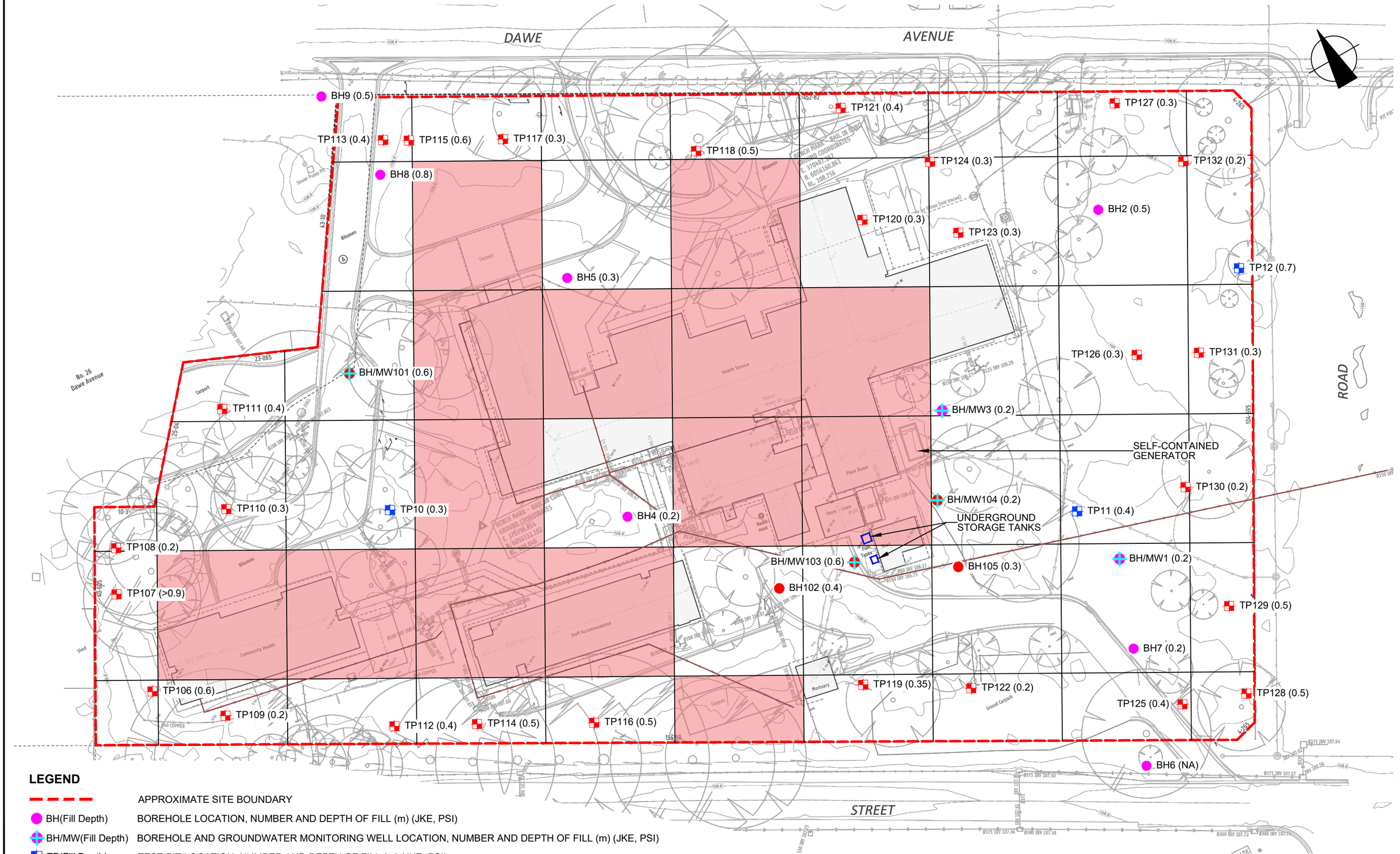
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Project No: E35821PR

Figure No: 1

JKEnvironments

PLOT DATE: 25/05/2023 11:36:25 AM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CAD\E35821PR.DWG



LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH101	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
BH/MW102	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
TP106	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
	INACCESSIBLE AREAS
	SEWER LINE / POSSIBLE SEWER LINE

0 6 12 18 24 30
SCALE 1:600 @A3 METRES

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

Title: **PSI/DSI SAMPLE LOCATION PLAN**

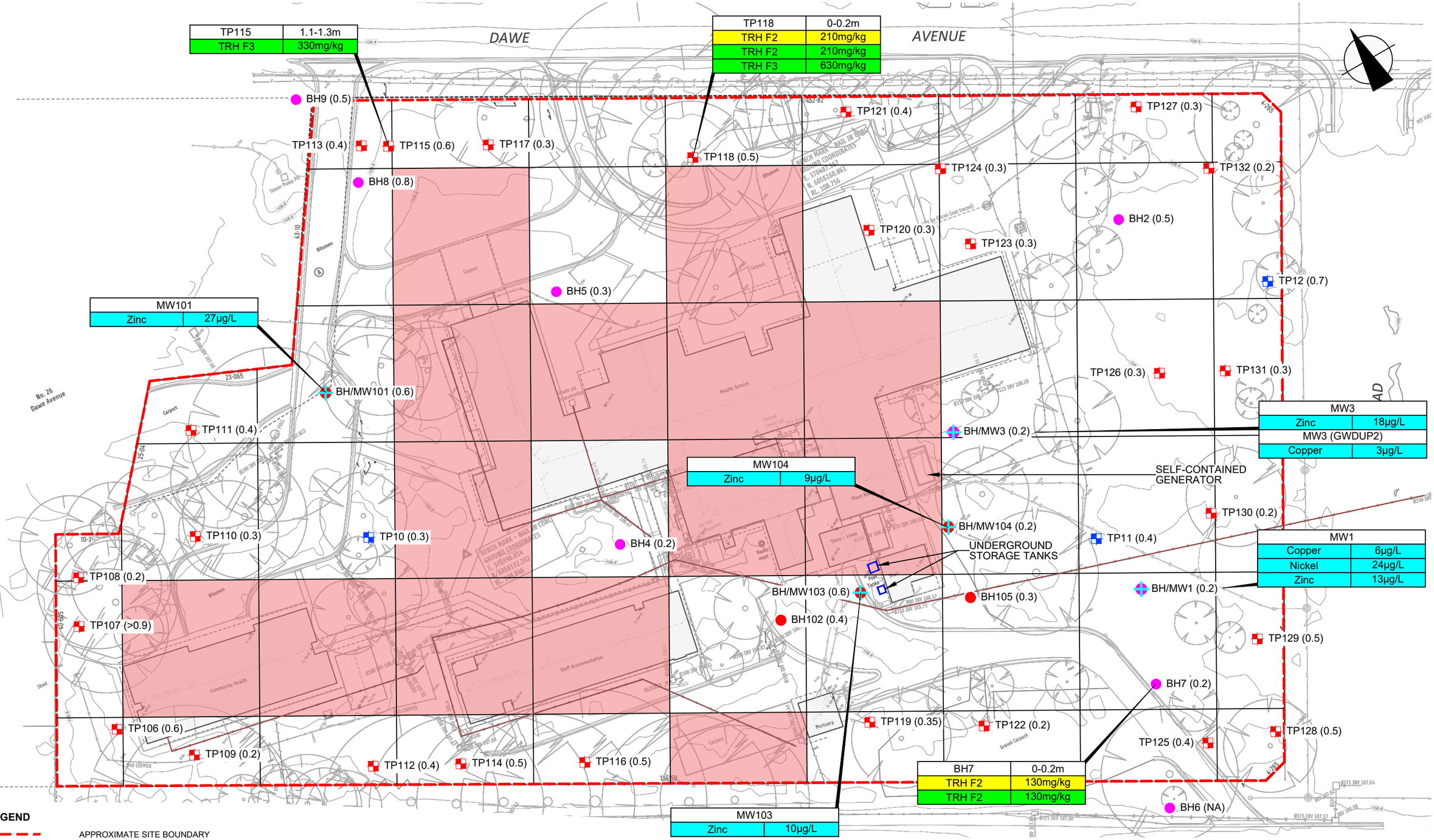
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Project No: E35821PR

Figure No: 2

JKEnvironments

PLOT DATE: 29/09/2023 1:27:33 PM DWG FILE: K:\5C EIS JOBS\35000\S\E35821PR FINLEY\CAD\E35821PR.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
- BH/MW(Fill Depth) — BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
- TP(Fill Depth) — TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
- BH101 — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
- BH/MW102 — BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
- TP106 — TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
- INACCESSIBLE AREAS
- SEWER LINE / POSSIBLE SEWER LINE

SAMPLE ID	-
CHEMICAL	CONCENTRATION (µg/L)

GROUNDWATER SAMPLE EXCEEDANCE

GROUNDWATER CONTAMINATION ABOVE SAC

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION

SOIL/SURFACE SAMPLE EXCEEDANCE

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK

0 6 12 18 24 30
SCALE 1:600 @A3 METRES

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

Title: **SAC EXCEEDANCE PLAN**

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Project No: E35821PR

Figure No: 3

JKEnvironments

PLOT DATE: 27/10/2023 9:31:35 AM DWG FILE: K:\SC EIS JOBS\35000'S\E35821PR FINLEY\CADIE35821PR.DWG

Appendix B: Selected Development Plans

Level 24, 25 Martin Place, Sydney NSW, 2000, Australia
+61 2 9956 2666 | hdrinc.com
HDR Pty. Limited ABN 76 158 075 220 trading as HDR

Nominated Architects
NSW Cate Cowlishaw 10786, D. Joe Mihaljevic 8699, Mark Gazy 7289, Simon Fleet 8363
VIC Cate Cowlishaw 15211
ACT Cate Cowlishaw 2767
TAS Cate Cowlishaw 1479
QLD Cate Cowlishaw 6139

NORTH POINT

KEY PLAN

REV	DESCRIPTION OF CHANGE	DATE	CHECKED	ISSUED
1	PRELIMINARY	23/10/23	HDR	HDR
2	PRELIMINARY	31/01/24	HDR	HDR
3	PROGRESS ISSUE	12/04/24	HDR	HDR
4	PROGRESS ISSUE	06/05/24	HDR	HDR
5	DESIGN DEVELOPMENT	12/07/24	HDR	HDR

DRAWING LEGEND

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING FINLEY HOSPITAL BUILDINGS
- SURROUNDING BUILDINGS
- EXISTING TREES

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT
FINLEY HOSPITAL REDEVELOPMENT
24 DAWE AVE, FINLEY NSW 2713

DRAWING TITLE
EXISTING - SITE PLAN

SCALE
1:500 @ A1

PROJECT NUMBER
10355502

DRAWING NUMBER
130909-HDR-AR-DWG-1102

ISSUE
5

PROJECT STATUS
DESIGN DEVELOPMENT

12/07/2024 12:42:25 PM

0 12.5 25 50

EXISTING CARPARK

EXISTING AMBULANCE BAY

EXISTING CARPARK

EXISTING CARPARK

EXISTING FOOTPATH

EXISTING LOADING DOCK

EXISTING SHED

EXISTING CARPARK

A B C D E F

1 2 3

HDR

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TAS Cate Cowlishaw 1479
QLD Cate Cowlishaw 6139

NORTH POINT

KEY PLAN

REV	DESCRIPTION OF CHANGE	DATE	CHECKED	ISSUED
1	DESIGN DEVELOPMENT	06/09/24	HDR	HDR

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT
FINLEY HOSPITAL REDEVELOPMENT
24 DAWE AVE, FINLEY NSW 2713

DRAWING TITLE
EXISTING - GROUND FLOOR PLAN

SCALE
1:200 @ A1

PROJECT NUMBER
10355502

DRAWING NUMBER
130909-HDR-AR-DWG-1103

ISSUE
1

PROJECT STATUS
DESIGN DEVELOPMENT

6/09/2024 3:26:18 PM

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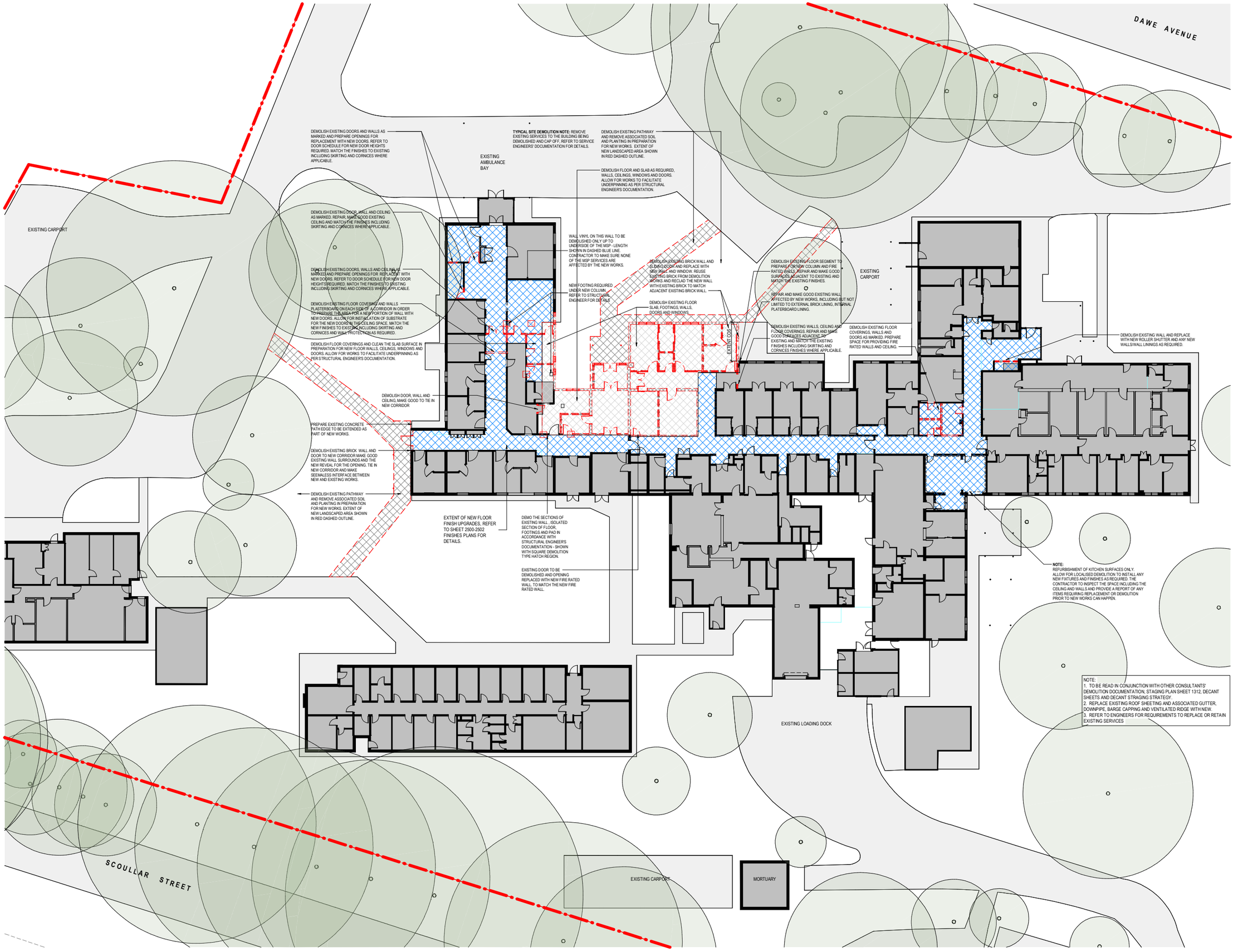

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QLD Cate Cowlishaw 6139

NORTH POINT

KEY PLAN

REV	DESCRIPTION OF CHANGE	DATE	CHECKED	ISSUED
1	PRELIMINARY	23/10/23	HDR	HDR
2	FOR INFORMATION	21/12/23	HDR	HDR
3	PRELIMINARY	31/01/24	HDR	HDR
4	PROGRESS ISSUE	12/04/24	HDR	HDR
5	PROGRESS ISSUE	06/05/24	HDR	HDR
6	DESIGN DEVELOPMENT	12/07/24	HDR	HDR

DRAWING LEGEND

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING WALL TO BE RETAINED.
- INDICATES EXTENT OF DEMOLITION WORKS.
- INDICATES EXTENT OF FLOOR AND WALL VINYL FINISHES DEMOLITION WORKS. REFER TO PROPOSED FINISHES PLAN FOR THE EXTENT OF NEW WORKS AND FINISHES TYPES. CONTRACTOR TO VERIFY SCOPE OF WORKS PRIOR TO DEMOTILION.
- OUT OF SCOPE AREAS

DEMOLITION GROUND

- INDICATES EXTENT OF NEW FLOOR FINISH UPGRADES, REFER TO SHEET 2500-2502 FINISHES PLANS FOR DETAILS.

DEMOLITION ROOF

- INDICATES EXTENT OF EXISTING ROOF (SHEETING AND ASSOCIATED FLASHINGS, SARKING, GUTTERS, DOWNPIPES, BARGE CAP, VENTILATED RIDGE, EXISTING FASCIAS TO BE REPAINTED TO MATCH ROOF COLOUR) TO BE REPLACED AT STAGE 1
- INDICATES EXTENT OF EXISTING ROOF (SHEETING AND ASSOCIATED FLASHINGS, SARKING, GUTTERS, DOWNPIPES, BARGE CAP, VENTILATED RIDGE, EXISTING FASCIAS TO BE REPAINTED TO MATCH ROOF COLOUR) TO BE REPLACED AT STAGE 2
- INDICATES EXTENT OF EXISTING ROOF (SHEETING AND ASSOCIATED FLASHINGS, SARKING, GUTTERS, DOWNPIPES, BARGE CAP, VENTILATED RIDGE)) TO BE RETAINED

DEMOLITION CEILING

- INDICATES EXTENT OF NEW CEILINGS, REFER TO SHEET 2600-2602 REFLECTED CEILING PLANS FOR DETAILS.

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT
FINLEY HOSPITAL REDEVELOPMENT
24 DAWE AVE, FINLEY NSW 2713

DRAWING TITLE
DEMOLITION - GROUND FLOOR

SCALE
1 : 200 @ A1

PROJECT NUMBER
10355502

DRAWING NUMBER
130909-HDR-AR-DWG-1201

ISSUE
6

PROJECT STATUS
DESIGN DEVELOPMENT

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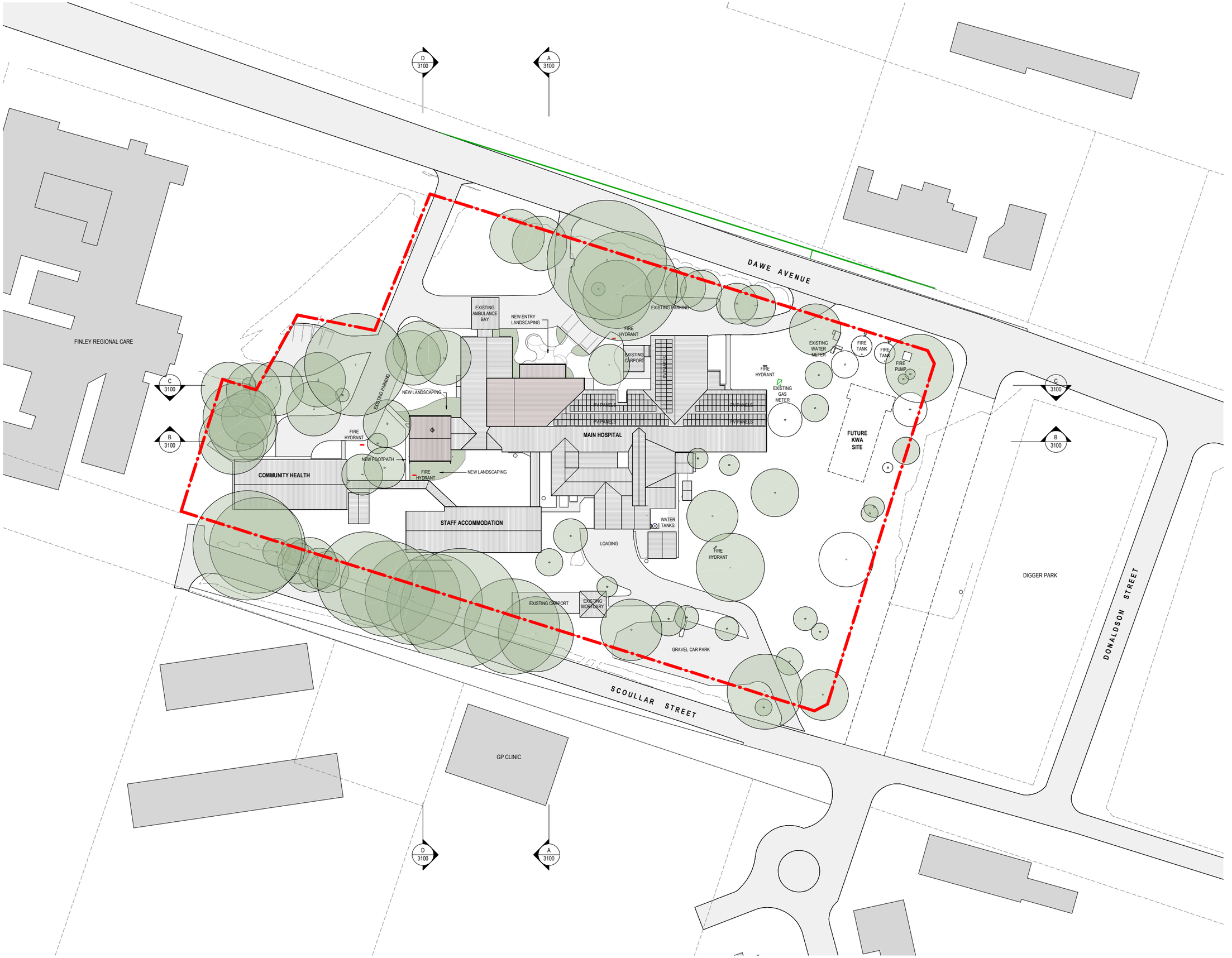

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HDR Pty. Limited ABN 76 158 075 220 trading as HDR

Nominated Architects
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VIC Cate Cowlishaw 15211
ACT Cate Cowlishaw 2767
TAS Cate Cowlishaw 1479
QLD Cate Cowlishaw 6139

NORTH POINT

KEY PLAN

REV	DESCRIPTION OF CHANGE	DATE	CHECKED	ISSUED
1	PRELIMINARY	23/10/23	HDR	HDR
2	FOR INFORMATION	15/12/23	HDR	HDR
3	PRELIMINARY	31/01/24	HDR	HDR
4	PROGRESS ISSUE	12/04/24	HDR	HDR
5	PROGRESS ISSUE	06/05/24	HDR	HDR
6	DESIGN DEVELOPMENT	12/07/24	HDR	HDR
7	DESIGN DEVELOPMENT	09/08/24	HDR	HDR

DRAWING LEGEND

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING FINLEY HOSPITAL BUILDINGS
- SURROUNDING BUILDINGS
- EXISTING TREES

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT
FINLEY HOSPITAL REDEVELOPMENT
24 DAWE AVE, FINLEY NSW 2713

DRAWING TITLE
PROPOSED - SITE PLAN

SCALE
1:500 @ A1

PROJECT NUMBER
10355502

DRAWING NUMBER
130909-HDR-AR-DWG-1301

ISSUE
7

PROJECT STATUS
DESIGN DEVELOPMENT

9/08/2024 12:39:55 PM

Level 24, 25 Martin Place, Sydney NSW, 2000, Australia
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HDR Pty. Limited ABN 76 158 075 220 trading as HDR

Nominated Architects
NSW Cate Cowlishaw 10786, D. Joe Mihaljevic 8699, Mark Gazy 7289, Simon Fleet 8363
VIC Cate Cowlishaw 15211
ACT Cate Cowlishaw 2767
TAS Cate Cowlishaw 1479
QLD Cate Cowlishaw 6139

NORTH POINT

KEY PLAN

REV	DESCRIPTION OF CHANGE	DATE	CHECKED	ISSUED
3	FOR INFORMATION	01/12/23	HDR	HDR
4	FOR SIGN OFF	08/12/23	HDR	HDR
5	FOR INFORMATION	12/12/23	HDR	HDR
6	FOR INFORMATION	15/12/23	HDR	HDR
7	FOR INFORMATION	23/01/24	HDR	HDR
8	PRELIMINARY	31/01/24	HDR	HDR
9	PROGRESS ISSUE	12/04/24	HDR	HDR
10	PROGRESS ISSUE	06/05/24	HDR	HDR
11	FOR DD SIGN OFF	17/05/24	HDR	HDR
12	FOR DD SIGN OFF	22/05/24	HDR	HDR
13	DESIGN DEVELOPMENT	12/07/24	HDR	HDR

LEGEND

- ADMINISTRATION
- CIRCULATION PUBLIC
- EMERGENCY DEPARTMENT
- FRONT OF HOUSE
- INPATIENT UNIT
- MEDICAL IMAGING
- NOT IN SCOPE
- SERVICES

WALL LEGEND

- FIRE RATED WALL 90/90/90
- SMOKE RATED WALL
- EXISTING WALL
- NEW WALL

DRAWING LEGEND

GA GROUND

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING TREES
- LANDSCAPE AREA
- OUT OF SCOPE AREAS
- TREE PROTECTION ZONE

GA ROOF

- EXISTING ROOF WITH NEW REPLACEMENT ROOFING
- LD01 - ROOF ACCESS POINTS FOR INFORMATION ONLY. FINAL DESIGN BY SPECIALIST ROOF SAFETY CONTRACTOR
- MECHANICAL ROOF PENETRATIONS

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT
FINLEY HOSPITAL REDEVELOPMENT
24 DAWE AVE, FINLEY NSW 2713

DRAWING TITLE
GENERAL ARRANGEMENT - GROUND FLOOR

SCALE
1:200 @ A1

PROJECT NUMBER
10355502

DRAWING NUMBER
130909-HDR-AR-DWG-2101

ISSUE
13

PROJECT STATUS
DESIGN DEVELOPMENT

12/07/2024 12:48:43 PM

Appendix C: Laboratory 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
%w/w:	weight per weight
ppm:	Parts per million
NL:	Not Limiting
NSL:	No Set Limit
OCP:	Organochlorine Pesticides
OPP:	Organophosphorus Pesticides
PAHs:	Polycyclic Aromatic Hydrocarbons
PCBs:	Polychlorinated Biphenyls
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
RSW:	Restricted Solid Waste
SAC:	Site Assessment Criteria
SCC:	Specific Contaminant Concentration
SSA:	Site Specific Assessment
SSHSLs:	Site Specific Health Screening Levels
TB:	Trip Blank
TCLP:	Toxicity Characteristics Leaching Procedure
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 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 low 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-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL 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)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH101	0.1-0.3	F: Silty Clay	**13**	<0.4	**25**	**31**	**13**	<0.1	**18**	**55**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	**12**	<0.4	**24**	**26**	**12**	<0.1	**13**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	**8**	<0.4	**24**	**22**	**14**	<0.1	**14**	**40**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	**5**	<0.4	**27**	**16**	**12**	<0.1	**21**	**25**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	0.02-0.2	F: Silty Clay	**10**	<0.4	**16**	**16**	**9**	<0.1	**16**	**50**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH103	0.02-0.2	F: Silty Clay	**7**	<0.4	**34**	**25**	**17**	<0.1	**20**	**39**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH103	0.6-0.95	Silty Clay	**5**	<0.4	**27**	**20**	**14**	<0.1	**17**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	0-0.2	F: Silty Clay	**6**	<0.4	**22**	**31**	**23**	**0.1**	**11**	**96**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH104	0.6-0.95	Silty Clay	**6**	<0.4	**27**	**22**	**14**	<0.1	**20**	**38**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	4.6-4.95	Silty Clay	<4	<0.4	**27**	**16**	**27**	<0.1	**19**	**49**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH105	0.05-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**13**	<0.1	**14**	**30**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP106	0-0.2	F: Silty Sandy Clay	<4	<0.4	**10**	**3**	**5**	<0.1	**2**	**7**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP107	0-0.2	F: Silty Clay	<4	<0.4	**17**	**11**	**9**	<0.1	**9**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**13**	**9**	**7**	<0.1	**6**	**17**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP107	0.7-0.9	F: Silty Clay	**8**	<0.4	**40**	**24**	**18**	<0.1	**23**	**41**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP108	0-0.2	F: Silty Clay	**6**	<0.4	**28**	**18**	**15**	<0.1	**17**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP109	0-0.2	F: Silty Clay	**5**	<0.4	**20**	**15**	**75**	<0.1	**12**	**78**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP109	0.7-0.9	Silty Clay	**8**	<0.4	**32**	**21**	**17**	<0.1	**22**	**42**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP110	0-0.2	F: Silty Clay	**8**	<0.4	**40**	**22**	**18**	<0.1	**26**	**36**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP110	0.6-0.8	Silty Clay	**7**	<0.4	**28**	**21**	**17**	<0.1	**17**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP111	0-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**11**	<0.1	**15**	**37**	**2**	**0.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP112	0-0.2	F: Silty Clay	**6**	<0.4	**24**	**160**	**49**	<0.1	**19**	**120**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP113	0-0.2	F: Silty Clay	**6**	<0.4	**30**	**18**	**18**	<0.1	**19**	**38**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP114	0-0.2	F: Silty Clay	**10**	<0.4	**29**	**41**	**15**	<0.1	**17**	**38**	<0.05	<0.5	<0.1	<0.1	<0.1	**0.9**	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	**1.2**	<0.1	<0.1	<0.1	NA	NA	NA
TP114	0.8-1	Silty Clay	**7**	<0.4	**35**	**21**	**15**	<0.1	**28**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP115	0-0.2	F: Silty Clay	**6**	<0.4	**26**	**18**	**23**	<0.1	**16**	**43**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP115	1.1-1.3	Silty Clay	**9**	<0.4	**28**	**27**	**16**	<0.1	**20**	**69**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP116	0-0.2	F: Silty Clay	**12**	<0.4	**26**	**15**	**17**	<0.1	**15**	**33**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**12**	<0.4	**25**	**17**	**16**	<0.1	**16**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP117	0-0.2	F: Silty Clay	<4	<0.4	**14**	**11**	**12**	<0.1	**7**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP118	0-0.2	F: Silty Clay	<4	<0.4	**12**	**19**	**12**	<0.1	**6**	**32**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP118	1-1.2	Silty Clay	**9**	<0.4	**34**	**21**	**17**	<0.1	**22**	**44**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP119	0-0.2	F: Silty Clay	**8**	<0.4	**30**	**20**	**21**	<0.1	**19**	**72**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP119	0.7-0.9	Silty Clay	**9**	<0.4	**39**	**24**	**17**	<0.1	**22**	**43**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP120	0-0.2	F: Silty Clay	**4**	<0.4	**17**	**15**	**15**	**0.5**	**9**	**65**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**15**	**13**	**14**	**0.5**	**7**	**57**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP120	0.6-0.8	Silty Clay	**8**	<0.4	**33**	**21**	**16**	<0.1	**21**	**39**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP121	0-0.2	F: Silty Clay	**5**	<0.4	**21**	**35**	**17**	<0.1	**11**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH122	0.05-0.2	F: Silty Clay	**8**	<0.4	**37**	**21**	**18**	<0.1	**29**	**44**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP123	0-0.2	F: Silty Clayey Sand	<4	<0.4	**10**	**3**	**5**	<0.1	**4**	**16**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP123	0.6-0.8	Silty Sandy Clay	**4**	<0.4	**21**	**12**	**11**	<0.1	**14**	**28**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP124	0-0.2	F: Silty Clay	<4	<0.4	**17**	**12**	**8**	<0.1	**5**	**30**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP125	0-0.2	F: Silty Clay	**5**	<0.4	**25**	**14**	**15**	<0.1	**17**	**28**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP125	0.7-09	Silty Clay	**7**	<0.4	**36**	**22**	**19**	<0.1	**24**	**43**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP126	0-0.2	F: Silty Clay	**6**	<0.4	**27**	**14**	**15**	<0.1	**14**	**24**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP127	0-0.2	F: Silty Clay	**5**	<0.4	**22**	**13**	**16**	<0.1	**10**	**26**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP127	0.6-0.8	Silty Clay	**8**	<0.4	**35**	**22**	**16**	<0.1	**21**	**40**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP128	0-0.2	F: Silty Clay	**7**	<0.4	**36**	**18**	**15**	<0.1	**20**	**34**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**37**	**19**	**16**	<0.1	**25**	**35**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP129	0-0.2	F: Silty Clay	**6**	<0.4	**19**	**14**	**17**	<0.1	**14**	**33**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP130	0-0.2	F: Silty Clay	**5**	<0.4	**26**	**15**	**15**	<0.1	**16**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP130	0.5-0.7	Silty Clay	**7**	<0.4	**32**	**21**	**16**	<0.1	**20**	**36**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP131	0-0.2	F: Silty Clay	**4**	<0.4	**24**	**12**	**12**	<0.1	**9**	**19**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP132	0-0.2	F: Silty Clay	**4**	<0.4	**19**	**10**	**12**	<0.1	**10**	**18**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
SDUP1	0-0.2	Duplicate of TP128	**7**	<0.4	**31**	**18**	**16**	<0.1	**21**	**29**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**34**	**19**	**18**	<0.1	**24**	**33**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP2	0-0.2	Duplicate of TP129	**6**	<0.4	**19**	**14**	**16**	<0.1	**14**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP3	0-0.2	Duplicate of TP125	**5**	<0.4	**25**	**15**	**16**	<0.1	**17**	**30**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP4	0-0.2	Duplicate of TP119	**6**	<0.4	**24**	**16**	**17**	<0.1	**15**	**60**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP5	0-0.2	Duplicate of TP116	**7**	<0.4	**24**	**13**	**11**	<0.1	**13**	**27**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**6**	<0.4	**23**	**13**	**13**	<0.1	**14**	**26**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	**8**	<0.4	**24**	**14**	**10**	<0.1	**15**	**34**	<0.05	<0.5	<0.1	<0.1	<0.1	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Total Number of Samples			62	62	62	62	62	62	62	62	60	60	25	25	25	25	25	25	25	24	24	32
Maximum Value			13	<PQL	40	160	75	0.5	29	120	2	0.6	<PQL	<PQL	<PQL	1.2	<PQL	<PQL	<PQL	<PQL	<PQL	Not 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-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH101	0.1-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH101	0.6-0.95	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
BH102	0.02-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.7
BH103	0.02-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	25.2
BH103	0.6-0.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.3
BH104	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	4
BH104	0.6-0.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	14.3
BH104	4.6-4.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
BH105	0.05-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP106	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP107	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP107	0.7-0.9	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP108	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.6
TP109	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP109	0.7-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
TP110	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP110	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP111	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP112	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP113	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP114	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.1
TP114	0.8-1	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP115	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP115	1.1-1.3	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP116	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP117	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP118	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	**210**	<0.2	<0.5	<1	<1	<1	0.1
TP118	1-1.2	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP119	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP119	0.7-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP120	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP120	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP121	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH122	0.05-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP123	0-0.2	F: Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP123	0.6-0.8	Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP124	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP125	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP125	0.7-09	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP126	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP127	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP127	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP128	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP129	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP130	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP130	0.5-0.7	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP131	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP132	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
SDUP1	0-0.2	Duplicate of TP128	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	Duplicate of TP129	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	Duplicate of TP125	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	Duplicate of TP119	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP5	0-0.2	Duplicate of TP116	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP6	0-0.2	Duplicate of TP114	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples					60	60	60	60	60	60	60	48
Maximum Value					<PQL	210	<PQL	<PQL	<PQL	<PQL	<PQL	25.2

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
BH101	0.1-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101	0.6-0.95	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	0.02-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.02-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.6-0.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0.6-0.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	4.6-4.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	0.05-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP106	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107	0.7-0.9	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP108	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP109	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP109	0.7-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP110	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP110	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP111	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP112	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP113	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP114	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP114	0.8-1	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP115	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP115	1.1-1.3	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP116	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP117	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP118	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP118	1-1.2	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP119	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP119	0.7-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP121	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH122	0.05-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP123	0-0.2	F: Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP123	0.6-0.8	Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP124	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP125	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP125	0.7-09	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP126	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP127	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP127	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP128	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP129	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP130	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP130	0.5-0.7	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP131	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP132	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1	0-0.2	Duplicate of TP128	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP2	0-0.2	Duplicate of TP129	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3	0-0.2	Duplicate of TP125	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	0-0.2	Duplicate of TP119	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP5	0-0.2	Duplicate of TP116	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP6	0-0.2	Duplicate of TP114	0m to <1m	Sand	45	110	0.5	160	55	40	3

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

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH101	0.1-0.3	Coarse	<25	<50	<100	<100
BH101 - [LAB_DUP]	0.1-0.3	Coarse	<25	<50	<100	<100
BH101	0.6-0.95	Coarse	<25	<50	<100	<100
BH102	0.02-0.2	Coarse	<25	<50	**250**	**290**
BH103	0.02-0.2	Coarse	<25	<50	<100	<100
BH103	0.6-0.95	Coarse	<25	<50	<100	<100
BH104	0-0.2	Coarse	<25	<50	<100	<100
BH104	0.6-0.95	Coarse	<25	<50	<100	<100
BH104	4.6-4.95	Coarse	<25	<50	<100	<100
BH105	0.05-0.2	Coarse	<25	<50	<100	<100
TP106	0-0.2	Coarse	<25	<50	<100	<100
TP107	0-0.2	Coarse	<25	<50	<100	<100
TP107 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP107	0.7-0.9	Coarse	<25	<50	<100	<100
TP108	0-0.2	Coarse	<25	<50	<100	<100
TP109	0-0.2	Coarse	<25	<50	<100	<100
TP109	0.7-0.9	Coarse	<25	<50	<100	<100
TP110	0-0.2	Coarse	<25	<50	<100	<100
TP110	0.6-0.8	Coarse	<25	<50	<100	<100
TP111	0-0.2	Coarse	<25	<50	<100	<100
TP112	0-0.2	Coarse	<25	<50	<100	<100
TP113	0-0.2	Coarse	<25	<50	<100	<100
TP114	0-0.2	Coarse	<25	<50	<100	<100
TP114	0.8-1	Coarse	<25	<50	<100	<100
TP115	0-0.2	Coarse	<25	<50	<100	<100
TP115	1.1-1.3	Coarse	<25	<50	**330**	**260**
TP116	0-0.2	Coarse	<25	<50	<100	<100
TP116 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP117	0-0.2	Coarse	<25	<50	<100	<100
TP118	0-0.2	Coarse	<25	**210**	**630**	**230**
TP118	1-1.2	Coarse	<25	<50	<100	<100
TP119	0-0.2	Coarse	<25	<50	<100	<100
TP119	0.7-0.9	Coarse	<25	<50	<100	<100
TP120	0-0.2	Coarse	<25	<50	<100	<100
TP120 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP120	0.6-0.8	Coarse	<25	<50	<100	<100
TP121	0-0.2	Coarse	<25	<50	<100	<100
BH122	0.05-0.2	Coarse	<25	<50	<100	<100
TP123	0-0.2	Coarse	<25	<50	<100	<100
TP123	0.6-0.8	Coarse	<25	<50	<100	<100
TP124	0-0.2	Coarse	<25	<50	<100	<100
TP125	0-0.2	Coarse	<25	<50	<100	<100
TP125	0.7-09	Coarse	<25	<50	<100	<100
TP126	0-0.2	Coarse	<25	<50	<100	<100
TP127	0-0.2	Coarse	<25	<50	<100	<100
TP127	0.6-0.8	Coarse	<25	<50	<100	<100
TP128	0-0.2	Coarse	<25	<50	<100	<100
TP128 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP129	0-0.2	Coarse	<25	<50	**150**	<100
TP130	0-0.2	Coarse	<25	<50	<100	<100
TP130	0.5-0.7	Coarse	<25	<50	<100	<100
TP131	0-0.2	Coarse	<25	<50	<100	<100
TP132	0-0.2	Coarse	<25	<50	<100	<100
SDUP1	0-0.2	Coarse	<25	<50	<100	<100
SDUP1 -	0-0.2	Coarse	<25	<50	<100	<100
SDUP2	0-0.2	Coarse	<25	<50	**150**	<100
SDUP3	0-0.2	Coarse	<25	<50	<100	<100
SDUP4	0-0.2	Coarse	<25	<50	<100	<100
SDUP5	0-0.2	Coarse	<25	<50	<100	<100
SDUP6	0-0.2	Coarse	<25	<50	<100	<100
Total Number of Samples			60	60	60	60
Maximum Value			<PQL	210	630	290

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

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Soil Texture**	C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH101	0.1-0.3	Coarse	700	1000	2500	10000
BH101 - [LAB_DUP]	0.1-0.3	Coarse	700	1000	2500	10000
BH101	0.6-0.95	Coarse	700	1000	2500	10000
BH102	0.02-0.2	Coarse	700	1000	2500	10000
BH103	0.02-0.2	Coarse	700	1000	2500	10000
BH103	0.6-0.95	Coarse	700	1000	2500	10000
BH104	0-0.2	Coarse	700	1000	2500	10000
BH104	0.6-0.95	Coarse	700	1000	2500	10000
BH104	4.6-4.95	Coarse	700	1000	2500	10000
BH105	0.05-0.2	Coarse	700	1000	2500	10000
TP106	0-0.2	Coarse	700	1000	2500	10000
TP107	0-0.2	Coarse	700	1000	2500	10000
TP107 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP107	0.7-0.9	Coarse	700	1000	2500	10000
TP108	0-0.2	Coarse	700	1000	2500	10000
TP109	0-0.2	Coarse	700	1000	2500	10000
TP109	0.7-0.9	Coarse	700	1000	2500	10000
TP110	0-0.2	Coarse	700	1000	2500	10000
TP110	0.6-0.8	Coarse	700	1000	2500	10000
TP111	0-0.2	Coarse	700	1000	2500	10000
TP112	0-0.2	Coarse	700	1000	2500	10000
TP113	0-0.2	Coarse	700	1000	2500	10000
TP114	0-0.2	Coarse	700	1000	2500	10000
TP114	0.8-1	Coarse	700	1000	2500	10000
TP115	0-0.2	Coarse	700	1000	2500	10000
TP115	1.1-1.3	Coarse	700	1000	2500	10000
TP116	0-0.2	Coarse	700	1000	2500	10000
TP116 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP117	0-0.2	Coarse	700	1000	2500	10000
TP118	0-0.2	Coarse	700	1000	2500	10000
TP118	1-1.2	Coarse	700	1000	2500	10000
TP119	0-0.2	Coarse	700	1000	2500	10000
TP119	0.7-0.9	Coarse	700	1000	2500	10000
TP120	0-0.2	Coarse	700	1000	2500	10000
TP120 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP120	0.6-0.8	Coarse	700	1000	2500	10000
TP121	0-0.2	Coarse	700	1000	2500	10000
BH122	0.05-0.2	Coarse	700	1000	2500	10000
TP123	0-0.2	Coarse	700	1000	2500	10000
TP123	0.6-0.8	Coarse	700	1000	2500	10000
TP124	0-0.2	Coarse	700	1000	2500	10000
TP125	0-0.2	Coarse	700	1000	2500	10000
TP125	0.7-09	Coarse	700	1000	2500	10000
TP126	0-0.2	Coarse	700	1000	2500	10000
TP127	0-0.2	Coarse	700	1000	2500	10000
TP127	0.6-0.8	Coarse	700	1000	2500	10000
TP128	0-0.2	Coarse	700	1000	2500	10000
TP128 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP129	0-0.2	Coarse	700	1000	2500	10000
TP130	0-0.2	Coarse	700	1000	2500	10000
TP130	0.5-0.7	Coarse	700	1000	2500	10000
TP131	0-0.2	Coarse	700	1000	2500	10000
TP132	0-0.2	Coarse	700	1000	2500	10000
SDUP1	0-0.2	Coarse	700	1000	2500	10000
SDUP1 -	0-0.2	Coarse	700	1000	2500	10000
SDUP2	0-0.2	Coarse	700	1000	2500	10000
SDUP3	0-0.2	Coarse	700	1000	2500	10000
SDUP4	0-0.2	Coarse	700	1000	2500	10000
SDUP5	0-0.2	Coarse	700	1000	2500	10000
SDUP6	0-0.2	Coarse	700	1000	2500	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		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		**RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH101	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
BH101 - [LAB_DUP]	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
BH101	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
BH102	0.02-0.2	<25	<50	**250**	**290**	<0.2	<0.5	<1	<1	<1	**1.7**
BH103	0.02-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**25.2**
BH103	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.3**
BH104	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**4**
BH104	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**14.3**
BH104	4.6-4.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
BH105	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP106	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP107	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP107 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP107	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP108	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.6**
TP109	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP109	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.5**
TP110	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP110	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP111	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP112	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP113	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP114	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.1**
TP114	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP115	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP115	1.1-1.3	<25	<50	**330**	**260**	<0.2	<0.5	<1	<1	<1	**0.8**
TP116	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
TP116 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP117	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP118	0-0.2	<25	**210**	**630**	**230**	<0.2	<0.5	<1	<1	<1	**0.1**
TP118	1-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP119	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP119	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP120	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP120 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP120	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP121	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
BH122	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP123	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP123	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP124	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP125	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP125	0.7-09	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP126	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP127	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP127	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP128	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP128 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP129	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP130	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP130	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP131	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP132	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
SDUP1	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP6	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples		60	60	60	60	60	60	60	60	60	48
Maximum Value		<PQL	210	630	290	<PQL	<PQL	<PQL	<PQL	<PQL	25.2

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

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA												
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0**											**0.01**	**0.001**
19/09/2023	BH101	0.1-0.2	No	2	2,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH101	0.1-0.3	213.11	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
19/09/2023	BH101	0.2-0.6	No	2	3,170	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH101	0.6-1	No	5	6,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH102	0-0.1	No	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH102	0.02-0.2	636.48	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
19/09/2023	BH102	0.1-0.4	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH103	0.02-0.1	No	7	8,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH103	0.02-0.2	535.01	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
19/09/2023	BH103	0.1-0.6	No	10	11,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH104	0-0.1	No	10	11,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH104	0-0.2	850.81	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
19/09/2023	BH105	0.05-0.3	No	2	3,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH105	0.05-0.2	619.04	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
21/09/2023	TP106	0-0.1	No	10	14,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP106	0-0.2	861.37	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP106	0.1-0.6	No	10	15,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP107	0-0.1	No	10	12,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP107	0-0.2	816.06	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP107	0.1-0.4	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP108	0-0.1	No	10	12,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP108	0-0.2	701.53	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
21/09/2023	TP109	0-0.1	No	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP109	0-0.2	840.93	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
21/09/2023	TP110	0-0.1	No	10	12,870	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP110	0-0.2	568.92	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP110	0.1-0.3	No	10	13,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP111	0-0.1	No	10	11,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP111	0-0.2	520.62	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
21/09/2023	TP111	0.1-0.4	No	10	13,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP112	0-0.1	No	10	12,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP112	0-0.2	518.89	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
21/09/2023	TP112	0.1-0.4	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP113	0-0.1	No	10	13,890	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP113	0-0.2	578.14	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
21/09/2023	TP114	0-0.1	No	10	13,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP114	0-0.2	598.55	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP114	0.1-0.5	No	10	14,330	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP115	0-0.1	No	10	12,240	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP115	0-0.2	620.91	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP115	0.1-0.6	No	10	13,950	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP116	0-0.1	No	10	11,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP116	0-0.2	559.62	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
21/09/2023	TP116	0.1-0.5	No	10	12,220	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP117	0-0.1	No	10	13,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP117	0-0.2	667.34	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
21/09/2023	TP117	0.1-0.3	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP118	0-0.1	No	10	12,850	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP118	0-0.2	662.68	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
22/09/2023	TP118	0.1-0.5	No	10	12,990	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP119	0-0.1	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP119	0-0.2	724.36	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP119	0.1-0.35	No	10	12,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP120	0-0.1	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP120	0-0.2	655.12	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
22/09/2023	TP121	0-0.1	No	10	12,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP121	0-0.2	374.6	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
22/09/2023	TP121	0.1-0.4	No	10	12,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH122	0.05-0.25	No	2	2,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH122	0.05-0.2	456.14	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
22/09/2023	TP123	0-0.1	No	10	14,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP123	0-0.2	842.12	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
22/09/2023	TP124	0-0.1	No	10	15,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP124	0-0.2	578.42	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
22/09/2023	TP124	0.1-0.3	No	10	14,950	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP125	0-0.1	No	10	10,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP125	0-0.2	724.53	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
21/09/2023	TP125	0.1-0.4	No	10	13,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP126	0-0.1	No	10	11,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP126	0-0.2	634.33	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
22/09/2023	TP126	0.1-0.3	No	10	12,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP127	0-0.1	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP127	0-0.2	671.68	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
22/09/2023	TP127	0.1-0.3	No	10	12,230	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP128	0-0.1	No	10	12,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP128	0-0.2	546.27	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
21/09/2023	TP128	0.1-0.4	No	10	13,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP129	0-0.1	No	10	12,050	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP129	0-0.2	481.2	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
21/09/2023	TP129	0.1-0.5	No	10	13,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP130	0-0.1	No	10	14,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP130	0-0.2	629.12	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
22/09/2023	TP131	0-0.1	No	10	13,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP131	0-0.2	716.72	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
22/09/2023	TP131	0.1-0.3	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP132	0-0.1	No	10	14,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP132	0-0.2	834.04	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

Concentration above the SAC **VALUE**

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

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH101	0.1-0.3	F: Silty Clay	Coarse	8.5	11.5	37	13	25	31	13	18	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	Coarse	8.5	11.5	37	12	24	26	12	13	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	Coarse	8.5	11.5	37	8	24	22	14	14	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	Coarse	8.5	11.5	37	5	27	16	12	21	25	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH102	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	10	16	16	9	16	50	<1	NA	<25	<50	250	290	<0.2	<0.5	<1	<1	<0.05
BH103	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	7	34	25	17	20	39	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH103	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	5	27	20	14	17	32	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	22	31	23	11	96	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	6	27	22	14	20	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	4.6-4.95	Silty Clay	Coarse	8.5	11.5	37	<4	27	16	27	19	49	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH105	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	25	14	13	14	30	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP106	0-0.2	F: Silty Sandy Clay	Coarse	8.5	11.5	37	<4	10	3	5	2	7	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	17	11	9	9	23	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	<4	13	9	7	6	17	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107	0.7-0.9	F: Silty Clay	Coarse	8.5	11.5	37	8	40	24	18	23	41	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP108	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	28	18	15	17	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP109	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	20	15	75	12	78	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP109	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	8	32	21	17	22	42	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP110	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	40	22	18	26	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP110	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	7	28	21	17	17	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP111	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	25	14	11	15	37	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.4
TP112	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	24	160	49	19	120	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP113	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	30	18	18	19	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP114	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	10	29	41	15	17	38	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP114	0.8-1	Silty Clay	Coarse	8.5	11.5	37	7	35	21	15	28	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP115	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	26	18	23	16	43	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP115	1.1-1.3	Silty Clay	Coarse	8.5	11.5	37	9	28	27	16	20	69	<1	NA	<25	<50	330	260	<0.2	<0.5	<1	<1	<0.05
TP116	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	12	26	15	17	15	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	12	25	17	16	16	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP117	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	14	11	12	7	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP118	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	12	19	12	6	32	<1	<0.1	<25	210	630	230	<0.2	<0.5	<1	<1	<0.05
TP118	1-1.2	Silty Clay	Coarse	8.5	11.5	37	9	34	21	17	22	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP119	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	30	20	21	19	72	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP119	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	9	39	24	17	22	43	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	17	15	15	9	65	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	4	15	13	14	7	57	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	8	33	21	16	21	39	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP121	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	21	35	17	11	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH122	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	37	21	18	29	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP123	0-0.2	F: Silty Clayey Sand	Coarse	8.5	11.5	37	<4	10	3	5	4	16	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP123	0.6-0.8	Silty Sandy Clay	Coarse	8.5	11.5	37	4	21	12	11	14	28	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP124	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	17	12	8	5	30	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP125	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	25	14	15	17	28	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP125	0.7-09	Silty Clay	Coarse	8.5	11.5	37	7	36	22	19	24	43	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP126	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	27	14	15	14	24	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP127	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	22	13	16	10	26	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP127	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	8	35	22	16	21	40	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP128	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	7	36	18	15	20	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	8	37	19	16	25	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP129	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	19	14	17	14	33	<1	NA	<25	<50	150	<100	<0.2	<0.5	<1	<1	<0.05
TP130	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	26	15	15	16	23	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP130	0.5-0.7	Silty Clay	Coarse	8.5	11.5	37	7	32	21	16	20	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP131	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	24	12	12	9	19	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP132	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	19	10	12	10	18	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	0-0.2	Duplicate of TP128	Coarse	8.5	11.5	37	7	31	18	16	21	29	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	8	34	19	18	24	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP2	0-0.2	Duplicate of TP129	Coarse	8.5	11.5	37	6	19	14	16	14	32	<1	NA	<25	<50	150	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3	0-0.2	Duplicate of TP125	Coarse	8.5	11.5	37	5	25	15	16	17	30	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP4	0-0.2	Duplicate of TP119	Coarse	8.5	11.5	37	6	24	16	17	15	60	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5	0-0.2	Duplicate of TP116	Coarse	8.5	11.5	37	7	24	13	11	13	27	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	6	23	13	13	14	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	Coarse	8.5	11.5	37	8	24	14	10	15	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				63	63	63	62	62	62	62	62	62	60	25	60	60	60	60	60	60	60	60	60
Maximum Value				8.5	11.5	37	13	40	160	75	29	120	<PQL	<PQL	<PQL	210	630	290	<PQL	<PQL	<PQL	<PQL	0.4

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

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH101	0.1-0.3	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	--	--	--	--	--	--	--	--	--	--	--
BH101	0.6-0.95	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH102	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH103	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH103	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH104	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH104	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH104	4.6-4.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH105	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP106	0-0.2	F: Silty Sandy Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP107	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP107	0.7-0.9	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP108	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP109	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP109	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP110	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP110	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP111	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP112	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP113	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP114	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	--	--	--	--	--	--	--	180	--	--	--	--	--	--	--	--	--
TP114	0.8-1	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP115	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP115	1.1-1.3	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP116	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP117	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP118	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP118	1-1.2	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP119	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP119	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP120	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP120	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP121	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH122	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP123	0-0.2	F: Silty Clayey Sand	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP123	0.6-0.8	Silty Sandy Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP124	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP125	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP125	0.7-09	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP126	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP127	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP127	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP128	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP129	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP130	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP130	0.5-0.7	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP131	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP132	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP1	0-0.2	Duplicate of TP128	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP2	0-0.2	Duplicate of TP129	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP3	0-0.2	Duplicate of TP125	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP4	0-0.2	Duplicate of TP119	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP5	0-0.2	Duplicate of TP116	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	--	--	--	--	--	--	--	--	--	--	--
SDUP6	0-0.2	Duplicate of TP114	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20

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 PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH101	0.1-0.3	F: Silty Clay	**13**	<0.4	**25**	**31**	**13**	<0.1	**18**	**55**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	**12**	<0.4	**24**	**26**	**12**	<0.1	**13**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	**8**	<0.4	**24**	**22**	**14**	<0.1	**14**	**40**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	**5**	<0.4	**27**	**16**	**12**	<0.1	**21**	**25**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH102	0.02-0.2	F: Silty Clay	**10**	<0.4	**16**	**16**	**9**	<0.1	**16**	**50**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**120**	**240**	**360**	<0.2	<0.5	<1	<1	Not Detected
BH103	0.02-0.2	F: Silty Clay	**7**	<0.4	**34**	**25**	**17**	<0.1	**20**	**39**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH103	0.6-0.95	Silty Clay	**5**	<0.4	**27**	**20**	**14**	<0.1	**17**	**32**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH104	0-0.2	F: Silty Clay	**6**	<0.4	**22**	**31**	**23**	**0.1**	**11**	**96**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH104	0.6-0.95	Silty Clay	**6**	<0.4	**27**	**22**	**14**	<0.1	**20**	**38**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH104	4.6-4.95	Silty Clay	<4	<0.4	**27**	**16**	**27**	<0.1	**19**	**49**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH105	0.05-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**13**	<0.1	**14**	**30**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP106	0-0.2	F: Silty Sandy Clay	<4	<0.4	**10**	**3**	**5**	<0.1	**2**	**7**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP107	0-0.2	F: Silty Clay	<4	<0.4	**17**	**11**	**9**	<0.1	**9**	**23**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**13**	**9**	**7**	<0.1	**6**	**17**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP107	0.7-0.9	F: Silty Clay	**8**	<0.4	**40**	**24**	**18**	<0.1	**23**	**41**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP108	0-0.2	F: Silty Clay	**6**	<0.4	**28**	**18**	**15**	<0.1	**17**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP109	0-0.2	F: Silty Clay	**5**	<0.4	**20**	**15**	**75**	<0.1	**12**	**78**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP109	0.7-0.9	Silty Clay	**8**	<0.4	**32**	**21**	**17**	<0.1	**22**	**42**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP110	0-0.2	F: Silty Clay	**8**	<0.4	**40**	**22**	**18**	<0.1	**26**	**36**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP110	0.6-0.8	Silty Clay	**7**	<0.4	**28**	**21**	**17**	<0.1	**17**	**47**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP111	0-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**11**	<0.1	**15**	**37**	**2**	**0.4**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP112	0-0.2	F: Silty Clay	**6**	<0.4	**24**	**160**	**49**	<0.1	**19**	**120**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP113	0-0.2	F: Silty Clay	**6**	<0.4	**30**	**18**	**18**	<0.1	**19**	**38**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP114	0-0.2	F: Silty Clay	**10**	<0.4	**29**	**41**	**15**	<0.1	**17**	**38**	<0.05	<0.05	<0.1	<0.1	<0.1	**0.9**	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	**1.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP114	0.8-1	Silty Clay	**7**	<0.4	**35**	**21**	**15**	<0.1	**28**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP115	0-0.2	F: Silty Clay	**6**	<0.4	**26**	**18**	**23**	<0.1	**16**	**43**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP115	1.1-1.3	Silty Clay	**9**	<0.4	**28**	**27**	**16**	<0.1	**20**	**69**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**150**	**280**	**430**	<0.2	<0.5	<1	<1	NA
TP116	0-0.2	F: Silty Clay	**12**	<0.4	**26**	**15**	**17**	<0.1	**15**	**33**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**12**	<0.4	**25**	**17**	**16**	<0.1	**16**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP117	0-0.2	F: Silty Clay	<4	<0.4	**14**	**11**	**12**	<0.1	**7**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP118	0-0.2	F: Silty Clay	<4	<0.4	**12**	**19**	**12**	<0.1	**6**	**32**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	**77**	**520**	**390**	**987**	<0.2	<0.5	<1	<1	Not Detected
TP118	1-1.2	Silty Clay	**9**	<0.4	**34**	**21**	**17**	<0.1	**22**	**44**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP119	0-0.2	F: Silty Clay	**8**	<0.4	**30**	**20**	**21**	<0.1	**19**	**72**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP119	0.7-0.9	Silty Clay	**9**	<0.4	**39**	**24**	**17**	<0.1	**22**	**43**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP120	0-0.2	F: Silty Clay	**4**	<0.4	**17**	**15**	**15**	**0.5**	**9**	**65**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**15**	**13**	**14**	**0.5**	**7**	**57**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP120	0.6-0.8	Silty Clay	**8**	<0.4	**33**	**21**	**16**	<0.1	**21**	**39**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP121	0-0.2	F: Silty Clay	**5**	<0.4	**21**	**35**	**17**	<0.1	**11**	**47**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH122	0.05-0.2	F: Silty Clay	**8**	<0.4	**37**	**21**	**18**	<0.1	**29**	**44**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP123	0-0.2	F: Silty Clayey Sand	<4	<0.4	**10**	**3**	**5**	<0.1	**4**	**16**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP123	0.6-0.8	Silty Sandy Clay	**4**	<0.4	**21**	**12**	**11**	<0.1	**14**	**28**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP124	0-0.2	F: Silty Clay	<4	<0.4	**17**	**12**	**8**	<0.1	**5**	**30**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP125	0-0.2	F: Silty Clay	**5**	<0.4	**25**	**14**	**15**	<0.1	**17**	**28**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP125	0.7-09	Silty Clay	**7**	<0.4	**36**	**22**	**19**	<0.1	**24**	**43**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP126	0-0.2	F: Silty Clay	**6**	<0.4	**27**	**14**	**15**	<0.1	**14**	**24**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP127	0-0.2	F: Silty Clay	**5**	<0.4	**22**	**13**	**16**	<0.1	**10**	**26**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP127	0.6-0.8	Silty Clay	**8**	<0.4	**35**	**22**	**16**	<0.1	**21**	**40**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP128	0-0.2	F: Silty Clay	**7**	<0.4	**36**	**18**	**15**	<0.1	**20**	**34**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**37**	**19**	**16**	<0.1	**25**	**35**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP129	0-0.2	F: Silty Clay	**6**	<0.4	**19**	**14**	**17**	<0.1	**14**	**33**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP130	0-0.2	F: Silty Clay	**5**	<0.4	**26**	**15**	**15**	<0.1	**16**	**23**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP130	0.5-0.7	Silty Clay	**7**	<0.4	**32**	**21**	**16**	<0.1	**20**	**36**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP131	0-0.2	F: Silty Clay	**4**	<0.4	**24**	**12**	**12**	<0.1	**9**	**19**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP132	0-0.2	F: Silty Clay	**4**	<0.4	**19**	**10**	**12**	<0.1	**10**	**18**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
SDUP1	0-0.2	Duplicate of TP128	**7**	<0.4	**31**	**18**	**16**	<0.1	**21**	**29**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**34**	**19**	**18**	<0.1	**24**	**33**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP2	0-0.2	Duplicate of TP129	**6**	<0.4	**19**	**14**	**16**	<0.1	**14**	**32**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	**100**	**100**	<0.2	<0.5	<1	<1	NA
SDUP3	0-0.2	Duplicate of TP125	**5**	<0.4	**25**	**15**	**16**	<0.1	**17**	**30**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP4	0-0.2	Duplicate of TP119	**6**	<0.4	**24**	**16**	**17**	<0.1	**15**	**60**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP5	0-0.2	Duplicate of TP116	**7**	<0.4	**24**	**13**	**11**	<0.1	**13**	**27**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**6**	<0.4	**23**	**13**	**13**	<0.1	**14**	**26**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	**8**	<0.4	**24**	**14**	**10**	<0.1	**15**	**34**	<0.05	<0.05	<0.1	<0.1	<0.1	**0.4**	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
Total Number of Samples			62	62	62	62	62	62	62	62	60	60	25	24	24	25	24	60	60	60	60	60	60	60	60	60	32
Maximum Value			13	<PQL	40	160	75	0.5	29	120	2	0.4	<PQL	<PQL	<PQL	1.2	<PQL	<PQL	77	520	390	987	<PQL	<PQL	<PQL	<PQL	Not Detected

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

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							
			MW1	MW1 [LAB_DUP]	MW3	MW101	MW103	MW104	GWDUP1	GWDUP2
Inorganic Compounds and Parameters										
pH	-	6.5 - 8.5	7	7	6.5	6.8	7.1	6.9	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**16000**	**16000**	**1600**	**3100**	**1500**	**3500**	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	24	**4**	**4**	<1	**2**	<1	<1	<1	<1
Cadmium	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1	**1**	<1	**2**	<1	<1	<1
Copper	1	1.4	**6**	**6**	**1**	**1**	<1	**1**	<1	**3**
Lead	1	3.4	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05	**0.06**	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	11	**24**	**23**	**2**	**6**	**1**	**3**	**3**	**1**
Zinc	1	8	**13**	**12**	**18**	**27**	**10**	**9**	**8**	**16**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	950	<1	NA	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	NA	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	NA	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	NA	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	NA	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)										
TRH F1	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	NA	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	16	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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							
			MW1	MW1 [LAB_DUP]	MW3	MW101	MW103	MW104	GWDUP1	GWDUP2
Inorganic Compounds and Parameters										
pH	-	6.5 - 8.5	7	7	6.5	6.8	7.1	6.9	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**16000**	**16000**	**1600**	**3100**	**1500**	**3500**	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	100	**4**	**4**	<1	**2**	<1	<1	<1	<1
Cadmium	0.1	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (total)	1	500	<1	<1	**1**	<1	**2**	<1	<1	<1
Copper	1	20000	**6**	**6**	**1**	**1**	<1	**1**	<1	**3**
Lead	1	100	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	**0.06**	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	**24**	**23**	**2**	**6**	**1**	**3**	**3**	**1**
Zinc	1	30000	**13**	**12**	**18**	**27**	**10**	**9**	**8**	**16**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	10	<1	NA	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	NA	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	NA	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	NA	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)										
TRH F1	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	NA	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW1	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0
MW3	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0
MW101	3.67	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	1.5
MW103	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	1.1
MW104	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0.7
GWDUP1	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
GWDUP2	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				7	7	7	7	7	7	7	5
Maximum Value				<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1.5

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
MW1	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW3	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW101	3.67	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW103	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW104	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
GWDUP1	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
GWDUP2	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL

TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene
PQL Envirolab SYD			25	50	100	100	0.2	0.5	1	2	1
PQL Envirolab VIC			25	50	100	100	0.2	0.5	1	2	1
Intra	TP128	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP1	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	TP129	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP2	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	150	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	0%	nc	nc	nc	nc	nc	nc
Intra	TP125	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP119	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP116	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP114	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP6	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
Field Blank	TB-S2 25/09/23	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
Field Rinsate	FR1-HA 22/09/23	µg/L	<10	<50	<100	<100	<1	<1	<1	<2	<1
Trip Spike	TS-S1 18/09/23		-	-	-	-	98%	99%	98%	97%	96%
Trip Spike	TS-S2 25/09/23		-	-	-	-	100%	101%	102%	102%	102%

			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
PQL Envirolab SYD			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
PQL Envirolab VIC			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
Intra	TP128	0-0.2	<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
laboratory	SDUP1	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	TP129	0-0.2	<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
laboratory	SDUP2	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	TP125	0-0.2	<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
laboratory	SDUP3	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP119	0-0.2	<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
laboratory	SDUP4	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP116	0-0.2	<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
laboratory	SDUP5	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP114	0-0.2	<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
laboratory	SDUP6	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	<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
Field Blank	TB-S2 25/09/23	-	<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
Field Rinsate	FR1-HA 22/09/23	µg/L	<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
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
PQL Envirolab SYD			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PQL Envirolab VIC			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Intra	TP128	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	TP129	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
laboratory	SDUP2	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	TP125	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
laboratory	SDUP3	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP119	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
laboratory	SDUP4	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP116	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP5	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	TP114	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP6	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.65	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	77%	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	TB-S2 25/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Rinsate	FR1-HA 22/09/23	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			Azinphos-methyl (Guthio	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
PQL Envirolab SYD			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4	0.4	1	1	1	0.1	1	1
PQL Envirolab VIC			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4	0.4	1	1	1	0.1	1	1
Intra	TP128	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7	<0.4	36	18	15	<0.1	20	34
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7	<0.4	31	18	16	<0.1	21	29
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7	nc	33.5	18	15.5	nc	20.5	31.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	nc	15%	0%	6%	nc	5%	16%
Intra	TP129	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	<0.4	19	14	17	<0.1	14	33
laboratory	SDUP2	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	<0.4	19	14	16	<0.1	14	32
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	6	nc	19	14	16.5	nc	14	32.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	nc	0%	0%	6%	nc	0%	3%
Intra	TP125	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	<0.4	25	14	15	<0.1	17	28
laboratory	SDUP3	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	<0.4	25	15	16	<0.1	17	30
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	5	nc	25	14.5	15.5	nc	17	29
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	nc	0%	7%	6%	nc	0%	7%
Inter	TP119	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8	<0.4	30	20	21	<0.1	19	72
laboratory	SDUP4	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	<0.4	24	16	17	<0.1	15	60
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7	nc	27	18	19	nc	17	66
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	29%	nc	22%	22%	21%	nc	24%	18%
Inter	TP116	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	12	<0.4	26	15	17	<0.1	15	33
laboratory	SDUP5	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	<0.4	24	13	11	<0.1	13	27
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	9.5	nc	25	14	14	nc	14	30
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	53%	nc	8%	14%	43%	nc	14%	20%
Inter	TP114	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	10	<0.4	29	41	15	<0.1	17	38
laboratory	SDUP6	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	8	<0.4	24	14	10	<0.1	15	34
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	9	nc	26.5	27.5	12.5	nc	16	36
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	22%	nc	19%	98%	40%	nc	13%	11%
Field Blank	TB-S1 18/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	3	<1	3	<0.1	<1	3
Field Blank	TB-S2 25/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	4	<1	4	<0.1	<1	3
Field Rinsate	FR1-HA 22/09/23	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.01	<0.01	0.1	<0.03	<0.0005	<0.02	<0.02
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Result outside of QA/QC acceptance criteria

Rinsate metals results in mg/L

TABLE Q2
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	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*	*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*
Intra	MW104	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	1	<1	<0.05	3	9
laboratory	GWDUP1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<1	<1	<0.05	3	8
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.75	nc	nc	3	8.5
	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	nc	67%	nc	nc	0%	12%
Inter	MW3	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	1	1	<1	0.06	2	18
laboratory	GWDUP2	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	3	<1	<0.05	1	16
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.75	2	nc	0.0425	1.5	17
	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	67%	100%	nc	82%	67%	12%
Field	TB-W1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<1	<1	<0.05	<1	<1
Blank	25/09/2023																																
Field	FR2-DIP	15	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	110	<1	<0.05	<1	6
Rinsate	26/09/2023																																
Trip	TS-W1	-	-	-	-	106%	102%	115%	114%	111%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spike	25/09/2023																																

Result outside of QA/QC acceptance criteria Value

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

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL 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)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0-0.2	F: Silty Clay	**4**	<0.4	**18**	**13**	**13**	<0.1	**9**	**27**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**18**	**12**	**13**	<0.1	**10**	**26**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.3-0.5	Silty Clay	**4**	<0.4	**25**	**16**	**16**	<0.1	**12**	**24**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	1.3-1.5	Silty Clay	**7**	<0.4	**27**	**21**	**16**	<0.1	**15**	**40**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.2	F: Silty Clay	<4	<0.4	**16**	**12**	**11**	<0.1	**9**	**21**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH2	1-1.4	Silty Clay	**7**	<0.4	**29**	**21**	**17**	<0.1	**17**	**42**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0-0.2	F: Silty Clay	<4	<0.4	**14**	**9**	**11**	<0.1	**8**	**49**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH3	0.3-0.5	Silty Clay	<4	<0.4	**18**	**11**	**8**	<0.1	**11**	**19**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0-0.2	F: Clayey Silt	<4	<0.4	**14**	**11**	**8**	<0.1	**9**	**37**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH4	0.3-0.5	Silty Clay	**5**	<0.4	**25**	**15**	**12**	<0.1	**17**	**23**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH5	0-0.2	F: Silty Sand	**5**	<0.4	**10**	**9**	**7**	<0.1	**6**	**26**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH5	0.3-0.5	Silty Clay	<4	<0.4	**20**	**12**	**11**	<0.1	**12**	**22**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0-0.5	Sandy Silty Clay	**5**	<0.4	**28**	**20**	**15**	<0.1	**17**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	**5**	<0.4	**28**	**20**	**16**	<0.1	**16**	**37**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH7	0-0.2	F: Sandy Silty Clay	**5**	<0.4	**11**	**15**	**7**	<0.1	**11**	**65**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH7	0.2-0.7	Sandy Silty Clay	**5**	<0.4	**25**	**22**	**14**	<0.1	**27**	**46**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0-0.2	F: Silty Clay	<4	<0.4	**23**	**15**	**16**	<0.1	**14**	**31**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH8	0.8-1	Sandy Silty Clay	**6**	<0.4	**28**	**29**	**16**	<0.1	**20**	**66**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH9	0-0.2	F: Sandy Silt	<4	<0.4	**18**	**14**	**12**	<0.1	**11**	**42**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH9	0.5-0.9	Silty Clay	**6**	<0.4	**26**	**28**	**14**	<0.1	**20**	**71**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP10	0-0.2	F: Silty Clay	<4	<0.4	**16**	**10**	**11**	<0.1	**8**	**24**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**16**	**10**	**10**	<0.1	**8**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP10	0.3-0.6	Silty Clay	**5**	<0.4	**23**	**17**	**12**	<0.1	**14**	**25**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP11	0-0.2	F: Silty Clay	<4	<0.4	**18**	**12**	**11**	<0.1	**9**	**24**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP11	0.4-0.6	Silty Clay	**7**	<0.4	**30**	**25**	**16**	<0.1	**19**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP12	0-0.2	F: Silty Clay	<4	<0.4	**11**	**8**	**7**	<0.1	**6**	**22**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP12	0.5-0.7	F: Silty Clay	**6**	<0.4	**31**	**18**	**16**	<0.1	**18**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP1	0-0.2	Duplicate of BH1	**5**	<0.4	**21**	**14**	**15**	<0.1	**11**	**31**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP2	0-0.2	Duplicate of BH3	<4	<0.4	**17**	**11**	**11**	<0.1	**9**	**56**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP3	0-0.2	Duplicate of BH2	<4	<0.4	**18**	**13**	**10**	<0.1	**10**	**21**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
SDUP4	0-0.2	Duplicate of BH4	<4	<0.4	**13**	**11**	**7**	<0.1	**8**	**34**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			31	31	31	31	31	31	31	31	32	32	17	17	17	17	17	17	17	18	17	12
Maximum Value			7	<PQL	31	29	17	<PQL	27	71	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not 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-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH1	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1	1.3-1.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH2	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH2	1-1.4	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.2	F: Clayey Silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH4	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH5	0-0.2	F: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH5	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
BH6	0-0.5	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH7	0-0.2	F: Sandy Silty Clay	0m to <1m	Sand	<25	**130**	<0.2	<0.5	<1	<1	<1	0
BH7	0.2-0.7	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH8	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH8	0.8-1	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH9	0-0.2	F: Sandy Silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH9	0.5-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
TP10	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP10	0.3-0.6	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP11	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP11	0.4-0.6	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.4
TP12	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
TP12	0.5-0.7	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
SDUP1	0-0.2	Duplicate of BH1	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	Duplicate of BH3	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	Duplicate of BH2	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	Duplicate of BH4	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples					32	32	32	32	32	32	32	24
Maximum Value					<PQL	130	<PQL	<PQL	<PQL	<PQL	<PQL	2.4

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
BH1	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	1.3-1.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	1-1.4	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0-0.2	F: Clayey Silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0-0.2	F: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6	0-0.5	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0-0.2	F: Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0.2-0.7	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0.8-1	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH9	0-0.2	F: Sandy Silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH9	0.5-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10	0.3-0.6	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP11	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP11	0.4-0.6	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP12	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP12	0.5-0.7	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1	0-0.2	Duplicate of BH1	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP2	0-0.2	Duplicate of BH3	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3	0-0.2	Duplicate of BH2	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	0-0.2	Duplicate of BH4	0m to <1m	Sand	45	110	0.5	160	55	40	3

JKEnvironments

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

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0-0.2	Coarse	<25	<50	**190**	<100
BH1 - [LAB_DUP]	0-0.2	Coarse	<25	<50	**330**	<100
BH1	0.3-0.5	Coarse	<25	<50	<100	<100
BH1	1.3-1.5	Coarse	<25	<50	<100	<100
BH2	0-0.2	Coarse	<25	<50	<100	<100
BH2	1-1.4	Coarse	<25	<50	<100	<100
BH3	0-0.2	Coarse	<25	<50	<100	<100
BH3	0.3-0.5	Coarse	<25	<50	<100	<100
BH4	0-0.2	Coarse	<25	<50	<100	<100
BH4	0.3-0.5	Coarse	<25	<50	<100	<100
BH5	0-0.2	Coarse	<25	<50	<100	<100
BH5	0.3-0.5	Coarse	<25	<50	<100	<100
BH6	0-0.5	Coarse	<25	<50	<100	<100
BH6 - [LAB_DUP]	0-0.5	Coarse	<25	<50	<100	<100
BH7	0-0.2	Coarse	<25	**130**	**540**	**350**
BH7	0.2-0.7	Coarse	<25	<50	<100	<100
BH8	0-0.2	Coarse	<25	<50	<100	<100
BH8	0.8-1	Coarse	<25	<50	<100	<100
BH9	0-0.2	Coarse	<25	<50	**160**	<100
BH9	0.5-0.9	Coarse	<25	<50	<100	<100
TP10	0-0.2	Coarse	<25	<50	<100	<100
TP10 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP10	0.3-0.6	Coarse	<25	<50	<100	<100
TP11	0-0.2	Coarse	<25	<50	<100	<100
TP11	0.4-0.6	Coarse	<25	<50	<100	<100
TP12	0-0.2	Coarse	<25	<50	<100	<100
TP12	0.5-0.7	Coarse	<25	<50	<100	<100
SDUP1	0-0.2	Coarse	<25	<50	**150**	<100
SDUP2	0-0.2	Coarse	<25	<50	<100	<100
SDUP3	0-0.2	Coarse	<25	<50	<100	<100
SDUP3 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
SDUP4	0-0.2	Coarse	<25	<50	<100	<100
Total Number of Samples			32	32	32	32
Maximum Value			<PQL	130	540	350

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)
BH1	0-0.2	Coarse	700	1000	2500	10000
BH1 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
BH1	0.3-0.5	Coarse	700	1000	2500	10000
BH1	1.3-1.5	Coarse	700	1000	2500	10000
BH2	0-0.2	Coarse	700	1000	2500	10000
BH2	1-1.4	Coarse	700	1000	2500	10000
BH3	0-0.2	Coarse	700	1000	2500	10000
BH3	0.3-0.5	Coarse	700	1000	2500	10000
BH4	0-0.2	Coarse	700	1000	2500	10000
BH4	0.3-0.5	Coarse	700	1000	2500	10000
BH5	0-0.2	Coarse	700	1000	2500	10000
BH5	0.3-0.5	Coarse	700	1000	2500	10000
BH6	0-0.5	Coarse	700	1000	2500	10000
BH6 - [LAB_DUP]	0-0.5	Coarse	700	1000	2500	10000
BH7	0-0.2	Coarse	700	1000	2500	10000
BH7	0.2-0.7	Coarse	700	1000	2500	10000
BH8	0-0.2	Coarse	700	1000	2500	10000
BH8	0.8-1	Coarse	700	1000	2500	10000
BH9	0-0.2	Coarse	700	1000	2500	10000
BH9	0.5-0.9	Coarse	700	1000	2500	10000
TP10	0-0.2	Coarse	700	1000	2500	10000
TP10 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP10	0.3-0.6	Coarse	700	1000	2500	10000
TP11	0-0.2	Coarse	700	1000	2500	10000
TP11	0.4-0.6	Coarse	700	1000	2500	10000
TP12	0-0.2	Coarse	700	1000	2500	10000
TP12	0.5-0.7	Coarse	700	1000	2500	10000
SDUP1	0-0.1	Coarse	700	1000	2500	10000
SDUP2	0-0.1	Coarse	700	1000	2500	10000
SDUP3	0-0.1	Coarse	700	1000	2500	10000
SDUP3 - [LAB_DUP]	0-0.1	Coarse	700	1000	2500	10000
SDUP4	0-0.2	Coarse	700	1000	2500	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		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		**RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0-0.2	<25	<50	**190**	<100	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.2	<25	<50	**330**	<100	<0.2	<0.5	<1	<1	<1	NA
BH1	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH1	1.3-1.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
BH2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH2	1-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH4	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH5	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
BH6	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH6 - [LAB_DUP]	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
BH7	0-0.2	<25	**130**	**540**	**350**	<0.2	<0.5	<1	<1	<1	0
BH7	0.2-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH8	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH8	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH9	0-0.2	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<1	0
BH9	0.5-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
TP10	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP10 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP10	0.3-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP11	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP11	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.4**
TP12	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
TP12	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
SDUP1	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples		32	32	32	32	32	32	32	32	32	24
Maximum Value		<PQL	130	540	350	<PQL	<PQL	<PQL	<PQL	<PQL	2.4

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

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0.001**											**0.01**	**0.001**
9/05/2023	BH1	0-0.2	No	10	10,750	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH1	0-0.2	594.57	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
9/05/2023	BH2	0-0.2	No	10	10,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH2	0-0.2	622.63	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
9/05/2023	BH3	0-0.2	No	10	10,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH3	0-0.2	708.16	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
9/05/2023	BH4	0-0.2	No	10	10,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH4	0-0.2	684.4	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
10/05/2023	BH5	0-0.2	No	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH5	0-0.2	664.72	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
8/05/2023	BH6	0-0.1	No	10	15,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH6	0-0.5	679.27	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
8/05/2023	BH6	0.1-0.5	NA	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH7	0-0.2	No	10	10,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH7	0-0.2	548.24	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
8/05/2023	BH7	0.2-0.7	NA	5	6,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH7	0.7-1	NA	10	10,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH8	0-0.2	No	10	10,660	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH8	0-0.2	654.34	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
10/05/2023	BH9	0-0.2	No	10	10,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH9	0-0.2	799.77	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
11/05/2023	TP10	0-0.2	No	10	10,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP10	0-0.2	409.01	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
11/05/2023	TP10	0.2-0.3	NA	10	10,270	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/05/2023	TP11	0-0.2	No	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP11	0-0.2	664.01	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
11/05/2023	TP11	0.4-0.6	NA	10	10,470	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/05/2023	TP12	0-0.2	No	10	11,040	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP12	0-0.2	521.44	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
11/05/2023	TP12	0.5-0.7	NA	10	10,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

Update textures based on actual descriptions.

JKEnvironments

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

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH1	0-0.2	F: Silty Clay	Fine	NA	NA	NA	**4**	**18**	**13**	**13**	**9**	**27**	<1	<0.1	<25	<50	**190**	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	**4**	**18**	**12**	**13**	**10**	**26**	<1	<0.1	<25	<50	**330**	<100	<0.2	<0.5	<1	<1	<0.05
BH1	0.3-0.5	Silty Clay	Fine	NA	NA	NA	**4**	**25**	**16**	**16**	**12**	**24**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH1	1.3-1.5	Silty Clay	Fine	NA	NA	NA	**7**	**27**	**21**	**16**	**15**	**40**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH2	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**16**	**12**	**11**	**9**	**21**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH2	1-1.4	Silty Clay	Fine	NA	NA	NA	**7**	**29**	**21**	**17**	**17**	**42**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**14**	**9**	**11**	**8**	**49**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0.3-0.5	Silty Clay	Fine	NA	NA	NA	<4	**18**	**11**	**8**	**11**	**19**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH4	0-0.2	F: Clayey Silt	Fine	NA	NA	NA	<4	**14**	**11**	**8**	**9**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH4	0.3-0.5	Silty Clay	Fine	NA	NA	NA	**5**	**25**	**15**	**12**	**17**	**23**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0-0.2	F: Silty Sand	Coarse	NA	NA	NA	**5**	**10**	**9**	**7**	**6**	**26**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0.3-0.5	Silty Clay	Fine	NA	NA	NA	<4	**20**	**12**	**11**	**12**	**22**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH6	0-0.5	Sandy Silty Clay	Fine	NA	NA	NA	**5**	**28**	**20**	**15**	**17**	**36**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	Fine	NA	NA	NA	**5**	**28**	**20**	**16**	**16**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH7	0-0.2	F: Sandy Silty Clay	Fine	NA	NA	NA	**5**	**11**	**15**	**7**	**11**	**65**	<1	<0.1	<25	**130**	**540**	**350**	<0.2	<0.5	<1	<1	<0.05
BH7	0.2-0.7	Sandy Silty Clay	Fine	NA	NA	NA	**5**	**25**	**22**	**14**	**27**	**46**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH8	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**23**	**15**	**16**	**14**	**31**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH8	0.8-1	Sandy Silty Clay	Fine	NA	NA	NA	**6**	**28**	**29**	**16**	**20**	**66**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH9	0-0.2	F: Sandy Silt	Fine	NA	NA	NA	<4	**18**	**14**	**12**	**11**	**42**	<1	<0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<0.05
BH9	0.5-0.9	Silty Clay	Fine	NA	NA	NA	**6**	**26**	**28**	**14**	**20**	**71**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**16**	**10**	**11**	**8**	**24**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	<4	**16**	**10**	**10**	**8**	**23**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10	0.3-0.6	Silty Clay	Fine	NA	NA	NA	**5**	**23**	**17**	**12**	**14**	**25**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP11	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**18**	**12**	**11**	**9**	**24**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP11	0.4-0.6	Silty Clay	Fine	NA	NA	NA	**7**	**30**	**25**	**16**	**19**	**47**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP12	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**11**	**8**	**7**	**6**	**22**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP12	0.5-0.7	F: Silty Clay	Fine	NA	NA	NA	**6**	**31**	**18**	**16**	**18**	**32**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	0-0.2	Duplicate of BH1	Fine	NA	NA	NA	**5**	**21**	**14**	**15**	**11**	**31**	<1	<0.1	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<0.05
SDUP2	0-0.2	Duplicate of BH3	Fine	NA	NA	NA	<4	**17**	**11**	**11**	**9**	**56**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3	0-0.2	Duplicate of BH2	Fine	NA	NA	NA	<4	**18**	**13**	**10**	**10**	**21**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP4	0-0.2	Duplicate of BH4	Fine	NA	NA	NA	<4	**13**	**11**	**7**	**8**	**34**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				0	0	0	31	31	31	31	31	31	32	17	32	32	32	32	32	32	32	32	32
Maximum Value				NA	NA	NA	7	31	29	17	27	71	<PQL	<PQL	<PQL	130	540	350	<PQL	<PQL	<PQL	<PQL	<PQL

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

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH1	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH1	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH1	1.3-1.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH2	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH2	1-1.4	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH3	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH3	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH4	0-0.2	F: Clayey Silt	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH4	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH5	0-0.2	F: Silty Sand	Coarse	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	300	2800	50	85	70	105	20
BH5	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH6	0-0.5	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0-0.2	F: Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0.2-0.7	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH8	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH8	0.8-1	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH9	0-0.2	F: Sandy Silt	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH9	0.5-0.9	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP10	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP10	0.3-0.6	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP11	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP11	0.4-0.6	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP12	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP12	0.5-0.7	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
SDUP1	0-0.2	Duplicate of BH1	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP2	0-0.2	Duplicate of BH3	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
SDUP3	0-0.2	Duplicate of BH2	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	--	--	--	--	--	--	170	--	180	120	1300	5600	65	105	125	45	20
SDUP4	0-0.2	Duplicate of BH4	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20

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**																									
BH1	0-0.2	F: Silty Clay	**4**	<0.4	**18**	**13**	**13**	<0.1	**9**	**27**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**140**	<100	**140**	<0.2	<0.5	<1	<1	Not Detected
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**18**	**12**	**13**	<0.1	**10**	**26**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**270**	**110**	**380**	<0.2	<0.5	<1	<1	NA
BH1	0.3-0.5	Silty Clay	**4**	<0.4	**25**	**16**	**16**	<0.1	**12**	**24**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH1	1.3-1.5	Silty Clay	**7**	<0.4	**27**	**21**	**16**	<0.1	**15**	**40**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH2	0-0.2	F: Silty Clay	<4	<0.4	**16**	**12**	**11**	<0.1	**9**	**21**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH2	1-1.4	Silty Clay	**7**	<0.4	**29**	**21**	**17**	<0.1	**17**	**42**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH3	0-0.2	F: Silty Clay	<4	<0.4	**14**	**9**	**11**	<0.1	**8**	**49**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH3	0.3-0.5	Silty Clay	<4	<0.4	**18**	**11**	**8**	<0.1	**11**	**19**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH4	0-0.2	F: Clayey Silt	<4	<0.4	**14**	**11**	**8**	<0.1	**9**	**37**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH4	0.3-0.5	Silty Clay	**5**	<0.4	**25**	**15**	**12**	<0.1	**17**	**23**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH5	0-0.2	F: Silty Sand	**5**	<0.4	**10**	**9**	**7**	<0.1	**6**	**26**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH5	0.3-0.5	Silty Clay	<4	<0.4	**20**	**12**	**11**	<0.1	**12**	**22**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH6	0-0.5	Sandy Silty Clay	**5**	<0.4	**28**	**20**	**15**	<0.1	**17**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	**5**	<0.4	**28**	**20**	**16**	<0.1	**16**	**37**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH7	0-0.2	F: Sandy Silty Clay	**5**	<0.4	**11**	**15**	**7**	<0.1	**11**	**65**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	**85**	**370**	**360**	**815**	<0.2	<0.5	<1	<1	Not Detected
BH7	0.2-0.7	Sandy Silty Clay	**5**	<0.4	**25**	**22**	**14**	<0.1	**27**	**46**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH8	0-0.2	F: Silty Clay	<4	<0.4	**23**	**15**	**16**	<0.1	**14**	**31**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH8	0.8-1	Sandy Silty Clay	**6**	<0.4	**28**	**29**	**16**	<0.1	**20**	**66**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH9	0-0.2	F: Sandy Silt	<4	<0.4	**18**	**14**	**12**	<0.1	**11**	**42**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**110**	**110**	<0.2	<0.5	<1	<1	Not Detected
BH9	0.5-0.9	Silty Clay	**6**	<0.4	**26**	**28**	**14**	<0.1	**20**	**71**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP10	0-0.2	F: Silty Clay	<4	<0.4	**16**	**10**	**11**	<0.1	**8**	**24**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**16**	**10**	**10**	<0.1	**8**	**23**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP10	0.3-0.6	Silty Clay	**5**	<0.4	**23**	**17**	**12**	<0.1	**14**	**25**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP11	0-0.2	F: Silty Clay	<4	<0.4	**18**	**12**	**11**	<0.1	**9**	**24**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP11	0.4-0.6	Silty Clay	**7**	<0.4	**30**	**25**	**16**	<0.1	**19**	**47**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP12	0-0.2	F: Silty Clay	<4	<0.4	**11**	**8**	**7**	<0.1	**6**	**22**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP12	0.5-0.7	F: Silty Clay	**6**	<0.4	**31**	**18**	**16**	<0.1	**18**	**32**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP1	0-0.2	Duplicate of BH1	**5**	<0.4	**21**	**14**	**15**	<0.1	**11**	**31**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**120**	<100	**120**	<0.2	<0.5	<1	<1	NA
SDUP2	0-0.2	Duplicate of BH3	<4	<0.4	**17**	**11**	**11**	<0.1	**9**	**56**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP3	0-0.2	Duplicate of BH2	<4	<0.4	**18**	**13**	**10**	<0.1	**10**	**21**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.05	NA	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP4	0-0.2	Duplicate of BH4	<4	<0.4	**13**	**11**	**7**	<0.1	**8**	**34**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
Total Number of Samples			31	31	31	31	31	31	31	31	32	32	17	18	18	18	17	32	32	32	32	32	32	32	32	32	12
Maximum Value			7	<PQL	31	29	17	<PQL	27	71	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	85	370	360	815	<PQL	<PQL	<PQL	<PQL	Not Detected

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

JKEnvironments

TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene
	PQL Envirolab SYD		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*
	PQL Envirolab VIC		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*
Intra	BH1	0-0.2	<25	<50	190	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP1	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	170	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	24%	nc	nc	nc	nc	nc	nc
Intra	BH3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
laboratory	SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB1	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
Blank	8/05/23										
Field	FRS1 - Shovel	µg/L [1]	<10	<50	<100	<100	<1	<1	<1	<2	<1
Rinsate	11/05/23										
Trip	TS1		-	-	-	-	102%	102%	102%	106%	104%
Spike	8/05/23										

			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
	PQL Envirolab SYD		*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*
	PQL Envirolab VIC		*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*
Intra	BH1	0-0.2	<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
laboratory	SDUP1	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH3	0-0.2	<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
laboratory	SDUP2	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH2	0-0.2	<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
laboratory	SDUP3	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH4	0-0.2	<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
laboratory	SDUP4	0-0.2	<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
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB1	-	<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
Blank	8/05/23																
Field	FRS1 - Shovel	µg/L [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
Rinsate	11/05/23																
Trip	TS1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Intra	BH1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP2	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH2	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH4	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP4	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blank	8/05/23																					
Field	FRS1 - Shovel	µg/L [1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rinsate	11/05/23																					
Trip	TS1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																					

			Azinphos-methyl (Guthio	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
Intra	BH1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4	<0.4	18	13	13	<0.1	9	27
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5	<0.4	21	14	15	<0.1	11	31
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4.5	nc	19.5	13.5	14	nc	10	29
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	22%	nc	15%	7%	14%	nc	20%	14%
Intra	BH3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	14	9	11	<0.1	8	49
laboratory	SDUP2	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	17	11	11	<0.1	9	56
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	15.5	10	11	nc	8.5	52.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	19%	20%	0%	nc	12%	13%
Inter	BH2	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	16	12	11	<0.1	9	21
laboratory	SDUP3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	18	13	10	<0.1	10	21
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	17	12.5	10.5	nc	9.5	21
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	12%	8%	10%	nc	11%	0%
Inter	BH4	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	14	11	8	<0.1	9	37
laboratory	SDUP4	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	13	11	7	<0.1	8	34
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	13.5	11	7.5	nc	8.5	35.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7%	0%	13%	nc	12%	8%
Field	TB1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	3	2	2	<0.1	<1	3
Blank	8/05/23																						
Field	FRS1 - Shovel	µg/L [1]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.01	<0.01	0.5	<0.03	<0.0005	<0.02	0.05
Rinsate	11/05/23																						
Trip	TS1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																						

Result outside of QA/QC acceptance criteria (highlighted)
1. Heavy metals concentrations reported in mg/L

Appendix D: Borehole & Test Pit Logs

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH101** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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
							0			ASPHALTIC CONCRETE: 100mm.t				
									-	FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel and asphaltic concrete fragments.	w≈PL			SCREEN: 2.01kg 0.1-0.2m, NO FCF
						N = 24 6,10,14								SCREEN: 3.17kg 0.2-0.6m, NO FCF
										FILL: Silty clay, medium to high plasticity, red brown, trace of roots.	w≈PL			SCREEN: 6.01kg 0.6-1.0m, NO FCF
							1		CI-CH	Silty CLAY: medium to high plasticity, light brown.	w≈PL			ALLUVIAL
						N = 22 6,10,12								
							2							
						N = 15 5,8,7	3			as above, but light brown and grey.				
ON 20/9/23 ▼ ON 26/9/23														
							4							GROUNDWATER MONITORING WELL INSTALLED TO 5.6m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.6m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.6m TO 2.4m. BENTONITE SEAL 2.4m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
▶						N = 10 5,5,5			CI-CH	Silty sandy CLAY: medium to high plasticity, grey and orange brown, fine to medium grained sand.	w>PL			
							5							
							6			END OF BOREHOLE AT 6.0m				
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH102** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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: 20mm.t	w≈PL			SCREEN: 10.71kg 0.02-0.1m, NO FCF
										FILL: Silty clay, medium to high plasticity, orange brown, trace of igneous gravel and asphalt.				SCREEN: 11.01kg 0.1-0.4m, NO FCF
	■		■			N = 11 3,5,6			CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			ALLUVIAL
							1			END OF BOREHOLE AT 0.95m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH103** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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
							0		-	ASPHALTIC CONCRETE: 20mm.t	w≈PL			SCREEN: 8.61kg 0.02-0.1m, NO FCF
										FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel and asphaltic concrete fragments.				SCREEN: 11.11kg 0.1-0.6m, NO FCF
						N = 15 3,6,9			CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			HYDROCARBON ODOUR
							1							ALLUVIAL
										as above, but light orange brown.				
						N = 22 5,11,11				Silty CLAY: medium to high plasticity, brown.				
							2							
						N = 7 2,4,3	3			as above, but light brown.				
ON 20/9/23 ▼ ON 26/9/23														
▶							4				w>PL			GROUNDWATER MONITORING WELL INSTALLED TO 5.2m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.2m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.2m TO 1.6m. BENTONITE SEAL 1.6m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
						N = 11 3,7,4								
							5							
							6			END OF BOREHOLE AT 6.0m				
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH104** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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
							0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH		w≈PL			SCREEN: 11.12kg 0-0.1m, NO FCF
						N = 20 3,8,12	1			Silty CLAY: medium to high plasticity, brown, trace of roots.				ALLUVIAL
						N > 15 5,15,0/ 70mm REFUSAL	2			as above, but light brown.				
ON 20/9/23 ON 26/9/23						N = 13 5,6,7	3			Silty CLAY: medium to high plasticity, grey and orange brown, trace of fine to medium grained sand, and roots.				
						N = 8 3,4,4	4			Silty CLAY: medium to high plasticity, brown mottled grey and orange.	w>PL			GROUNDWATER MONITORING WELL INSTALLED TO 5.2m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.2m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.2m TO 2.0m. BENTONITE SEAL 2.0m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
							5							
							6			END OF BOREHOLE AT 6.0m				
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH105** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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	w≈PL			SCREEN: 3.01kg 0.05-0.3m, NO FCF
									CI-CH	FILL: Silty clay, medium to high plasticity, orange brown, trace of asphaltic concrete fragments.	w≈PL			ALLUVIAL
	■		■			N > 20 8,12,8/ 0mm				Silty CLAY: medium to high plasticity, orange brown.				
						REFUSAL	1			END OF BOREHOLE AT 0.8m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP106** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 sandy clay, medium to high plasticity, light brown, fine to medium grained sand, trace of roots and root fibres.	w<PL			GRASS COVER SCREEN: 14.12kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 15.01kg 0.1-0.6m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 1.1m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP107** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w<PL			GRASS COVER
										FILL: Silty clay, medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 12.61kg 0-0.1m, NO FCF
	■		■											SCREEN: 14.01kg 0.1-0.4m, NO FCF
							1			END OF TEST PIT AT 0.9m				SERVICE CONDUIT ENCOUNTERED AT 0.8m
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP108** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 12.15kg 0-0.1m, NO FCF
	■		■											ALLUVIAL
										END OF TEST PIT AT 0.7m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP109** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, orange brown, with fine to medium grained sand, trace of ash, slag, roots and root fibres.	w<PL			GRASS COVER
									CI-CH		w≈PL			SCREEN: 11.45kg 0-0.1m, NO FCF
	■		■							Silty CLAY: medium to high plasticity, red brown, trace of root fibres.				ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP110** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of concrete fragments, roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 12.87kg 0-0.1m, NO FCF
	■		■											SCREEN: 13.02kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP111** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of brick fragments, roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 11.11kg 0-0.1m, NO FCF
														SCREEN: 13.36kg 0.1-0.4m, NO FCF
														ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP112** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of plastic fragments, roots and root fibres.	w<PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 12.12kg 0-0.1m, NO FCF
														SCREEN: 14.01kg 0.1-0.4m, NO FCF
														ALLUVIAL
							1			END OF BOREHOLE AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP113** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.5m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of igneous gravel, ceramic and plastic fragments, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 13.89kg 0-0.1m, NO FCF
	■		■						CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			0.3m: IRRIGATION PIPES ENCOUNTERED
							1			END OF TEST PIT AT 0.9m				ALLUVIAL
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP114** **1/1**

SDUP6: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of igneous gravel, fine to medium grained sand, ash, roots and root fibres.	w<PL			GRASS COVER SCREEN: 13.81kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 14.33kg 0.1-0.5m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 1.0m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP115** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.24kg 0-0.1m, NO FCF
							1		CI-CH	Silty CLAY: medium to high plasticity, light brown, trace of igneous gravel.	w≈PL			SCREEN: 13.95kg 0.1-0.6m, NO FCF ALLUVIAL
										END OF TEST PIT AT 1.3m				
							2							
							3							
							4							
							5							
							6							
							7							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. TP116 **1/1**

SDUP5: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, light brown, with fine to medium grained sand, trace of igneous gravel.	w<PL			GRASS COVER SCREEN: 11.98kg 0-0.1m, NO FCF
	■		■						CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 12.22kg 0.1-0.5m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 1.0m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP117** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 13.61kg 0-0.1m, NO FCF
	■		■											SCREEN: 14.01kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP118** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w<PL			MULCH COVER SCREEN: 12.85kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 12.99kg 0.1-0.5m, NO FCF ALLUVIAL
	■		■				1							
										END OF TEST PIT AT 1.2m				
							2							
							3							
							4							
							5							
							6							
							7							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP119** **1/1**

SDUP4: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of fine to medium grained sand, roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 11.01kg 0-0.1m, NO FCF
	■		■											SCREEN: 12.11kg 0.1-0.35m, NO FCF
														ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP120** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH		w≈PL			SCREEN: 14.01kg 0-0.1m, NO FCF
	■		■							Silty CLAY: medium to high plasticity, brown.				ALLUVIAL
										END OF TEST PIT AT 0.8m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP121** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, brown, trace of roots and root fibres.	w<PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 12.45kg 0-0.1m, NO FCF
	■		■											SCREEN: 12.98kg 0.1-0.4m, NO FCF
														ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH122** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./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	■		■		■	N = 14 3,6,8	0		-	GRAVEL: medium to coarse grained, sub-angular, igneous, grey.	w≈PL			SCREEN: 2.45kg 0.05-0.25m, NO FCF
									CI-CH	FILL: Silty clay, medium to high plasticity, red brown, trace of igneous gravel.	w≈PL			ALLUVIAL
										Silty CLAY: medium to high plasticity, brown.				
							1			END OF BOREHOLE AT 0.95m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP123** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8

Date: 22/9/23 **Datum:** -

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clayey sand, fine to medium grained, light brown, trace of roots and root fibres.	M			GRASS COVER
									CI-CH	Silty sandy CLAY: medium to high plasticity, brown, fine to medium grained sand.	w≈PL			SCREEN: 14.81kg 0-0.1m, NO FCF 0.1m: IRRIGATION PIPE
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP124** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH		w≈PL			SCREEN: 15.01kg 0-0.1m, NO FCF
	■		■							Silty CLAY: medium to high plasticity, red brown.				SCREEN: 14.95kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. TP125 **1/1**

SDUP3: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, light brown, trace of bark mulch, roots and root fibres.	w≈PL			MULCH COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 10.91kg 0-0.1m, NO FCF
														SCREEN: 13.10kg 0.1-0.4m, NO FCF
														ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP126** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of plastic fragments, roots and root fibres.	w<PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 11.90kg 0-0.1m, NO FCF
	■		■											SCREEN: 12.15kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP127** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 11.01kg 0-0.1m, NO FCF
	■		■											SCREEN: 12.23kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. TP128 **1/1**

SDUP1: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 109.0m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, red brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			SCREEN: 12.48kg 0-0.1m, NO FCF
	■		■				1							SCREEN: 13.10kg 0.1-0.4m, NO FCF
										END OF TEST PIT AT 1.1m				ALLUVIAL
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. TP129 **1/1**

SDUP2: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.05kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			SCREEN: 13.01kg 0.1-0.5m, NO FCF ALLUVIAL
	■		■				1			END OF TEST PIT AT 1.0m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP130** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** -

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 14.81kg 0-0.1m, NO FCF
	■		■											ALLUVIAL
										END OF TEST PIT AT 0.7m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP131** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 13.81kg 0-0.1m, NO FCF
	■		■											SCREEN: 14.01kg 0.1-0.3m, NO FCF
										END OF TEST PIT AT 0.8m				ALLUVIAL
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP132** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./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 clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 14.50kg 0-0.1m, NO FCF ALLUVIAL
										END OF TEST PIT AT 0.7m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

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BOREHOLE LOG

Borehole No. 1

1/1

SDUP1: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.7m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	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 clay, low to medium plasticity, brown, trace of fine grained igneous gravel, and root fibres.	w<PL			GRASS COVER
								CI-CH	Silty CLAY: medium to high plasticity, brown and red brown, trace of fine grained sand, and root fibres.	w<PL	Hd	>600 >600	SCREEN: 10.75kg 0-0.2m, NO FCF ALLUVIAL
					N > 20 8,11,9/ 50mm REFUSAL	1			Silty CLAY: medium to high plasticity, brown, trace of fine grained sand, and fine to medium grained igneous gravel.			>600 >600	
					N = 26 5,12,14	2						>600 >600 >600	
									Silty CLAY: medium to high plasticity, light grey mottled orange brown, trace of fine grained sand, and fine to medium grained igneous gravel.			450 500 550	HP TESTING ON REMOULDED SAMPLE
▼ 2 DAYS AFTER COMPLETION						3			as above, but grey and brown.			>600 >600	
					N = 22 8,8,14	4						>600 >600	GROUNDWATER MONITORING WELL INSTALLED TO 4.9m.
						5			END OF BOREHOLE AT 5.0m				CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 4.9m TO 2.5m. CASING 2.5m TO 0.12m. 2mm SAND FILTER PACK 4.9m TO 2.5m. BENTONITE SEAL 2.5m TO 2.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						6							
						7							

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BOREHOLE LOG

Borehole No. 2

1/1

SDUP3: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Silty clay, medium to high plasticity, red brown, trace of fine grained igneous gravel and root fibres.	w>PL			GRASS COVER SCREEN: 10.0kg 0-0.2m, NO FCF
					N = 27 5,12,15	1		CH	Silty CLAY: high plasticity, brown, trace of fine to medium grained igneous gravel, fine grained ironstone gravel, and root fibres.	w<PL	Hd	>600 >600 >600	ALLUVIAL
					N = 14 3,6,8	2			Silty CLAY: medium to high plasticity, brown, trace of fine to medium grained igneous gravel and root fibres.	w<PL	(F)	480 530 550	
					N = 6 2,3,3	3		CL-CI	Silty CLAY: low to medium plasticity, light grey mottled orange brown and red brown, trace of sand.	w>PL	St	120 170 180	
▼ ON COMPLETION						4			Sandy silty CLAY: low to medium plasticity, light grey mottled orange brown, fine grained sand, trace of shell and muscovite fragments.		S-F	40 30 50	HP TESTING ON REMOULDED SAMPLE
						5			END OF BOREHOLE AT 4.95m				
						6							
						7							

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BOREHOLE LOG

Borehole No. 3 1/1

SDUP2: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Silty clay, low to medium plasticity, brown, trace of fine to medium grained sand, fine grained igneous gravel, and root fibres.	w>PL			GRASS COVER
								CI-CH		w>PL	VSt		SCREEN: 10.48kg 0-0.2m, NO FCF
					N = 10 3,3,7				Silty CLAY: medium to high plasticity, red brown, trace of fine grained igneous gravel, and root fibres.			250 320 350	ALLUVIAL
					N = 10 3,4,6	1			Silty CLAY: medium to high plasticity, brown mottled red brown, trace of fine to medium grained igneous gravel, ash and root fibres.	w≈PL	Hd	430 500 550	
						2		CL-CI	Silty CLAY: low to medium plasticity, brown and orange brown, trace of fine grained sand.	w>PL	F		
2 DAYS AFTER COMPLETION ▼						3						40 40 50	HP TESTING ON REMOULDED SAMPLE
▼ ON COMPLET-ION					N = 9 0,4,5	4						60 80 110	GROUNDWATER MONITORING WELL INSTALLED TO 4.88m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 4.88m TO 2.58m. CASIN
						5			END OF BOREHOLE AT 5.45m				2.58m TO 0.12m. 2mm SAND FILTER PACK 4.88m TO 2.2m. BENTONITE SEAL 2.2m TO 1.8m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						6							
						7							

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BOREHOLE LOG

Borehole No. 4 1/1

SDUP4: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Clayey Silt, low plasticity, red brown, with fine grained sand, trace of root fibres.	w<PL			GRASS COVER
								CI-CH		w<PL	Hd		SCREEN: 10.12kg 0-0.2m, NO FCF
					N = 18 3,9,9	1			Silty CLAY: medium to high plasticity, red brown, trace of fine to medium grained igneous gravel.				ALLUVIAL
					N = 9 3,4,5	2			Silty CLAY: medium to high plasticity, brown mottled light grey and orange brown, trace of fine grained igneous and ironstone gravel, and root fibres.			450 350 120	
								CL-CI	Silty CLAY: low to medium plasticity, light grey mottled orange brown, with fine to medium grained sand.	w>PL	VSt	250 230 200	HP TESTING ON REMOULDED SAMPLE
						3					(S-F)		
ON COMPLET-ION					N = 2 2,2,0	4		CL	Sandy CLAY: low plasticity, brown, fine to coarse grained sand, trace of shell fragments.	w>PL	F	80 110 90	
					N = 13 3,5,8			SM	Silty SAND: fine to coarse grained, brown, trace of shell fragments.	W	MD		
						5			END OF BOREHOLE AT 4.95m				
						6							
						7							

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BOREHOLE LOG

Borehole No. 5

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 10/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Silty sand, fine to coarse grained, brown, trace of fine grained sandstone gravel, and clay.	M			GRASS COVER
								CI-CH	Silty CLAY: medium to high plasticity, red brown and brown, trace of fine to medium grained sand fine to medium grained igneous gravel, ash and root fibres.	w≈PL	VSt		SCREEN: 11.45kg 0-0.2m, NO FCF
					N = 9 2,3,6	1		CI	Silty CLAY: medium plasticity, light grey, trace of ash and root fibres.	w>PL		320 350 350	ALLUVIAL
					N = 11 3,4,7	2		SC	Clayey SAND: fine to coarse grained, brown, fine to medium plasticity clay.	M	L	230 320 380	HP TESTING ON REMOULDED SAMPLE
▶ ▼ ON COMPLET-ION					N = 8 3,4,4	3				W		420 450 480	
					N = 11 4,6,5	4		CI-CH	Silty CLAY: medium to high plasticity, light grey mottled orange brown, trace of root fibres.	w>PL	St- VSt	120 250 310	
								SC	Clayey SAND: fine to coarse grained, brown, trace of fine to medium grained igneous gravel.	W	MD		
						5			END OF BOREHOLE AT 5.0m				
						6							
						7							

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BOREHOLE LOG

Borehole No. 6

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 8/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■			0		CL-CI	Sandy silty CLAY: low to medium plasticity, red brown, fine to medium grained sand, with fine to medium grained igneous gravel, and root fibres.	w<PL	(Hd)		GRASS COVER SCREEN: 15.0kg 0-0.1m, NO FCF SCREEN: 11.45kg 0.1-0.5m, NO FCF SCREEN: 6.75kg 1.0-1.5m, NO FCF
						1							
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

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BOREHOLE LOG

Borehole No. 7

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.9m

Date: 8/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■			0		CL-CI	FILL: Sandy silty clay, low to medium plasticity, brown, fine to medium grained sand, with fine to medium grained igneous, claystone and sandstone gravel.	w<PL			GRASS COVER
										w<PL	Hd		SCREEN: 10.4kg 0-0.2m, NO FCF
									Sandy silty CLAY: low to medium plasticity, red brown, fine to medium grained sand, trace of fine grained igneous gravel.				SCREEN: 6.01kg 0.2-0.7m, NO FCF
						1						>600	
									as above, but brown.			>600	SCREEN: 10.11kg 0.7-1.0m, NO FCF
												>600	HP TESTING ON REMOULDED SAMPLE
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

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BOREHOLE LOG

Borehole No. 8

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 8/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	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 clay, medium to high plasticity, brown, trace of fine to medium grained sand, fine to medium grained igneous gravel, and root fibres.	w>PL			GRASS COVER POSSIBLY NATURAL SCREEN: 10.66kg 0-0.2m, NO FCF
	■		■			1		SC	Sandy silty CLAY: low to medium plasticity, brown, fine to medium grained sand trace of fine grained igneous gravel.	w≈PL	(St)		ALLUVIAL
						2			END OF BOREHOLE AT 2.0m				
						3							
						4							
						5							
						6							
						7							

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BOREHOLE LOG

Borehole No. 9 1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 10/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	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: Sandy silt, low plasticity, red brown, fine to medium grained sand, trace of fine grained sand, clay nodules and root fibres.	w<PL			GRASS COVER SCREEN: 10.01kg 0-0.2m, NO FCF
						1		CL-CI	Silty CLAY: low to medium plasticity, brown, trace of fine grained sand, and clay nodules.	w<PL	(VSt)		ALLUVIAL
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP10** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, brown, trace of root fibres.	w<PL			SCREEN: 10.41kg 0-0.2m, NO FCF
	■		■		■					FILL: Silty clay, low to medium plasticity, red brown, trace of ash and root fibres.	w<PL			SCREEN: 10.27kg 0.2-0.3m, NO FCF
	■		■		■				CI-CH	Silty CLAY: medium to high plasticity, red brown.				ALLUVIAL
							0.5							
							1							
										END OF TEST PIT AT 1.1m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP11** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, brown, trace of root fibres.	w<PL			SCREEN: 10.71kg 0-0.2m, NO FCF
	■		■		■		0.5		CI-CH	Silty CLAY: medium to high plasticity, brown and red brown.	w<PL			ALLUVIAL SCREEN: 10.47kg 0.4-0.6m, NO FCF
	■		■				1							
							1.5			END OF TEST PIT AT 1.3m				
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP12** **1/1**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 109.0m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./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 clay, low to medium plasticity, brown, trace of root fibres.	w≈PL			SCREEN: 11.04kg 0-0.2m, NO FCF
	■		■		■		0.5			FILL: Silty clay, low to medium plasticity, red brown, trace of ash and root fibres.				SCREEN: 10.50kg 0.5-0.7m, NO FCF
	■		■						CI-CH	Silty CLAY: medium to high plasticity, red brown.	w<PL			ALLUVIAL
							1							
										END OF TEST PIT AT 1.3m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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:

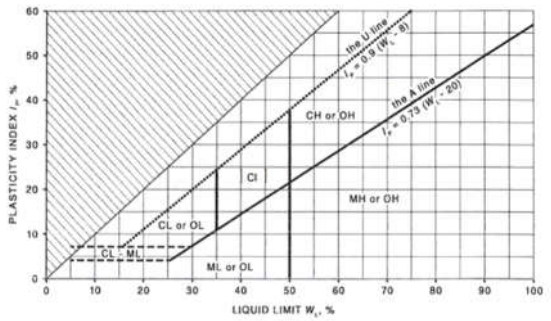
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

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: Structural Advice Memorandum

Building exceptional outcomes together

Memorandum

To	Simon Briddon (Capital Insight)
From	Andrew Tan (BE, CPEng, NER, RPEQ, Principal Structural Engineer, Tonkin) **Date** 24 July 2024
Job Number	222359
Subject	Finley Hospital Redevelopment – Existing underground storage tanks

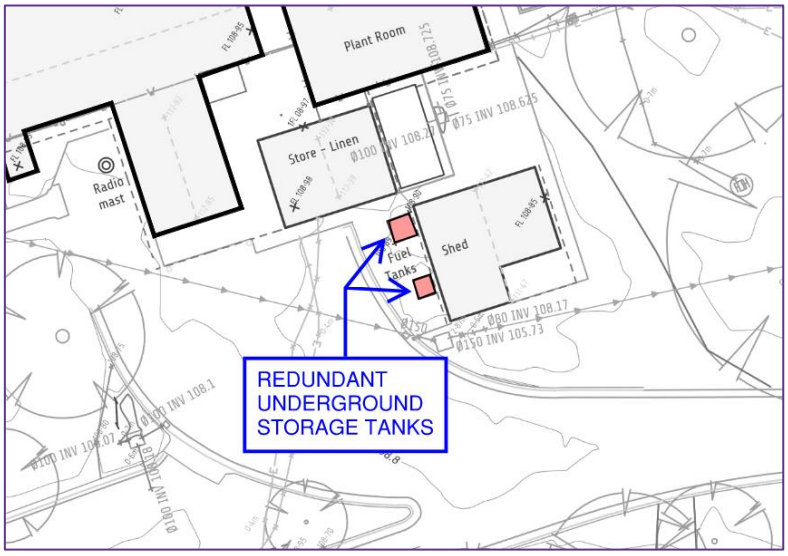


Figure 1: Finley Hospital - Existing underground storage tanks

Background

JK Environment's Remediation Action Plan (RAP) report dated 24th November 2024 has recommended the removal of existing redundant underground storage tanks adjacent to an existing shed. See Figure 1 above.

Structural Implications

Further to our assessment and considering the close proximity of the storage tanks to the existing shed, we are of the opinion that the removal of the underground storage tanks will likely undermine the foundation system of the shed structure.

Recommendation

Considering the above and to maintain the structural integrity of the existing shed structure, we recommend that the underground storage tanks to be remained in place until such time in the future that both shed and tanks can be demolished and removed at the same time.

Appendix F: Imported Materials and Waste Tracking Registers

Imported Materials Register

Supplier	Date	Docket/Invoice #	Product Type	Quantity (specify m3 or tonnes)	Area where Material was Placed

Exported (Waste) Materials Register

Load	Date	Material Type / Classification	Site Area where Waste was Generated	Waste Classification Report Reference	Disposal Facility	Tipping Receipt/Docket Number	Tracking Number (where relevant)	Tonnage

Appendix G: 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)[19] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[20]. 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;

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

[20] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All blank data reported;
- 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 H: Guidelines and Reference Documents

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 Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

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, (2020a). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

NSW EPA (2020b). Underground Petroleum Storage Systems, Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019

NSW EPA, (2022). Sampling design part 1 - application, Contaminated Land Guidelines

NSW Health Infrastructure, (2021). Design Guidance Note No. 030. Site Investigations: Project Opportunities and Constraints

NSW Health Infrastructure, (2020). Design Guidance Note No. 060. Contaminated Land Management Framework

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)

Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 (NSW)

Standards Australia, (2008). The Removal and Disposal of Underground Petroleum Storage Tanks (AS4976-2008)

State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW)

Western Australia Department of Health, (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia