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REPORT TO  
**SUNDALE NORTHLAND DEVELOPMENT PTY LTD**  
**ATF SUNDALE NORTHLAND DEVELOPMENT UNIT**  
**TRUST**

ON  
**DETAILED SITE INVESTIGATION**

FOR  
**PROPOSED RESIDENTIAL DEVELOPMENT**

AT  
**12-16 BENT STREET, LINDFIELD, NSW**

Date: 1 May 2025  
Ref: E35535BWrpt5-DSI

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## Executive Summary

Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed residential development at 12-16 Bent Street, Lindfield, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 attached in the appendices.

This report has been prepared to support the lodgement of a State Significant Development Application (SSDA) for the proposed residential development, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021 (formerly known as SEPP55).

A Preliminary Site Contamination Investigation (PSI) and Preliminary Groundwater Quality Screening have been prepared by JKE for the proposed development. A summary of this information is included in Section 2. This report should be read in conjunction with the PSI and Preliminary Groundwater Quality Screening report. A Sampling, Analysis and Quality Plan (SAQP) was prepared by JKE for the DSI. The SAQP is attached in the appendices.

JKE were also commissioned to undertake an Acid Sulfate Soil (ASS) assessment, a Dryland Salinity Assessment and a Surface and Groundwater Impact Assessment (SGIA) for the SSDA. The results of above assessments have been presented in individual reports issued to the client. The DSI should be read in conjunction with the other reports.

A geotechnical investigation was undertaken previously to with this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 35535YCrpt2, dated 9 January 2025). This report should be read in conjunction with the JKG report.

A review of the supplied information indicates that the proposed development will comprise demolition of the existing residences and associated structures followed by the construction of a new 9-storey residential building over a partial basement Ground Floor (G) level and three common basement levels (B1, B2 and B3).

The proposed finished floor level (FFL) of the lowest basement level B3 is at RL 71.6m Australian Height Datum (AHD), which requires bulk excavation to a depth of approximately 15.5m below ground level (BGL) within the north-eastern high side of the site and to approximately 9mBGL within the south-western low side of the site. The basements will be set back approximately 3m from the north-western and north-eastern site boundaries and 6m from the south-western and south-eastern boundaries as indicated on Figure 2. Landscaped areas are proposed within the basement off-set areas. The supplied proposed development plans are attached Appendix B of the SAQP.

The primary aims of the investigation were to characterise the soil and groundwater contamination conditions in order to assess site risks in relation to contamination and inform the preparation of a Remediation Action Plan (RAP).

The objectives were to:

- Assess the soil and groundwater contamination conditions via implementation of a sampling and analysis program outlined in the SAQP (attached in the appendices);
- Document an iteration and review of the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

The investigation included a review of existing project information, a site inspection, soil sampling from 17 in-situ locations including six test pits and 11 boreholes and four stockpile locations, and groundwater sampling from three groundwater monitoring wells. The sampling locations are shown on Figure 2. A review of the CSM identified the following potential sources of contamination/AEC: imported fill material; historical agricultural activities; use of pesticides; hazardous building materials; and up-gradient off-site dry cleaners, motor garage/service stations and general up-gradient industrial activities.



The boreholes generally encountered fill to depths of approximately 0.2mBGL (BH309) to 1.4mBGL (TP315 and TP316), with inclusions of igneous, sandstone ironstone and quartz gravel, sandstone boulders, sand, building rubble (concrete, asphalt and tile fragments, bricks and glass), plastic, slag, ash, roots and root fibres. FCF/ACM were encountered in TP311 (0-0.1m) and SP4 (0-0.1m) during the DSI field work.

A selection of soil and groundwater samples were analysed for the contaminants of potential concern (CoPC) identified in the CSM. The following exceedances were report for each media:

- In fill soil: asbestos in the form of bonded FCF/ACM was detected in surficial soil (top 100mm) within TP311 (0-0.1m) and SP4 (0-0.1m), which is considered to be an exceedance above the human health SAC; and arsenic was reported at concentrations above the ecological SAC at the stockpile location SP1 (0.4-0.5m);
- In FCF: asbestos was detected in the FCF samples collected from the ground surface located in the eastern portion of the site within 16 Bent Street; and
- In groundwater: Copper, nickel and zinc concentrations were encountered in the groundwater above the ecological SAC from MW101, while only nickel and zinc concentrations were encountered above the ecological SAC in MW102 and MW103. pH was also outside of the acceptable range for recreational (human health) and ecological SAC in two monitoring wells (MW101 and MW103).

Based on the findings of the DSI, JKE is of the opinion that the site can be made suitable for the proposed development described in Section 1.1 subject to remediation. The following is recommended:

- Undertake a hazardous materials assessment of the existing onsite buildings and structures prior to demolition;
- Preparation of a construction phase Asbestos Management Plan (AMP) by a suitably qualified consultant for the remediation and development works;
- Preparation of a RAP; and
- Preparation of a validation assessment report for the remediation works undertaken at the site.

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



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## Abbreviations

Asbestos Fines/Fibrous Asbestos	AF/FA
Ambient Background Concentrations	ABC
Added Contaminant Limits	ACL
Asbestos Containing Material	ACM
Australian Drinking Water Guidelines	ADWG
Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Before You Dig Australia	BYDA
Below Ground Level	BGL
Benzo(a)pyrene Toxicity Equivalent Factor	BaP TEQ
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
Data Quality Indicator	DQI
Data Quality Objective	DQO
Detailed Site Investigation	DSI
Ecological Investigation Level	EIL
Ecological Screening Level	ESL
Environment Protection Authority	EPA
Fibre Cement Fragment(s)	FCF
Finished Floor Level	FFL
Health Investigation Level	HIL
Health Screening Level	HSL
Health Screening Level-Site Specific Assessment	HSL-SSA
JK Environments	JKE
JK Geotechnics	JKG
Lab Control Spike	LCS
Light Non-Aqueous Phase Liquid	LNAPL
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Polychlorinated Biphenyls	PCB
Per- and Polyfluoroalkyl Substances	PFAS
Photo-ionisation Detector	PID
Practical Quantitation Limit	PQL
Quality Assurance	QA
Quality Control	QC
Relative Level	RL
Remediation Action Plan	RAP
Relative Percentage Difference	RPD
Reduced/Relative Level	RL
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
State Environmental Planning Policy	SEPP
Site Specific Assessment	SSA
Source, Pathway, Receptor	SPR
Standing Water Level	SWL



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State Significant Development Application	SSDA
Trip Blank	TB
Total Recoverable Hydrocarbons	TRH
Trip Spike	TS
United States Environmental Protection Agency	USEPA
Volatile Organic Compounds	VOC
World Health Organisation	WHO

**Units**

Litres	L
Metres BGL	mBGL
Metres	m
Millivolts	mV
Millilitres	ml or mL
Milliequivalents	meq
micro Siemens per Centimetre	$\mu\text{S}/\text{cm}$
Micrograms per Litre	$\mu\text{g}/\text{L}$
Milligrams per Kilogram	mg/kg
Milligrams per Litre	mg/L
Parts Per Million	ppm
Percentage	%
Percentage weight for weight	%w/w



## 1 INTRODUCTION

Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed residential development at 12-16 Bent Street, Lindfield, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 attached in the appendices.

This report has been prepared to support the lodgement of a State Significant Development Application (SSDA) for the proposed residential development, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021<sup>1</sup> (formerly known as SEPP55).

A Preliminary Site Contamination Investigation (PSI) and Preliminary Groundwater Quality Screening have been prepared by JKE for the proposed development. A summary of this information is included in Section 2. This report should be read in conjunction with the PSI and Preliminary Groundwater Quality Screening report. A Sampling, Analysis and Quality Plan (SAQP) was prepared by JKE for the DSI. The SAQP is attached in the appendices.

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A geotechnical investigation was undertaken previously to with this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 35535YCrpt2, dated 9 January 2025)<sup>2</sup>. This report should be read in conjunction with the JKG report.

### 1.1 Proposed Development Details

A review of the supplied information indicates that the proposed development will comprise demolition of the existing residences and associated structures followed by the construction of a new 9-storey residential building over a partial basement Ground Floor (G) level and three common basement levels (B1, B2 and B3).

The proposed finished floor level (FFL) of the lowest basement level B3 is at RL 71.6m Australian Height Datum (AHD), which requires bulk excavation to a depth of approximately 15.5m below ground level (BGL) within the north-eastern high side of the site and to approximately 9mBGL within the south-western low side of the site. The basements will be set back approximately 3m from the north-western and north-eastern site boundaries and 6m from the south-western and south-eastern boundaries as indicated on Figure 2. Landscaped areas are proposed within the basement off-set areas. The supplied proposed development plans are attached in Appendix B of the SAQP.

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<sup>1</sup> State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW) (referred to as SEPP Resilience and Hazards 2021)

<sup>2</sup> JKG, (2025). Report to Sundale Northland Development P/L on Geotechnical Investigation for Proposed Residential Development at 12-16 Bent Street, Lindfield, NSW (Referred to as JKG report)



## 1.2 Aims and Objectives

The primary aims of the investigation were to characterise the soil and groundwater contamination conditions in order to assess site risks in relation to contamination and inform the preparation of a Remediation Action Plan (RAP).

The objectives were to:

- Assess the soil and groundwater contamination conditions via implementation of a sampling and analysis program outlined in the SAQP (attached in the appendices);
- Document an iteration and review of the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

## 1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP71389BW) of 20 March 2025 and written acceptance from the client of 27 March 2025. The scope of work included the following:

- Review of site information, including the JKE PSI and Preliminary Groundwater Quality Screening;
- Preparation of a CSM;
- Design and implementation of the SAQP (attached in the appendices);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)<sup>3</sup>, other guidelines made under or with regards to the Contaminated Land Management Act (1997)<sup>4</sup> and SEPP Resilience and Hazards 2021. A list of reference documents/guidelines is included in the appendices.

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<sup>3</sup> National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

<sup>4</sup> Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)



## 2 SITE INFORMATION

### 2.1 Background

A summary of relevant information from the previous JKE investigation is outlined in the table below:

Table 2-1: Previous Information Summary

Report	Summary of relevant information
PSI, JKE 2025a <sup>5</sup>	<p>The PSI included a review of historical information, site walkover inspection and soil sampling from six boreholes (BH2, BH3, BH8A, BH9, BH101 and BH102) concurrently with the JKG geotechnical investigation. The PSI included data from 14-16 Bent Street which was obtained in 2022. The 2022 data included site history information and sub-surface soil data from boreholes BH2, BH3, BH8A and BH9. No. 12 Bent Street was incorporated into the revised PSI in 2024.</p> <p>The PSI identified that the site has historically been used for residential purposes since at least 1943. Building demolition and construction activities were identified at the site. The central portion of the site (14 Bent Street) has likely been used for hobby farm type agricultural activities. The site history and site walkover inspection identified the following areas of environmental concern (AEC): imported fill material; historical agricultural activities; use of pesticides; hazardous building materials; and up-gradient off-site dry cleaners, motor garage/service stations and general up-gradient industrial activities.</p> <p>The boreholes drilled for the PSI generally encountered fill material to depths of approximately 0.1mBGL to 1.2mBGL, underlain by residual silty clay soils and sandstone bedrock. The fill typically comprised sandy silty clay and silty sandy clay with inclusions of igneous, ironstone and sandstone gravel, clay nodules, ceramic, concrete and plastic fragments, roots and root fibres and ash.</p> <p>The PSI laboratory results identified zinc and nickel in fill above the ecological site assessment criteria (SAC). The source of the zinc was considered to be associated with imported fill soil. The elevations are shown on Figure 3.</p> <p>The PSI did not identify any contamination that would preclude the proposed development/use of the site. The following was recommended:</p> <ul style="list-style-type: none"> <li>• Undertake a DSI to characterise the site contamination conditions and establish whether remediation is required. An SAQP is to be prepared prior to the commencement of the DSI; and</li> <li>• Undertake a hazardous building materials (HAZMAT) survey for the existing residences and structures prior to demolition.</li> </ul>
Preliminary Groundwater Quality Screening, JKE 2025b <sup>6</sup>	<p>The groundwater quality screening included sampling and laboratory analysis of groundwater from three existing onsite wells (MW101 to MW103 inclusive). The groundwater monitoring wells are shown on Figure 2 attached in the appendices.</p> <p>The primary objective of the screening was to provide preliminary groundwater quality data that could be used to support an application for a temporary construction dewatering license with WaterNSW.</p>

<sup>5</sup> JKE, (2025a). Report to Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust on Preliminary Site Contamination Investigation (PSI) for Proposed Residential Development at 12-16 Bent Street, Lindfield, NSW. (Ref: E35535BWrptRev2, dated 18 March 2025) (referred to as PSI)

<sup>6</sup> JKE, (2025b). Report to Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust on Preliminary Groundwater Quality Screening for Proposed Residential Development at 12-16 Bent Street, Lindfield, NSW. (Ref: E35535BWrpt2-GW, dated 16 January 2025) (referred to as Groundwater Quality Screening)

Report	Summary of relevant information
	<p>The Preliminary Groundwater Quality Screening identified the following results above the SAC:</p> <ul style="list-style-type: none"> <li>• The copper concentrations in one well (MW101) exceeded the ecological SAC;</li> <li>• The aluminium concentrations in one well (MW101) exceeded the ecological SAC;</li> <li>• The nickel and zinc concentrations in all three wells exceeded the ecological SAC; and</li> <li>• The pH in all three wells was outside the range for recreational and fresh waters.</li> </ul> <p>JKE recommended that the groundwater be treated prior to discharge and the relevant consent authorities should be contacted to clarify the requirements to obtain disposal approval to stormwater or sewer. Reference should be made to the Preliminary Groundwater Quality Screening report for details or specific recommendations.</p>

## 2.2 Site Identification

Table 2-2: Site Identification

<b>Current Site Owner at time of PSI (certificate of title):</b>	<ul style="list-style-type: none"> <li>• 12 Bent Street: Ku-Ring-Gai Council;</li> <li>• 14 Bent Street (as of November 2022): Mark Haddon Carter and Ruth Louise Charles; and</li> <li>• 16 Bent Street (as of November 2022): Deirdre Elizabeth Hall.</li> </ul>
<b>Site Address:</b>	12-16 Bent Street, Lindfield, NSW
<b>Lot &amp; Deposited Plan:</b>	Lot 1 in DP 318518, Lot 1 in DP 935936, Lot 1 in DP 960015, Lot 1 in DP 960014 and Lot 3 in DP 1226294
<b>Current Land Use:</b>	Residential and vacant land
<b>Proposed Land Use:</b>	Multi-storey residential
<b>Local Government Area:</b>	Ku-ring-gai Council
<b>Current Zoning:</b>	R4 – High Density Residential
<b>Site Area (m<sup>2</sup>) (approx.):</b>	4,300
<b>RL (AHD in m) (approx.):</b>	79-86
<b>Geographical Location (decimal degrees) (approx.):</b>	Latitude: -33.775889 Longitude: 151.166764
<b>Site Plans:</b>	Appendix A

## 2.3 Site Location and Regional Setting

The site is located in a predominantly residential area of Lindfield and is bound by Bent Street to the north. The site is located approximately 1km to the north-east of Little Blue Gum Creek.

## 2.4 Topography

The regional topography is characterised by a west and north-west facing hillside that extends from a ridge feature located along Pacific Highway to the east. The site is located at the mid-slope of the hillside and slopes to the west at approximately 4°-5°, generally in sympathy with the regional topography. No. 12 Bent Street slopes to the west at approximately 3°-4°. A localised valley feature was located towards the south-west of the site, where the wider regional topography generally declines to the south-west towards Little Blue Gum Creek.

## 2.5 Site Inspection

A walkover inspection of the site was undertaken for the DSI by JKE between 7 and 16 April 2025. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken. The site conditions were generally similar to those observed during the JKE PSI inspection undertaken in December 2024. Key observations are summarised below:

- At the time of the inspection, the site was occupied by two adjoining residences identified as 14 and 16 Bent Street. The residence within 16 Bent Street was vacant at the time of the DSI inspection. No. 12 Bent Street was grass covered, vacant and unoccupied at the time of inspection;
- The onsite residences were of brick and sandstone construction and appeared to be in a poor condition based on an external cursory inspection. Separate external structures including a fibre cement clad veranda and dilapidated metal shed were located within 14 and 16 Bent Street respectively;
- The site was fenced by a brick wall and a low concrete wall along the northern boundary, fronting Bent Street and by wood paling fences along parts of the western and southern boundaries. The site boundaries along the east (12 Bent Street) included a brick wall which extended into parts of the southern site boundary. No soil instability or erosion was observed at the site;
- Fill was observed within areas of exposed soil, especially within the garden beds located within the rear yard area of 14 Bent Street. A vegetated mound/batter and several mounds were located within 12 and 14 Bent Street along the south-eastern site boundary. The onsite mounds were assigned SP1 to SP4 inclusive for identification and sampling purposes;
- Fibre cement sheets were observed in the west section of No 16 Bent Street along the site boundary as shown on Figure 2. A representative sample was obtained for laboratory testing as outlined in Section 7;
- Water is expected to infiltrate permeable areas of the site (i.e. lawns, landscaped areas and garden beds). Excess surface water is expected to flow overland towards the west in sympathy with the site topography. The onsite residences are expected to intercept stormwater and discharge into the regional stormwater infrastructure towards the west;
- Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds; and
- The onsite vegetation included exotic grasses, shrubs and trees of up to 15m in height were located within the site. The onsite vegetation appeared in good conditions with no visible dieback or phytotoxic stress observed.

## 2.6 Surrounding Land Use

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

- North – Bent Street and residential properties further to the north;
- South – Residential properties and a large on-grade asphaltic concrete (AC) carpark used for public parking;
- East – Vacant and vegetated allotments. The adjacent vacant areas to the east of the site appeared to have been former residential properties that had undergone demolition. Two dry cleaner businesses (Platinum Valet Dry Cleaning and Jeeves Dry cleaners) were located approximately 100m-150m to the south-east and up-gradient of the site. The dry cleaners were located within the Lindfield town centre and shops along the Pacific Highway; and
- West – Two-storey townhouse properties.

The up-gradient dry cleaners located on a ridge line with falls towards the site were considered to be a potential off-site source of contamination. Off-site contamination (if any) would be expected to migrate to the site via contaminated groundwater.

## 2.7 Underground Services

The 'Before You Dig Australia' (BYDA) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

## 2.8 Summary of Site History

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

Table 2-3: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
1910-1970	The site was owned by private individuals and likely used for residential purposes.  Parts of the site had likely been used for small scale market gardening purposes during this time.	The aerial photographs indicate the immediate surrounds appeared to contain a mix of residential and commercial properties. Commercial areas were predominantly located to the east of the site, along Pacific Highway. The areas located to the east of the site had been re-developed for commercial land use, including the operation of a number of dry cleaners and motor garages/service stations following the 1950s.
1970-1978	The residence at 12 Bent Street had been demolished. A new larger building (appeared to be residential) had been constructed within this allotment. The remainder of the site appeared to have continued to be occupied by the two residences.	Residential and commercial land use (commercial land use mainly to the east of site).



<b>Year(s)</b>	<b>On-site - Potential Land Use / Activities</b>	<b>Off-site - Potential Land Use / Activities</b>
1978-2015	The majority of the site was privately owned and likely used for residential purposes. No. 12 Bent Street was owned by individuals and two companies.	A mixture of residential and commercial properties.

### 3 SUMMARY OF GEOLOGY AND HYDROGEOLOGY

#### 3.1 Regional Geology

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

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

Table 3-1: Summary of Subsurface Conditions – PSI

Profile	Description
Fill	<p>Fill was encountered at the surface in all boreholes and extended to depths of approximately 0.1mBGL (BH101) to 1.2mBGL (BH102).</p> <p>The fill typically comprised sandy silty clay and silty sandy clay with inclusions of igneous, ironstone and sandstone gravel, clay nodules, ceramic, concrete and plastic fragments, roots and root fibres and ash.</p> <p>Staining or odours were not observed in the fill during sampling.</p>
Natural Soil	<p>Natural silty clay soil was encountered beneath the fill in all boreholes and extended to depths of approximately 0.65mBGL (BH101) to 2.3mBGL (BH103). The natural soil was typically red brown, orange brown and light grey and contained inclusions of ironstone gravel and bands, sand, root fibres and ash.</p> <p>Staining or odours were not observed in the natural soil during sampling.</p>
Bedrock	<p>Sandstone bedrock was encountered in BH9, BH101, BH102 and BH103 and extended to the termination of the boreholes at a maximum depth of approximately 26.05mBGL. The sandstone bedrock was typically red brown and grey, with occasional laminate lenses.</p>
Groundwater	<p>Groundwater seepage was not encountered in the boreholes during auger drilling.</p>

#### 3.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS risk maps were reviewed for the PSI. The PSI indicated that the site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation (1997).

ASS information presented in a Lotsearch report reviewed as part of the PSI indicated that the site is located within a Class 5 ASS risk area. Works in a Class 5 risk area that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent Class 1,2,3,4 land.

Reference should be made to the JKE Preliminary ASS assessment report (Ref: E35535BWlet-ASS, dated 14 January 2025) for additional information.

### 3.3 Hydrogeology

Hydrogeological information presented in the PSI 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 30 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 560m from the site. This was utilised for water supply purposes. This bore was located up-gradient of the site, along the Pacific Highway ridge feature and is not considered to be a receptor;
- The majority of the bores were registered for monitoring purposes;
- There were no down-gradient bores (i.e. within 1,000m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified sand or clay soil to depths of 1.5mBGL-4mBGL, underlain by shale and sandstone bedrock. Standing water levels (SWLs) in the bores ranged from 2.6mBGL to 65mBGL.

The information reviewed for the PSI indicates that the subsurface conditions at the site are likely to consist of relatively low permeability (residual) soils overlying shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. Use of groundwater is not proposed as part of the development.

Considering the local topography and surrounding land features, JKE anticipate groundwater to flow towards the west or south-west.

Reference should be made to the JKE SGIA report (Ref: E35535BWrpt4-SGIA) for additional information.

### 3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Little Blue Gum Creek located approximately 1km to the south-west of the site. The site location and regional topography indicates that excess surface water flows have the potential to enter the stormwater system which is likely to discharge to the Little Blue Gum Creek. The creek is a tributary of the Lane Cove River which hosts a freshwater ecosystem and potentially used for recreational purposes. Little Blue Gum Creek is considered to be a receptor.

Reference should be made to the JKE SGIA report (Ref: E35535BWrpt4-SGIA) for additional information.



## 4 REVIEW AND UPDATE 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 (including the site inspection information) and background/site history site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 8.

### 4.1 Potential Contamination Sources/AEC and CoPC

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

Table 4-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<p><u>Fill material</u> – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated.</p> <p>Fill was observed at the ground surface of the site in areas of exposed soil, especially within 12 Bent Street and the landscaped areas of the site.</p> <p>Historical council records indicated that at least one in-ground pool within 12 Bent Street had been demolished and likely been in-filled by materials of unknown origin. The fill material placed within the former pool excavation may be contaminated.</p> <p>The PSI identified fill to depths ranging from approximately 0.1mBGL to 1.2mBGL. The fill contained inclusions of igneous, ironstone and sandstone gravel, clay nodules, ceramic, concrete and plastic fragments, roots and root fibres and ash.</p>	<p>Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.</p> <p>The PSI encountered elevated concentrations of nickel and zinc above the ecological SAC as outlined in Section 2.1.</p>
<p><u>Historical agricultural use</u> – The central portion of the site appeared to have been occupied by small scale market gardens as observed in the aerial photographs from the 1930s. This could have resulted in contamination across the site via use of machinery, application of pesticides and building/ demolition of various structures. Irrigation pipes made from asbestos cement may also be associated with this AEC.</p>	<p>Heavy metals, TRH, PAHs, OCPs, PCBs and asbestos</p> <p>JKE note that OCPs only became commercially available in the 1940s. Prior to this time pesticides were predominantly heavy metal compounds.</p>
<p><u>Use of pesticides</u> – Pesticides may have been used beneath the buildings and/or around the site.</p>	<p>Heavy metals and OCPs</p>

Source / AEC	CoPC
<p><u>Hazardous Building Material</u> – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.</p> <p>The PSI identified building demolition at the site between 1970 and 1978, and between 2011 and 2016.</p> <p>JKE noted the presence of Fibre Cement sheets at the site surface on 16 Bent Street located adjacent to the west site boundary (refer to Figure 2). Representative sample was obtained for asbestos testing at the laboratory.</p>	<p>Asbestos, lead and PCBs</p>
<p><u>Off-site area 1</u> (Dry Cleaners and Motor Garages/Service Stations) – A current dry cleaner (Platinum Valet Dry Cleaning and Jeeves Dry cleaners) was located approximately 100m-150m to the north-east and up-gradient of the site.</p> <p>The PSI identified two historical dry cleaners, and a motor garage/ service station were located between approximately 100m and 120m the north-east and up-gradient of the site. These historical businesses were registered between 1967 and 1988. Although the dry cleaners and motor garages/service stations were located more than 100m away from the site, due to their up-gradient location, these land uses have been included as an AEC.</p>	<p>Heavy metals (lead), TRH, naphthalene and BTEX.</p> <p>We note that concentrations of PFAS and VOCs were not detected (i.e. below PQLs) in any of the groundwater samples analysed groundwater quality screening. As such, the potential for widespread PFAS and VOC contamination impacts from off-site sources via migration of contaminated groundwater to the site is considered low and these contaminants are no longer considered to be CoPC for the DSI.</p>
<p><u>Off-site area 2</u> – General off-site industrial land uses were identified within the vicinity of the site. The off-site industrial activities included a printer, photographic development, taxi/truck operator, microfilm producer and charcoal manufacturer located approximately 200m up-gradient of the site.</p>	<p>As per off-site area 1.</p>

## 4.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

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

Table 4-2: CSM

<p><b>Potential mechanism for contamination</b></p>	<p>Potential mechanisms for contamination include:</p> <ul style="list-style-type: none"> <li>• Fill material – importation of impacted material, ‘top-down’ impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material);</li> <li>• Historical agricultural use – ‘top-down’ and spills (e.g. application of pesticides, refuelling or repairing machinery, and other activities at the ground surface level);</li> <li>• Use of pesticides – ‘top-down’ and spills (e.g. during normal use, application and/or improper storage);</li> </ul>
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	<ul style="list-style-type: none"> <li>• Hazardous building materials – ‘top-down’ (e.g. demolition resulting in surficial impacts in unpaved areas); and</li> <li>• Off-site land uses including current and historical dry cleaners and motor garages/service stations – ‘top-down’, spill or sub-surface release. Impacts to the site could occur via migration of contaminated groundwater.</li> </ul>
<b>Affected media</b>	<p>Soil and groundwater have been identified as potentially affected media for the DSI.</p> <p>Based on the results of the DSI, an assessment will be made for the requirement of soil vapour testing.</p>
<b>Receptor identification</b>	<p>Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users and recreational water users within Little Blue Gum Creek. Although Little Blue Gum Creek is located approximately 1km away from the site, due to the down-gradient location and the regional valley feature located to the south-west of the site, the creek is considered to have the potential to form groundwater connectivity to the site. In addition, the historical maps reviewed for the PSI indicated that Little Blue Gum Creek could have been historically located closer to the site with potential alteration of the waterway between 1917 and 1936.</p> <p>Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and freshwater ecology in Little Blue Gum Creek.</p>
<b>Potential exposure pathways</b>	<p>Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion.</p> <p>Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings and basements.</p> <p>Exposure to groundwater is unlikely to occur in the Little Blue Gum Creek through direct migration, however groundwater has the potential to enter the creek via the stormwater system (which is expected to discharge into the creek) during temporary construction dewatering where groundwater is discharged into the stormwater system, as noted above.</p>
<b>Potential exposure mechanisms</b>	<p>The following have been identified as potential exposure mechanisms for site contamination:</p> <ul style="list-style-type: none"> <li>• Vapour intrusion into the proposed basement and/or building (either from soil contamination or volatilisation of contaminants from groundwater);</li> <li>• Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and</li> <li>• Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation.</li> </ul>
<b>Presence of preferential pathways for contaminant movement</b>	<p>None were identified onsite.</p>



## 5 SUMMARY OF SAMPLING, ANALYSIS AND QUALITY PLAN

JKE prepared a standalone SAQP (Ref: E35535BWrpt-SAQP, dated 31 March 2025)<sup>7</sup> for the DSI which is attached in the appendices (Appendix G). The SAQP is summarised as follows:

- Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2;
- Soil samples were obtained from 11 boreholes (BH301 to BH304 inclusive, BH306 to BH309 inclusive, BH312, BH131 and BH317) and from six test pits (TP305, TP310, TP311 and TP314 to TP316 inclusive), as shown on the attached Figure 2. The grid-based locations were placed on a 20m grid with locations selected to provide general site coverage and to target the mound located within the south-western boundary of the site (TP314 to TP316 inclusive and BH317);
- This number of samples locations meets the minimum sampling density for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022)<sup>8</sup> contaminated land guidelines;
- Soil samples from boreholes were taken using a hand auger, with samples collected directly from the auger. Soil samples from test pits were taken using a 1.7tonne mechanical excavator, with samples collected from the walls or directly from the excavator bucket by hand. The soil samples were collected on 7 and 9 April 2025;
- Sampling included field screening for asbestos quantification;
- Three existing groundwater monitoring wells (MW101 to MW103 inclusive) installed for the Preliminary Groundwater Quality Screening were developed and sampled for the DSI. Considering the topography and the location of the nearest down-gradient water body, MW101 and MW102 were considered to be capturing the groundwater conditions in the ‘up-gradient’ area of the site, and MW103 was considered to be capturing the groundwater conditions in the ‘down-gradient’ area of the site;
- The monitoring wells construction details are documented on the JKG borehole logs for BH101, BH102 and BH103 attached in Appendix D;
- The monitoring wells were developed on 14 April 2025. All monitoring wells were developed using a Waterra foot valve system. The monitoring wells were pumped until steady state conditions were achieved;
- The monitoring wells were allowed to recharge for two days after development. groundwater samples were obtained on 16 April 2025 using low flow sampling equipment; and
- The field monitoring records and calibration data are attached in Appendix I.

### 5.1 Deviations to the SAQP

The following deviations to the SAQP are noted:

- Sample locations BH312 and BH131 were moved off the proposed grid-based sampling plan due to access constraints associated with the existing in-ground pool and wood decking around the vicinity of these boreholes. Refer to Figure 2 for the actual sampling locations;
- Additional sampling of the existing grassed stockpiles (SP1 and SP2) located in the south-eastern corner of the site were collected and analysed. This was undertaken to provide additional confidence in the

<sup>7</sup> JKE, (2025c). *Report to Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust on Sampling, Analysis and Quality Plan for Detailed Site Investigation at 12-16 Bent Street, Lindfield NSW* (referred to as SAQP)

<sup>8</sup> NSW EPA, (2022). *Sampling design part 1 - application*. (referred to as EPA Sampling Design Guidelines 2022)



site characterisation as part of the DSI objectives. The approximate location of the stockpiles and subsequent sample locations are shown on Figure 2; and

- Additional sampling was undertaken of the fibre cement sheets for asbestos testing. The approximate location of the sheets are shown on Figure 2.

Reference should be made to the SAQP attached in Appendix G for further information.

## 5.2 Laboratory Analysis

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

Table 5-1: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	377981, 377981-A and 378527
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	MGD0305 and MGD0399



## 6 SITE ASSESSMENT CRITERIA (SAC)

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

### 6.1 Soil

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

#### 6.1.1 Human Health

- Health Investigation Levels (HILs) for a ‘residential with minimum opportunity for soil access’ exposure scenario (HIL-B). This is a conservative approach to account for the proposed landscaped/deep soil area (approximately 1,862m<sup>3</sup>) which equates to 49% of the site area. Of the proposed landscaped/deep soil area, approximately 1,260m<sup>3</sup> of area is proposed as ‘communal open space’;
- Health Screening Levels (HSLs) for a ‘low-high density residential’ exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a ‘sand’ type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)<sup>9</sup>; and
- Asbestos was assessed against the HSL-B criteria. A summary of the asbestos criteria is provided in the table below:

Table 6-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	<p>The HSL-B criteria were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)<sup>10</sup>. The SAC include the following:</p> <ul style="list-style-type: none"> <li>• No visible asbestos at the surface/in the top 10cm of soil;</li> <li>• &lt;0.04% w/w bonded asbestos containing material (ACM) in soil; and</li> <li>• &lt;0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil.</li> </ul> <p>Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013):</p> $\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content} \times \text{bonded ACM (kg)}}{\text{Soil volume (L)} \times \text{soil density (kg/L)}}$ <p>However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams):</p>

<sup>9</sup> Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

<sup>10</sup> Western Australian (WA) Department of Health (DoH), (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia. (referred to as WA DoH 2021)



Guideline	Applicability
	$\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content} \times \text{bonded ACM (g)}}{\text{Soil weight (g)}}$

### 6.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an ‘urban residential and public open space’ (URPOS) exposure scenario. These have only been applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines<sup>11</sup>;
- ESLs were adopted based on the soil type;
- EILs for selected metals were calculated using site specific soil parameters for pH, cation exchange capacity and clay content. Averaged values were calculated for all clay fill and individual values were applied for the fill sand sample from BH314 (0-0.1m). Values for stockpiled sand fill sample from SP1 (0.4-0.5m) was applied to all stockpiled sand fill samples. These values were used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013), and published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)<sup>12</sup>. This method is considered to be adequate for the Tier 1 screening. The site specific values applied are presented in the table below:

Table 6-2: Averaged Soil Parameters Adopted for EIL

Location:	Depth (m):	Material Type:	pH:	CEC (cmol/kg):	Clay Content (%):
TP310	0-0.1	Fill: Silty Clay	7	53	12
BH313	0-0.1	Fill: Silty Clay	6.9	18	13
		Averaged Value:	6.95	35.5	12.5

Table 6-3: Individual Soil Parameters Adopted for EIL

Location:	Depth (m):	Material Type:	pH:	CEC (cmol/kg):	Clay Content (%):
BH314	0-0.1	Fill: Silty Gravelly Sand	8.7	26	16
SP1	0.4-0.5	Fill: Silty Sand	7.4	30	13

### 6.1.3 Management Limits for Petroleum Hydrocarbons

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

<sup>11</sup> Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

<sup>12</sup> Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

## 6.2 Groundwater

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)<sup>13</sup>. Environmental values for the DSI include aquatic ecosystems, human uses (incidental contact and recreational water use), and human-health risks in non-use scenarios (vapour intrusion).

### 6.2.1 Human Health

- HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B). HSLs were calculated based on the soil type and the observed depth to groundwater;
- The NEPM (2013) HSLs were not applicable for this project as the proposed basement will intersect groundwater. On this basis, JKE have undertaken a site-specific assessment (SSA) for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater. The assessment included selection of alternative Tier 1 criteria that were considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria were based on the following (as shown in the attached report tables):
  - Australian Drinking Water Guidelines 2011 (updated 2021)<sup>14</sup> for BTEX compounds and selected VOCs;
  - World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)<sup>15</sup> for petroleum hydrocarbons. We have conservatively adopted the value of 100µg/L for TRH F1 and F2;
  - USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
  - The use of the laboratory PQLs for other contaminants where there were no Australian guidelines.
- The Australian Drinking Water Guidelines 2011 (updated 2021)<sup>16</sup> were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies, or with seepage water in the basement). These have been deemed as 'recreational' SAC.

### 6.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species were adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)<sup>17</sup>. The 99% trigger values were adopted where required to account for bioaccumulation. Low

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<sup>13</sup> NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination*.

<sup>14</sup> National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

<sup>15</sup> World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

<sup>16</sup> National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

<sup>17</sup> Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)



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and moderate reliability trigger values were also adopted for some contaminants where high-reliability trigger values don't exist.

## 7 RESULTS

### 7.1 Summary of Data (QA/QC) Evaluation

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

### 7.2 Subsurface Conditions

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

Table 7-1: Summary of Subsurface Conditions

Profile	Description
Fill	<p>Fill was encountered at the surface in all boreholes and test pits and extended to depths of approximately 0.2mBGL (BH309) to 1.4mBGL (TP315 and TP316). TP310 was terminated in the fill at a maximum depth of approximately 0.45mBGL.</p> <p>The fill typically comprised silty clay, silty sandy clay, silty gravelly clay, silty gravelly sand and silty sand with inclusions of igneous, sandstone ironstone and quartz gravel, sandstone boulders, sand, building rubble (concrete, asphalt and tile fragments, bricks and glass), plastic, slag, ash, roots and root fibres.</p> <p>Staining or odours were not observed in the fill during sampling. Asbestos containing material (ACM) was detected in the fill in TP311.</p>
Natural Soil	<p>With the exception of TP310, silty clay (residual) natural soil was encountered beneath the fill in the boreholes and test pits. The natural was typically orange brown, light brown and grey, and contained inclusions of ironstone bands, ironstone gravels, root fibres and ash.</p> <p>Staining or odours were not observed in the natural soil during sampling.</p>
Groundwater	<p>Groundwater seepage was not encountered in the boreholes and test pits during sampling. All boreholes and test pits remained dry on completion and a short time after.</p>

### 7.3 Stockpile Conditions

Stockpile 1 and Stockpile 2 generally consisted of silty sand fill with inclusions of igneous and sandstone gravel, plastic, glass, wood chips, root fibres and ash. The stockpiled fill material was generally dark brown. Organic odour (compost type odour) was observed from the stockpiles. ACM was detected in the bulk sample collected from SP4 (0-0.1m) taken from Stockpile 2.

The stockpile field notes are attached in the appendices.

### 7.4 Field Screening

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

Table 7-2: Summary of Field Screening

Aspect	Details																
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. PID results ranged from 0.2ppm to 0.5ppm, which indicates a negligible level of PID detectable VOCs.																
Bulk Screening for Asbestos	<p>The bulk field screening results are summarised in the attached report Table S5. The ACM concentration in sample TP311 (0-0.1m) was 0.0223%w/w and in sample SP4 (0-0.1m) was 0.0229%w/w and were below the SAC of 0.04%w/w. However, it is noted that the asbestos was in the top 100mm of soil and hence conditions to pose a risk to human receptors.</p> <p>All other results were below the SAC and there were no other FCF or suspected asbestos materials in any of the other bulk samples.</p>																
Groundwater Depth & Flow	<p>SWLs measured in the monitoring wells at the site ranged from 6.12mBGL to 7.01mBGL during groundwater sampling. Groundwater RLs were calculated based on the measured SWL and monitoring well height survey data obtained from a differential GPS unit (accuracy <math>\pm 30</math>mm vertical and horizontal), as tabulated below. Based on the groundwater RLs, it is anticipated that excavation for the basements may intercept groundwater at the site.</p> <table border="1" data-bbox="427 920 1428 1055"> <thead> <tr> <th>MW no.</th> <th>RL (mAHD)</th> <th>SWL (mBGL)</th> <th>GW RL (mAHD)</th> </tr> </thead> <tbody> <tr> <td>MW101</td> <td>84.38</td> <td>6.12</td> <td>78.26</td> </tr> <tr> <td>MW102</td> <td>86.7</td> <td>6.93</td> <td>79.77</td> </tr> <tr> <td>MW103</td> <td>79.59</td> <td>7.01</td> <td>72.58</td> </tr> </tbody> </table> <p>A contour plot was prepared for the groundwater RLs using Surfer v8.08 (Surface Mapping Program) as shown on Figure 4. Groundwater flow generally occurs in a down gradient direction perpendicular to the groundwater elevation contours. The contour plot indicates that groundwater generally flows towards the west. This is consistent with expectations given the regional topographic fall and nearest down-gradient water body.</p>	MW no.	RL (mAHD)	SWL (mBGL)	GW RL (mAHD)	MW101	84.38	6.12	78.26	MW102	86.7	6.93	79.77	MW103	79.59	7.01	72.58
MW no.	RL (mAHD)	SWL (mBGL)	GW RL (mAHD)														
MW101	84.38	6.12	78.26														
MW102	86.7	6.93	79.77														
MW103	79.59	7.01	72.58														
Groundwater Field Parameters	<p>Field measurements recorded during sampling were as follows:</p> <ul style="list-style-type: none"> <li>- pH ranged from 4.04 to 6.12;</li> <li>- EC ranged from 519<math>\mu</math>S/cm to 1,884<math>\mu</math>S/cm;</li> <li>- Eh ranged from 16.1mV to 341.5mV; and</li> <li>- DO ranged from 0.1ppm to 5.9ppm.</li> </ul> <p>The PID readings in the monitoring well headspace recorded during sampling ranged from 0ppm in MW103 to 0.3ppm in MW101 and MW102.</p>																
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) was not detected using the interphase probe during groundwater sampling.																

## 7.5 Soil Laboratory Results

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



## 7.5.1 Human Health and Environmental (Ecological) Assessment

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

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	26	340	0	1	Arsenic concentrations of 340mg/kg reported in SP1 (0.4-0.5m) exceeded the ecological SAC of 100mg/kg. The concentration was above 250% of the SAC of 250mg/kg.
Cadmium	26	1	0	NSL	-
Chromium (total)	26	91	0	0	-
Copper	26	110	0	0	-
Lead	26	1,000	0	0	-
Mercury	26	2.3	0	NSL	-
Nickel	26	76	0	0	-
Zinc	26	450	0	0	-
Total PAHs	26	25	0	NSL	-
Benzo(a)pyrene	26	2.7	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	26	3.8	0	NSL	-
Naphthalene	26	<1	0	NSL	-
DDT+DDE+DDD	23	1	0	NSL	-
DDT	23	0.2	NSL	0	-
Aldrin and dieldrin	23	0.1	0	NSL	-
Chlordane	23	<0.1	0	NSL	-
Heptachlor	23	<0.1	0	NSL	-
Chlorpyrifos (OPP)	23	<0.1	0	NSL	-
PCBs	23	<0.1	0	NSL	-
TRH F1	26	<25	0	0	-



Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F2	26	150	1	1	TRH F2 concentrations of 150mg/kg reported in SP3 (0.4-0.5m) exceeded the human health-based SAC and ecological SAC of 110mg/kg and 120mg/kg respectively.  The sample was reanalysis for TRH F2 after silica gel clean-up to remove interference from organic/polar compounds. The result was below the SAC and laboratory PQL.
TRH F3	26	440	0	2	TRH F3 concentrations of 330mg/kg reported in SP3 (0.4-0.5m) and 350mg/kg reported in SP4 (0.4-0.5m) exceeded the ecological SAC of 300mg/kg.  The samples were reanalysis for TRH F2 and F3 after silica gel clean-up to remove interference from organic/polar compounds. The results were below the SAC and laboratory PQL.
TRH F4	26	280	0	0	-
Benzene	26	<0.2	0	0	-
Toluene	26	<0.5	0	0	-
Ethylbenzene	26	<1	0	0	-
Xylenes	26	<1	0	0	-
Asbestos (in soil) (%w/w)	26	<0.01%w/w ACM <0.001%w/w AF/FA	-	-	Asbestos was not detected in the soil samples analysed.
Asbestos in fibre cement (material)	3	Detected	-	-	Asbestos was detected in the FCF samples FCF1-TP311 and SP4-FCF1 collected from TP311 (0-0.1m) and SP4 (0-0.1m) bulk field screening samples.  Asbestos was also detected in the FCF sample FCF-Area collected from the ground surface.

**Notes:**

N: Total number (primary samples)

NSL: No set limit



NL: Not limiting

## 7.6 Groundwater Laboratory Results

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

Table 7-4: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	3	3	0	0	-
Cadmium	3	<0.1	0	0	-
Chromium (total)	3	<1	0	0	-
Copper	3	4	0	1	Copper concentrations of 4µg/L reported in MW101 and its field duplicate sample WDUP101 exceeded the ecological SAC of 1.4µg/L.
Lead	3	<1	0	0	-
Mercury	3	<0.05	0	0	-
Nickel	3	36	0	3	Nickel concentrations ranging from 12µg/L to 36µg/L reported in all monitoring wells exceeded the ecological SAC of 11µg/L.
Zinc	3	160	0	3	Zinc concentrations ranging from 27µg/L to 160µg/L reported in all monitoring wells exceeded the ecological SAC of 8µg/L.
Total PAHs	3	<0.1	0	0	-
Benzo(a)pyrene	3	<0.1	0	0	-
Naphthalene	3	<1	0	0	-
TRH F1	3	<10	0	NSL	-
TRH F2	3	<50	0	NSL	-
TRH F3	3	<100	NSL	NSL	-
TRH F4	3	<100	NSL	NSL	-
Benzene	3	<1	0	0	-
Toluene	3	<1	0	0	-



Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Ethylbenzene	3	<1	0	0	-
m+p-Xylene	3	<2	0	0	-
o-Xylene	3	<1	0	0	-
Total Xylenes	3	<1	0	0	-
pH	3	6.7	2	2	The pH results in the samples collected from MW101 and MW103 were outside the range of the human health and ecological SAC.
EC	3	2,200	NSL	NSL	-

**Notes:**

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

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## **8 DISCUSSION**

### **8.1 Tier 1 Risk Assessment and Review of CSM**

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

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

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

#### **8.1.1 Soil/Fill**

##### **8.1.1.1 Asbestos**

Asbestos in the form of bonded FCF/ACM was encountered at the ground surface in the western portion of the site, within 16 Bent Street (sampled as FCF-Area, see Figure 3) and in the surficial soils within TP311 (0-0.1m) and SP4 (0-0.1m). ACM was also encountered in the stockpiled fill SP4. The ACM were considered to be non-friable as they could not be crushed or pulverised to powder using regular hand pressure.

The FCF at the ground surface appeared to be associated with asbestos cement debris as a result of former building demolition activities, or from weathering of the existing residence. The ACM in the fill soil at TP311 and stockpiled soil SP4 is likely to be from imported fill material (more likely) or from historical building demolition activities (less likely).

As the ACM was encountered at the ground surface or within surficial fill soil (i.e. top 100mm), there is a potential to generate airborne asbestos fibres and present a complete SPR-linkage under the current site configuration. The areas of the site where the ACM were encountered are currently unoccupied by residents, therefore the risk for asbestos is low under the current site conditions whilst the soil remains undisturbed. However, the risk of asbestos would increase during soil disturbance as part of the proposed development or gardening/maintenance and remediation of asbestos at the site is required.

In the context of the proposed development, remediation of asbestos can occur during construction as part of the earthworks for the proposed basement. This will need to be captured under the requirements of a Remediation Action Plan (RAP). Remediation of the asbestos must be confirmed via validation outlined in the RAP.

##### **8.1.1.2 Heavy Metals**

Arsenic concentrations exceeded the ecological SAC in the stockpile fill sample SP1 (0.4-0.5m) located within the eastern corner of the site (refer to Figure 3). Zinc and nickel concentrations were also encountered above the ecological SAC from three fill sample locations during the PSI. The source of the heavy metals is considered to be associated with fill inclusions.

Adequate grass cover was observed at the majority of the site surface and not considered to be easily accessible by ecological receptors under the current site configuration. Additionally, the site is situated within an urban setting and there were no ecologically sensitive receptors identified at the site and dieback or stress was not observed from the onsite vegetation. Therefore, the ecological risk in relation to heavy metals under the current site condition is low. It is also noted that the majority of these elevations will be remediated during bulk excavation for the proposed basement.

We consider that the fill soils may pose an unacceptable ecological risk if they were to remain in landscaped areas as part of the proposed development. Therefore, remediation will be required to mitigate these potential risks and this is to be addressed in the RAP.

### **8.1.1.3 TRH**

TRH F2 and F3 concentrations exceeded the human health-based SAC and ecological SAC in two fill samples (SP3 and SP4) collected from the Stockpile 2 located within the eastern corner of the site (refer to Figure 3). The source of the TRH F2 and F3 was considered to be associated with organic inclusions in the fill matrix. This is supported by the TRH silica gel clean-up results in which the TRH F2 and F3 results were reported below the SAC. Silica gel clean-up is a laboratory procedure where organic interference from polar compounds (i.e. biogenic materials) are removed from the sample, isolating the petroleum hydrocarbon compounds for analysis. The low TRH results following silica gel clean-up indicates that the original TRH F2 and F3 concentrations are likely attributed to organic matter rather than from an actual petroleum source. This is further supported by the large amounts of organic material observed at the surface and around the vicinity of Stockpile 2, and vegetation cover within the site.

As the TRH F2 and F3 concentrations were reported to be below the SAC following silica gel clean-up, the TRH risk to human and ecological health is low and remediation of the TRH F2 and F3 is not considered to be required.

### **8.1.1.4 Other CoPC in Soil**

Elevated concentrations of the remaining CoPC were below the adopted SAC in the soil samples analysed during the DSI.

Although below the SAC, traces of OCPs aldrin + dieldrin, DDT, DDD and DDE concentrations were detected in selected surficial fill samples. It is considered unlikely that the OCP would impact the groundwater at the site (i.e. via vertical leaching) due to the low concentrations reported.

### **8.1.1.5 Consideration of PSI Soil Data**

Consideration and review of the entire dataset (including PSI soil data) has been undertaken. Concentrations of zinc and nickel were reported above the ecological SAC during the PSI. Exceedances of the CoPC identified during the PSI are presented in Figure 3 and are discussed in the above sections and in the PSI report. The historical data must be considered in the development of the RAP.

## 8.1.2 Groundwater

### 8.1.2.1 Heavy Metals

Copper, nickel and zinc concentrations were encountered in the groundwater above the ecological SAC in the groundwater samples collected from MW101, while only nickel and zinc concentrations were encountered above the ecological SAC in MW102 and MW103. JKE considered that the elevated heavy metals results above the ecological SAC is attributed to regional groundwater background concentrations rather than onsite contamination source. It is noted that these results were generally consistent with the groundwater results reported in the JKE Preliminary Groundwater Quality Screening. Risks from groundwater are expected to be low and acceptable on the provision that groundwater be appropriately managed during construction dewatering.

### 8.1.2.2 Other CoPC in Groundwater

Elevated concentrations of the other CoPC were not encountered above the SAC in the groundwater samples analysed and therefore unacceptable risks to the receptors have not been identified at the site to date.

The pH of the groundwater was outside of the acceptable range generally accepted for both human health and ecological SAC in MW101 and MW103.

Groundwater was not analysed for OCPs as these were not considered to be CoPC in groundwater. As the pesticide concentrations were detected only in trace levels in surficial fill which was above the water table and in clayey soils, we expect that the leaching potential of pesticides into groundwater is unlikely.

JKE note that treatment of the groundwater will be required for off-site disposal to stormwater during dewatering activities. Discharge requirements should be confirmed with the appropriate regulatory authority.

## 8.2 Decision Statements

The decision statements are addressed below:

*Are any results above the SAC?*

Yes, as discussed in Section 8.1.

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

Potential human health risks associated with asbestos and ecological risk associated with arsenic in soil exists at the site. Remediation and management will be required to mitigate the risks so the site can be rendered suitable for the proposed development.

*Is further investigation or remediation required and what is this likely to involve?*

Remediation will be required for asbestos and arsenic. Remediation using conventional methods including excavation and off-site disposal of contaminated material under an appropriate waste classification, or cap and containment of contamination would mostly likely commensurate with the proposed development.

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

JKE is of the opinion that the site can be made suitable for the proposed development described in Section 1.1, subject to preparation of a RAP, remediation and validation.

### 8.3 Review of CSM and Data Gaps

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

Table 8-1: Review of CSM and Data Gap Assessment

Data Gap	Assessment
Fill material	<p>Fill ranged in depth between approximately 0.1mBGL to 1.4mBGL was encountered across the site during the PSI and DSI. The fill contained inclusions of igneous, sandstone ironstone and quartz gravel, sandstone boulders, sand, building rubble (concrete, asphalt and tile fragments, bricks and glass), plastic, slag, ash, roots and root fibres.</p> <p>Sampling was undertaken generally on a probabilistic/grid-based plan and met the minimum sampling density for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022). In our opinion, the fill conditions beneath the buildings will likely be consistent with those encountered in the PSI and DSI boreholes and test pits. Further soil sampling is not considered to be required.</p>
Historical agricultural use	<p>Sampling met the minimum sampling density for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022). Detections of heavy metals, TRHs, PAHs, OCPs, OPPS and PCBs were generally low, indicating that there is a low potential for widespread contamination associated with this AEC.</p>
Use of pesticides	<p>Traces of OCPs (below the SAC) including aldrin + dieldrin, DDT, DDD and DDE were detected in selected surficial fill samples analysed for the DSI. The source of the OCPs is considered to be associated with localised use/application of pesticides. Sampling did not occur beneath the buildings and structures at the site due to access constraints. However, the fill conditions beneath the buildings/structures are considered likely to be consistent with those encountered in the PSI and DSI boreholes and test pit.</p>
Hazardous Building Materials	<p>Former buildings and structures have been demolished at the site since 1970. Given the age of the existing and former buildings, hazardous building materials are considered likely to be present and may have impact the site.</p> <p>Asbestos has been identified in the fill at two locations and at the ground surface during the DSI. Remediation of asbestos will be required to render the site suitable for the proposed development.</p> <p>In addition, and prior to demolition, a hazardous building materials survey of all buildings and structures should be undertaken.</p>



Data Gap	Assessment
Off-site areas	It is noted that impacts to the site are most likely to occur via migration of contaminated groundwater. Concentrations of VOCs and PFAS were not detected (below PQL) in groundwater sampled for the Preliminary Groundwater Quality Screening. Heavy metals including aluminium, copper, nickel and zinc were detected above the freshwater ecological SAC and pH was also reported to be outside of the human health and ecological SAC range during both the Preliminary Groundwater Quality Screening and DSI. The heavy metals and pH are considered to be attributed to regional groundwater conditions rather than onsite contamination source and the risks were assessed to be low. Further groundwater assessment is not warranted.

## 9 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of existing project information, a site inspection, soil sampling from 17 in-situ locations including six test pits and 11 boreholes and four stockpile locations, and groundwater sampling from three groundwater monitoring wells. The sampling locations are shown on Figure 2. A review of the CSM identified the following potential sources of contamination/AEC: imported fill material; historical agricultural activities; use of pesticides; hazardous building materials; and up-gradient off-site dry cleaners, motor garage/service stations and general up-gradient industrial activities.

The boreholes generally encountered fill to depths of approximately 0.2mBGL (BH309) to 1.4mBGL (TP315 and TP316), with inclusions of igneous, sandstone ironstone and quartz gravel, sandstone boulders, sand, building rubble (concrete, asphalt and tile fragments, bricks and glass), plastic, slag, ash, roots and root fibres. FCF/ACM were encountered in TP311 (0-0.1m) and SP4 (0-0.1m) during the DSI field work.

A selection of soil and groundwater samples were analysed for the CoPC identified in the CSM. The following exceedances were report for each media:

- In fill soil: asbestos in the form of bonded FCF/ACM was detected in surficial soil (top 100mm) within TP311 (0-0.1m) and SP4 (0-0.1m), which is considered to be an exceedance above the human health SAC; and arsenic was reported at concentrations above the ecological SAC at the stockpile location SP1 (0.4-0.5m);
- In FCF: asbestos was detected in the FCF samples collected from the ground surface located in the eastern portion of the site within 16 Bent Street; and
- In groundwater: Copper, nickel and zinc concentrations were encountered in the groundwater above the ecological SAC from MW101, while only nickel and zinc concentrations were encountered above the ecological SAC in MW102 and MW103. pH was also outside of the acceptable range for recreational (human health) and ecological SAC in two monitoring wells (MW101 and MW103).

Based on the findings of the DSI, JKE is of the opinion that the site can be made suitable for the proposed development described in Section 1.1 subject to remediation. The following is recommended:

- Undertake a hazardous materials assessment of the existing onsite buildings and structures prior to demolition;
- Preparation of a construction phase Asbestos Management Plan (AMP) by a suitably qualified consultant for the remediation and development works;
- Preparation of a RAP; and
- Preparation of a validation assessment report for the remediation works undertaken at the site.

JKE is of the opinion that there is currently no requirement to report the contamination to the NSW EPA under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)<sup>18</sup> provided the above recommendations are implemented.

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

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<sup>18</sup> NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997* (referred to as Duty to Report Contamination)



## 10 LIMITATIONS

The report limitations are outlined below:

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



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## 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.



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**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.

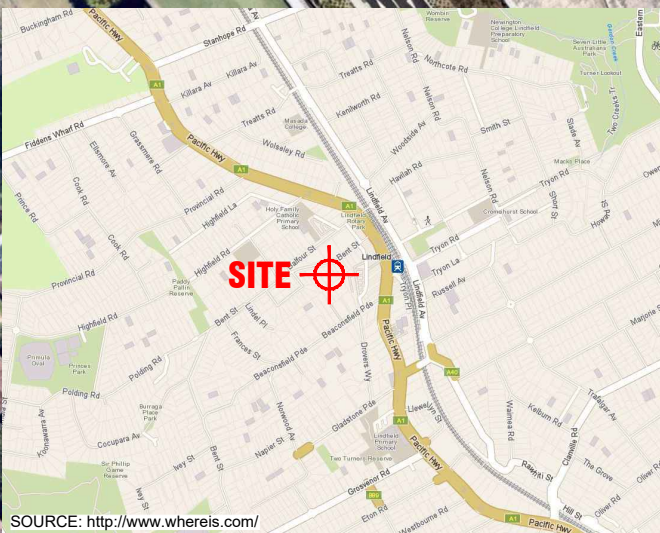
**Read Responsibility Clauses Closely**

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.



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## Appendix A: Report Figures



SOURCE: <http://www.wheris.com/>



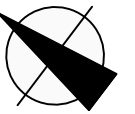
AERIAL IMAGE SOURCE: [MAPS.AU.NEARMAP.COM](http://MAPS.AU.NEARMAP.COM)

Title:		<b>SITE LOCATION PLAN</b>	
Location:		12-16 BENT STREET, LINDFIELD, NSW	
Project No:	E35535BW	Figure No:	1
<b>JKEnvironments</b>			

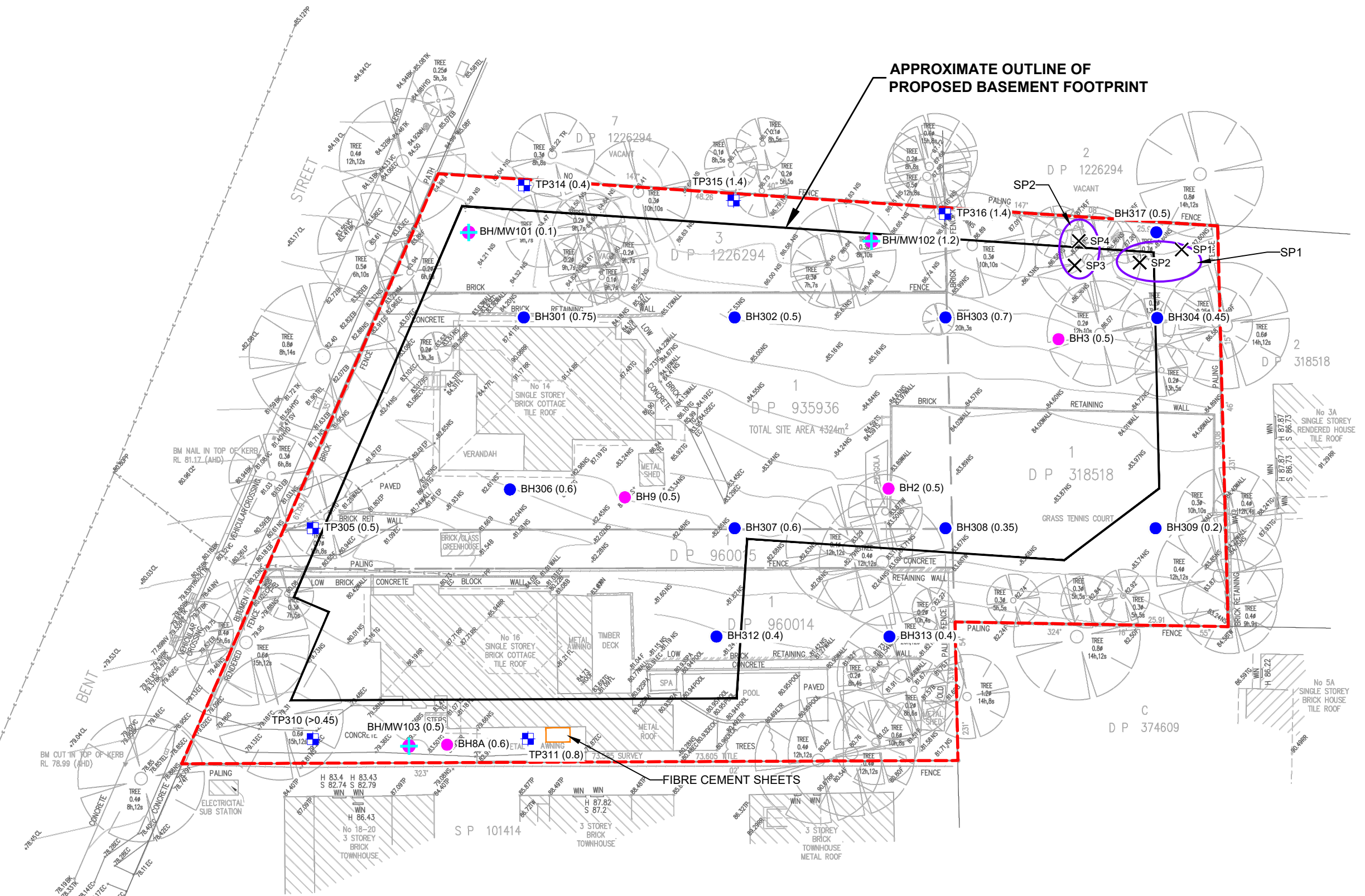


This plan should be read in conjunction with the Environmental report.

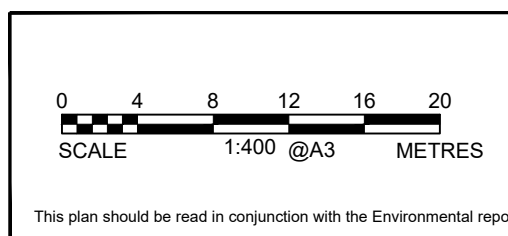
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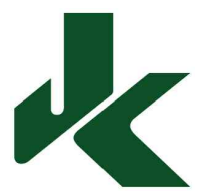
APPROXIMATE OUTLINE OF PROPOSED BASEMENT FOOTPRINT



LEGEND	
	APPROXIMATE SITE BOUNDARY
	BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
	BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
	BH301 BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
	TP305 TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
	STOCKPILE LOCATION
	STOCKPILE SAMPLE LOCATION AND NUMBER



Title: <b>SAMPLE LOCATION PLAN</b>	
Location: 12-16 BENT STREET, LINDFIELD, NSW	
Project No: E35535BW	Figure No: 2
<b>JKEnvironments</b>	



PLOT DATE: 28/04/2025 1:44:45 PM DWG FILE: K:\SC EIS JOBS\35000\35535\BWL\INDFIELD\CAD\E35535B.W DWG



**APPROXIMATE OUTLINE OF PROPOSED BASEMENT FOOTPRINT**

BH101	0-0.1m	Lab Replicate
Nickel	82mg/kg	82mg/kg
MW101		WDUP101
pH	4.6	N/A
Copper	4µg/L	4µg/L
Nickel	12µg/L	12µg/L
Zinc	69µg/L	70µg/L

MW102	LAB replicate	WDUP102
Nickel	19µg/L	18µg/L
Zinc	27µg/L	32µg/L

BH3	0-0.1m	SDUP1
Zinc	330mg/kg	350mg/kg

SP4	0-0.1m
ACM	Detected
SP4	0.4-0.5m
TRH F3	350mg/kg
TRH F3 Sillia gel clean-up	<100mg/kg

SP1	0.4-0.5m
Arsenic	340mg/kg

SP3	0.4-0.5m
TRH F2	150mg/kg
TRH F2	150mg/kg
TRH F3 Sillia gel clean-up	<50mg/kg
TRH F3	330mg/kg
TRH F3 Sillia gel clean-up	<100mg/kg

BH2	0-0.1m	Lab Duplicate	SDUP2
Zinc	370mg/kg	400mg/kg	410mg/kg

MW103	
pH	6
Nickel	36µg/L
Zinc	160µg/L

FIBRE CEMENT SHEETS	
FCF-AREA	Surface
Asbestos	Detected

TP311	0-0.1m
ACM	Detected

**LEGEND**

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH301 BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- TP305 TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- STOCKPILE LOCATION
- ✕ SP1 STOCKPILE SAMPLE LOCATION AND NUMBER

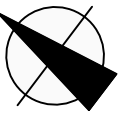
SAMPLE ID	DEPTH (metres)	SOIL/SURFACE SAMPLE EXCEEDANCE
CHEMICAL	CONCENTRATION	

SAMPLE ID		GROUNDWATER SAMPLE EXCEEDANCE
CHEMICAL	CONCENTRATION (µg/L)	

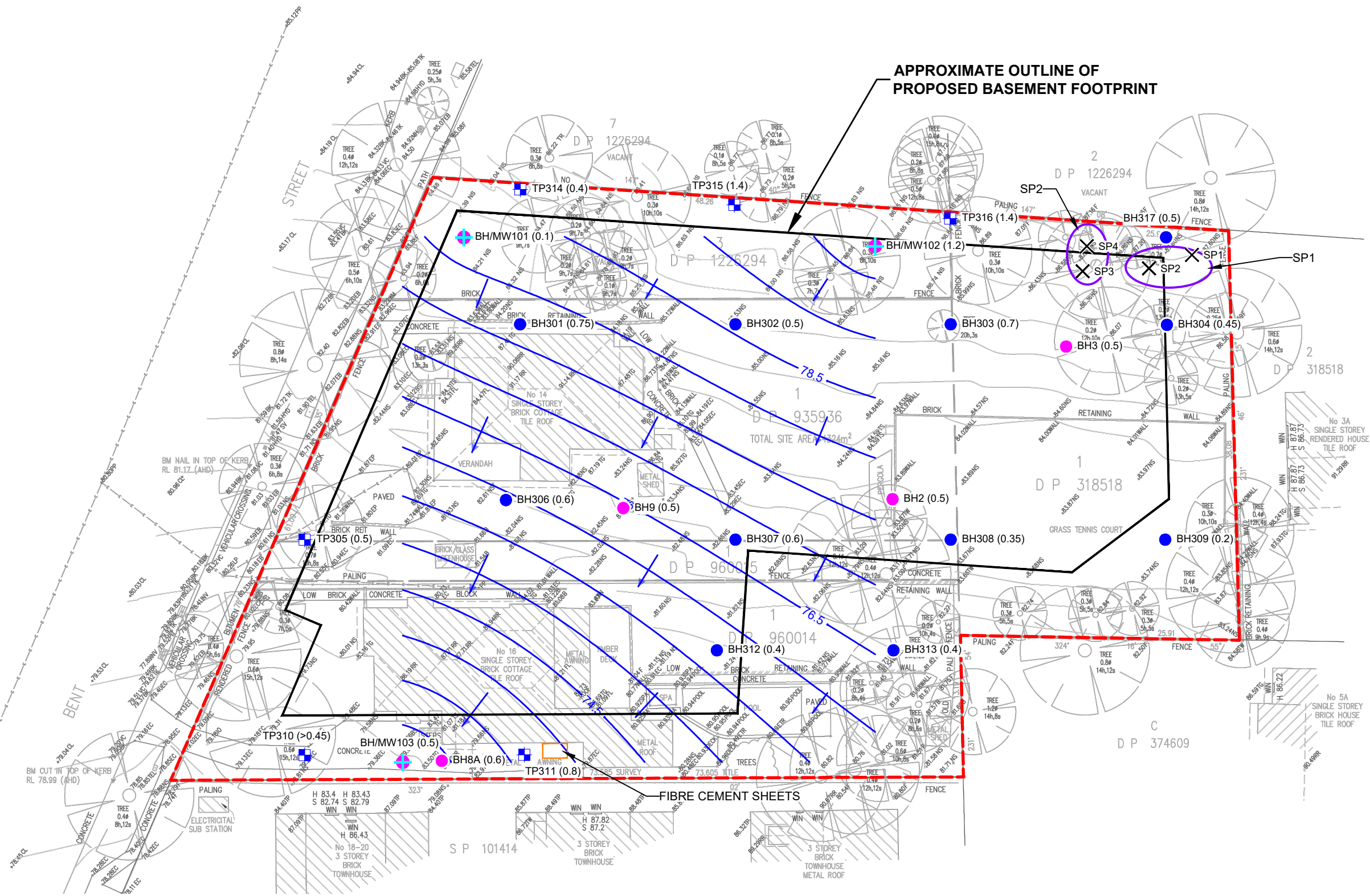
- SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK
- SOIL/SURFACE CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK
- GROUNDWATER CONTAMINATION ABOVE SAC
- ASBESTOS DETECTED

		Title: <b>SAC EXCEEDANCE PLAN</b>	
Location: 12-16 BENT STREET, LINDFIELD, NSW		Project No: E35535BW	
		Figure No: <b>3</b>	

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



APPROXIMATE OUTLINE OF PROPOSED BASEMENT FOOTPRINT



**LEGEND**

- - - APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- ⊕ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH301 BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- ⊕ TP305 TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- STOCKPILE LOCATION
- ✕ SP1 STOCKPILE SAMPLE LOCATION AND NUMBER
- 74.5 GROUNDWATER CONTOUR INTERVALS (m)
- INFERRED GROUNDWATER FLOW DIRECTION

<p>SCALE 1:400 @A3 METRES</p>	<p>Title: <b>GROUNDWATER CONTOUR PLOT</b></p> <p>Location: 12-16 BENT STREET, LINDFIELD, NSW</p> <p>Project No: E35535BW Figure No: 4</p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">JKEnvironments</p>
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This plan should be read in conjunction with the Environmental report.



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## **Appendix B: Laboratory Results Summary Tables**

## ABBREVIATIONS AND EXPLANATIONS

### Abbreviations used in the Tables:

<b>ABC:</b>	Ambient Background Concentration	<b>PCBs:</b>	Polychlorinated Biphenyls
<b>ACM:</b>	Asbestos Containing Material	<b>PQL:</b>	Practical Quantitation Limit
<b>ADWG:</b>	Australian Drinking Water Guidelines	<b>RS:</b>	Rinsate Sample
<b>AF:</b>	Asbestos Fines	<b>SAC:</b>	Site Assessment Criteria
<b>ANZG:</b>	Australian and New Zealand Guidelines	<b>SSA:</b>	Site Specific Assessment
<b>B(a)P:</b>	Benzo(a)pyrene	<b>SSHSLs:</b>	Site Specific Health Screening Levels
<b>CEC:</b>	Cation Exchange Capacity	<b>TB:</b>	Trip Blank
<b>CRC:</b>	Cooperative Research Centre	<b>TS:</b>	Trip Spike
<b>EILs:</b>	Ecological Investigation Levels	<b>TRH:</b>	Total Recoverable Hydrocarbons
<b>ESLs:</b>	Ecological Screening Levels	<b>USEPA:</b>	United States Environmental Protection Agency
<b>FA:</b>	Fibrous Asbestos	<b>WHO:</b>	World Health Organisation
<b>GIL:</b>	Groundwater Investigation Levels		
<b>HILs:</b>	Health Investigation Levels		
<b>HSLs:</b>	Health Screening Levels		
<b>HSL-SSA:</b>	Health Screening Level-Site Specific Assessment		
<b>kg/L</b>	kilograms per litre		
<b>NA:</b>	Not Analysed		
<b>NC:</b>	Not Calculated		
<b>NEPM:</b>	National Environmental Protection Measure		
<b>NHMRC:</b>	National Health and Medical Research Council		
<b>NL:</b>	Not Limiting		
<b>NSL:</b>	No Set Limit		
<b>OCP:</b>	Organochlorine Pesticides		
<b>OPP:</b>	Organophosphorus Pesticides		
<b>PAHs:</b>	Polycyclic Aromatic Hydrocarbons		
<b>%w/w:</b>	weight per weight		
<b>ppm:</b>	Parts per million		

### 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 referred to as the B(a)P Toxic Equivalence Quotient (TEQ).

#### EIL/ESL Table:

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

#### 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-B: 'Residential with minimal opportunities for soil access; including dwellings with fully/permanently paved yards like high-rise buildings'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos			
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			500	150	500	30000	1200	120	1200	60000	400	4	15	400	500	10	90	600	10	340	1	Detected/Not Detected	
Sample Reference	Sample Depth	Sample Description																					
BH301	0-0.1	Fill: Silty Clay	<b>7</b>	<0.4	<b>22</b>	<b>72</b>	<b>230</b>	<b>0.2</b>	<b>6</b>	<b>150</b>	<b>6</b>	<b>1</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>1</b>	<0.1	<0.1	<0.1	Not Detected	
BH301	0-0.1	Lab Duplicate	<b>6</b>	<b>0.4</b>	<b>24</b>	<b>73</b>	<b>250</b>	<b>0.2</b>	<b>5</b>	<b>150</b>	<b>5.5</b>	<b>1</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>1</b>	<0.1	<0.1	<0.1	NA	
BH301	0.6-0.7	Silty Clay	<b>12</b>	<0.4	<b>25</b>	<b>12</b>	<b>19</b>	<0.1	<b>3</b>	<b>6</b>	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH302	0-0.1	Fill: Silty Clay	<b>7</b>	<0.4	<b>11</b>	<b>26</b>	<b>94</b>	<b>0.2</b>	<b>2</b>	<b>45</b>	<b>1.3</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH303	0-0.1	Fill: Silty Clay	<b>29</b>	<0.4	<b>34</b>	<b>38</b>	<b>610</b>	<b>0.2</b>	<b>4</b>	<b>100</b>	<b>3.5</b>	<b>0.7</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.3</b>	<0.1	<0.1	<0.1	Not Detected	
BH304	0-0.1	Fill: Silty Clay	<b>10</b>	<0.4	<b>15</b>	<b>38</b>	<b>210</b>	<b>0.2</b>	<b>6</b>	<b>160</b>	<b>5.5</b>	<b>1</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.2</b>	<0.1	<0.1	<0.1	Not Detected	
TP305	0-0.1	Fill: Silty Clay	<4	<0.4	<b>8</b>	<b>34</b>	<b>700</b>	<b>0.1</b>	<b>5</b>	<b>78</b>	<b>8.6</b>	<b>1.5</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH306	0-0.1	Fill: Silty Clay	<b>5</b>	<0.4	<b>9</b>	<b>17</b>	<b>96</b>	<b>2.3</b>	<b>3</b>	<b>48</b>	<b>0.86</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH307	0-0.1	Fill: Silty Clay	<b>8</b>	<b>0.5</b>	<b>12</b>	<b>38</b>	<b>200</b>	<b>0.2</b>	<b>3</b>	<b>150</b>	<b>9.4</b>	<b>1.6</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<b>1</b>	<0.1	<0.1	<0.1	Not Detected	
BH308	0-0.1	Fill: Silty Clay	<b>70</b>	<0.4	<b>12</b>	<b>29</b>	<b>92</b>	<0.1	<b>5</b>	<b>55</b>	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH308	0.5-0.6	Silty Clay	<b>13</b>	<0.4	<b>29</b>	<b>6</b>	<b>18</b>	<0.1	<b>3</b>	<b>7</b>	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH309	0-0.1	Fill: Silty Clay	<b>11</b>	<0.4	<b>13</b>	<b>10</b>	<b>30</b>	<0.1	<b>3</b>	<b>25</b>	<b>0.2</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH309	0-0.1	Lab Duplicate	<b>13</b>	<0.4	<b>15</b>	<b>11</b>	<b>33</b>	<0.1	<b>3</b>	<b>27</b>	<b>0.05</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	
TP310	0-0.1	Fill: Silty Clay	<b>9</b>	<b>0.7</b>	<b>13</b>	<b>99</b>	<b>260</b>	<b>0.3</b>	<b>6</b>	<b>340</b>	<b>1.7</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP311	0-0.1	Fill: Silty Clay	<b>15</b>	<0.4	<b>15</b>	<b>88</b>	<b>180</b>	<b>0.3</b>	<b>5</b>	<b>360</b>	<b>2.9</b>	<b>0.6</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP311	1.0-1.1	Silty Clay	<b>7</b>	<0.4	<b>20</b>	<b>8</b>	<b>12</b>	<0.1	<b>4</b>	<b>17</b>	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH312	0-0.1	Fill: Silty Clay	<b>5</b>	<0.4	<b>10</b>	<b>39</b>	<b>72</b>	<b>0.1</b>	<b>2</b>	<b>63</b>	<b>0.3</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH313	0-0.1	Fill: Silty Clay	<b>17</b>	<b>0.5</b>	<b>22</b>	<b>100</b>	<b>120</b>	<b>1.6</b>	<b>6</b>	<b>210</b>	<b>1.1</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP314	0-0.1	Fill: Silty Gravelly Sand	<4	<0.4	<b>83</b>	<b>27</b>	<b>14</b>	<0.1	<b>72</b>	<b>51</b>	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP315	0-0.1	Fill: Silty Gravelly Clay	<b>6</b>	<0.4	<b>18</b>	<b>15</b>	<b>39</b>	<0.1	<b>10</b>	<b>77</b>	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP315	0.2-0.4	Fill: Silty Clay	<b>7</b>	<0.4	<b>10</b>	<b>10</b>	<b>24</b>	<0.1	<1	<b>6</b>	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
TP316	0-0.1	Fill: Silty Sand	<b>10</b>	<b>0.5</b>	<b>11</b>	<b>22</b>	<b>96</b>	<0.1	<b>5</b>	<b>79</b>	<b>0.07</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH317	0-0.1	Fill: Silty Clay	<b>12</b>	<b>0.7</b>	<b>21</b>	<b>46</b>	<b>190</b>	<b>0.2</b>	<b>5</b>	<b>360</b>	<b>25</b>	<b>3.8</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.1</b>	<0.1	<0.1	Not Detected	
BH317	0-0.1	Lab Duplicate	<b>13</b>	<b>0.9</b>	<b>18</b>	<b>54</b>	<b>240</b>	<b>0.2</b>	<b>5</b>	<b>450</b>	<b>23</b>	<b>3.6</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.1</b>	<0.1	<0.1	NA	
SP1	0.4-0.5	Fill: Silty Sand	<b>340</b>	<b>1</b>	<b>24</b>	<b>86</b>	<b>1000</b>	<b>0.3</b>	<b>6</b>	<b>320</b>	<b>2.8</b>	<b>0.6</b>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.1</b>	<0.1	<0.1	Not Detected	
SP2	0.3-0.4	Fill: Silty Sand	<b>12</b>	<b>1</b>	<b>15</b>	<b>81</b>	<b>260</b>	<b>0.2</b>	<b>6</b>	<b>350</b>	<b>1.8</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>0.2</b>	<0.1	<0.1	Not Detected	
SP3	0.4-0.5	Fill: Silty Sand	<b>8</b>	<b>0.8</b>	<b>14</b>	<b>55</b>	<b>180</b>	<b>0.2</b>	<b>7</b>	<b>320</b>	<b>0.4</b>	<0.5	<0.1	<0.1	<0.1	<b>0.1</b>	<0.1	<b>0.1</b>	<0.1	<0.1	<0.1	Not Detected	
SP4	0.4-0.5	Fill: Silty Sand	<b>16</b>	<b>0.6</b>	<b>22</b>	<b>52</b>	<b>190</b>	<b>0.2</b>	<b>6</b>	<b>260</b>	<b>2.2</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
SDUP301	0-0.1	Duplicate of TP314	<4	<0.4	<b>77</b>	<b>24</b>	<b>19</b>	<0.1	<b>67</b>	<b>47</b>	<b>0.1</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	
SDUP301	0-0.1	Lab Duplicate	<4	<0.4	<b>71</b>	<b>21</b>	<b>9</b>	<0.1	<b>61</b>	<b>35</b>	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	
SDUP301	0-0.1	Lab triplicate	<b>4</b>	<0.4	<b>91</b>	<b>29</b>	<b>15</b>	<0.1	<b>76</b>	<b>76</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SDUP302	0-0.1	Duplicate of BH302	<b>10</b>	<b>0.8</b>	<b>13</b>	<b>110</b>	<b>300</b>	<b>0.3</b>	<b>7</b>	<b>380</b>	<b>1.7</b>	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	
SDUP304	0-0.1	Duplicate of BH306	<b>4.9</b>	<0.40	<b>9.6</b>	<b>40</b>	<b>80</b>	<0.10	<b>2.4</b>	<b>58</b>	<b>1.2</b>	<0.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCF1-TP311	0-0.1	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
SP4-FCF1	0-0.1	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
FCF-Area	Surface	FCF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
<b>Total Number of Samples</b>			33	33	33	33	33	33	33	33	32	32	28	28	28	28	28	28	28	28	28	25	
<b>Maximum Value</b>			340	1	91	110	1000	2.3	76	450	25	3.8	<PQL	<PQL	<PQL	0.1	<PQL	1	<PQL	<PQL	<PQL	Detected	

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

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

					C <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEMP 2013 HSL Land Use Category					HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category								
BH301	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
BH301	0-0.1	Lab Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH301	0.6-0.7	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH302	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH303	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH304	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP305	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH306	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH307	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH308	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH308	0.5-0.6	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH309	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH309	0-0.1	Lab Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP310	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP311	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
TP311	1.0-1.1	Silty Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
BH312	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH313	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP314	0-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP315	0-0.1	Fill: Silty Gravelly Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP315	0.2-0.4	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP316	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH317	0-0.1	Fill: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH317	0-0.1	Lab Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SP1	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
SP2	0.3-0.4	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
SP3	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	<50	<b>150</b>	<0.4	<1	<2	<2	<2	0.5
SP3 - Silica gel	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
SP4	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
SP4 - Silica gel	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
SP4 - Silica gel	0.4-0.5	Lab replicate	0m to <1m	Sand	NA	<50	NA	NA	NA	NA	NA	NA
SDUP301	0-0.1	Duplicate of TP314	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP301	0-0.1	Lab Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP302	0-0.1	Duplicate of BH302	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP304	0-0.1	Duplicate of BH306	0m to <1m	Sand	<25	<50	<0.20	<0.50	<1.0	<1.0	<1.0	NA
<b>Total Number of Samples</b>					32	32	32	32	32	32	32	25
<b>Maximum Value</b>					<PQL	150	<PQL	<PQL	<PQL	<PQL	<PQL	0.5

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 <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH301	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH301	0-0.1	Lab Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH301	0.6-0.7	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH302	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH303	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH304	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP305	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH306	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH307	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH308	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH308	0.5-0.6	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH309	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH309	0-0.1	Lab Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP310	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP311	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP311	1.0-1.1	Silty Clay	1m to <2m	Sand	70	240	0.5	220	NL	60	NL
BH312	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH313	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP314	0-0.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP315	0-0.1	Fill: Silty Gravelly Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP315	0.2-0.4	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP316	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH317	0-0.1	Fill: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH317	0-0.1	Lab Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SP1	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SP2	0.3-0.4	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SP3	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SP4	0.4-0.5	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP301	0-0.1	Duplicate of TP314	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP301	0-0.1	Lab Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP302	0-0.1	Duplicate of BH302	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP304	0-0.1	Duplicate of BH306	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 <sub>6</sub> -C <sub>10</sub> (F1) plus BTEX	>C <sub>10</sub> -C <sub>16</sub> (F2) plus naphthalene	>C <sub>16</sub> -C <sub>34</sub> (F3)	>C <sub>34</sub> -C <sub>40</sub> (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE			
Sample Reference	Sample Depth	Soil Texture				
BH301	0-0.1	Fine	<25	<50	<b>400</b>	<b>240</b>
BH301	0-0.1	Fine	<25	<50	<b>440</b>	<b>120</b>
BH301	0.6-0.7	Fine	<25	<50	<100	<100
BH302	0-0.1	Fine	<25	<50	<100	<100
BH303	0-0.1	Fine	<25	<50	<100	<100
BH304	0-0.1	Fine	<25	<50	<100	<100
TP305	0-0.1	Fine	<25	<50	<b>140</b>	<b>100</b>
BH306	0-0.1	Fine	<25	<50	<100	<100
BH307	0-0.1	Fine	<25	<50	<b>220</b>	<b>270</b>
BH308	0-0.1	Fine	<25	<50	<100	<b>140</b>
BH308	0.5-0.6	Fine	<25	<50	<100	<100
BH309	0-0.1	Fine	<25	<50	<b>120</b>	<b>280</b>
BH309	0-0.1	Fine	<25	<50	<b>110</b>	<b>210</b>
TP310	0-0.1	Fine	<25	<50	<b>340</b>	<b>280</b>
TP311	0-0.1	Fine	<25	<50	<100	<100
TP311	1.0-1.1	Fine	<25	<50	<100	<100
BH312	0-0.1	Fine	<25	<50	<100	<100
BH313	0-0.1	Fine	<25	<50	<b>240</b>	<b>220</b>
TP314	0-0.1	Coarse	<25	<50	<100	<100
TP315	0-0.1	Fine	<25	<50	<100	<100
TP315	0.2-0.4	Fine	<25	<50	<100	<100
TP316	0-0.1	Coarse	<25	<50	<100	<100
BH317	0-0.1	Fine	<25	<50	<b>200</b>	<b>120</b>
BH317	0-0.1	Fine	<25	<50	<b>170</b>	<b>110</b>
SP1	0.4-0.5	Coarse	<25	<50	<b>180</b>	<b>110</b>
SP2	0.3-0.4	Coarse	<25	<50	<b>190</b>	<b>200</b>
SP3	0.4-0.5	Coarse	<50	<b>150</b>	<b>330</b>	<b>260</b>
SP4	0.4-0.5	Coarse	<25	<50	<b>350</b>	<b>260</b>
SDUP301	0-0.1	Coarse	<25	<50	<100	<100
SDUP301	0-0.1	Fine	<25	<50	<b>190</b>	<100
SDUP302	0-0.1	Fine	<25	<50	<b>290</b>	<b>280</b>
SDUP304	0-0.1	Fine	<25	<50	<100	<100
<b>Total Number of Samples</b>			32	32	32	32
<b>Maximum Value</b>			<PQL	150	440	280
Concentration above the SAC			<b>VALUE</b>			
Concentration above the PQL			<b>Bold</b>			

**MANAGEMENT LIMIT ASSESSMENT CRITERIA**

Sample Reference	Sample Depth	Soil Texture	C <sub>6</sub> -C <sub>10</sub> (F1) plus BTEX	>C <sub>10</sub> -C <sub>16</sub> (F2) plus naphthalene	>C <sub>16</sub> -C <sub>34</sub> (F3)	>C <sub>34</sub> -C <sub>40</sub> (F4)
BH301	0-0.1	Fine	800	1000	3500	10000
BH301	0-0.1	Fine	800	1000	3500	10000
BH301	0.6-0.7	Fine	800	1000	3500	10000
BH302	0-0.1	Fine	800	1000	3500	10000
BH303	0-0.1	Fine	800	1000	3500	10000
BH304	0-0.1	Fine	800	1000	3500	10000
TP305	0-0.1	Fine	800	1000	3500	10000
BH306	0-0.1	Fine	800	1000	3500	10000
BH307	0-0.1	Fine	800	1000	3500	10000
BH308	0-0.1	Fine	800	1000	3500	10000
BH308	0.5-0.6	Fine	800	1000	3500	10000
BH309	0-0.1	Fine	800	1000	3500	10000
BH309	0-0.1	Fine	800	1000	3500	10000
TP310	0-0.1	Fine	800	1000	3500	10000
TP311	0-0.1	Fine	800	1000	3500	10000
TP311	1.0-1.1	Fine	800	1000	3500	10000
BH312	0-0.1	Fine	800	1000	3500	10000
BH313	0-0.1	Fine	800	1000	3500	10000
TP314	0-0.1	Coarse	700	1000	2500	10000
TP315	0-0.1	Fine	800	1000	3500	10000
TP315	0.2-0.4	Fine	800	1000	3500	10000
TP316	0-0.1	Coarse	700	1000	2500	10000
BH317	0-0.1	Fine	800	1000	3500	10000
BH317	0-0.1	Fine	800	1000	3500	10000
SP1	0.4-0.5	Coarse	700	1000	2500	10000
SP2	0.3-0.4	Coarse	700	1000	2500	10000
SP3	0.4-0.5	Coarse	700	1000	2500	10000
SP4	0.4-0.5	Coarse	700	1000	2500	10000
SDUP301	0-0.1	Coarse	700	1000	2500	10000
SDUP301	0-0.1	Fine	800	1000	3500	10000
SDUP302	0-0.1	Fine	800	1000	3500	10000
SDUP304	0-0.1	Fine	800	1000	3500	10000

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

Analyte	C <sub>6</sub> -C <sub>10</sub>	>C <sub>10</sub> -C <sub>16</sub>	>C <sub>16</sub> -C <sub>34</sub>	>C <sub>34</sub> -C <sub>40</sub>	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services	25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria	5,600	4,200	5,800	8,100	140	21,000	5,900	17,000	2,200	
Site Use	<b>HIGH DENSITY RESIDENTIAL - DIRECT SOIL CONTACT</b>									
Sample Reference	Sample Depth									
BH301	0-0.1	<25	<50	<b>400</b>	<b>240</b>	<0.2	<0.5	<1	<1	<b>0.2</b>
BH301	0-0.1	<25	<50	<b>440</b>	<b>120</b>	<0.2	<0.5	<1	<1	NA
BH301	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
BH302	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
BH303	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
BH304	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.2</b>
TP305	0-0.1	<25	<50	<b>140</b>	<b>100</b>	<0.2	<0.5	<1	<1	<b>0.1</b>
BH306	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.4</b>
BH307	0-0.1	<25	<50	<b>220</b>	<b>270</b>	<0.2	<0.5	<1	<1	<b>0.3</b>
BH308	0-0.1	<25	<50	<100	<b>140</b>	<0.2	<0.5	<1	<1	<b>0.3</b>
BH308	0.5-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.4</b>
BH309	0-0.1	<25	<50	<b>120</b>	<b>280</b>	<0.2	<0.5	<1	<1	<b>0.4</b>
BH309	0-0.1	<25	<50	<b>110</b>	<b>210</b>	<0.2	<0.5	<1	<1	NA
TP310	0-0.1	<25	<50	<b>340</b>	<b>280</b>	<0.2	<0.5	<1	<1	<b>0.2</b>
TP311	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.1</b>
TP311	1.0-1.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.2</b>
BH312	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
BH313	0-0.1	<25	<50	<b>240</b>	<b>220</b>	<0.2	<0.5	<1	<1	<b>0.4</b>
TP314	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.4</b>
TP315	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
TP315	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.4</b>
TP316	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<b>0.3</b>
BH317	0-0.1	<25	<50	<b>200</b>	<b>120</b>	<0.2	<0.5	<1	<1	<b>0.4</b>
BH317	0-0.1	<25	<50	<b>170</b>	<b>110</b>	<0.2	<0.5	<1	<1	NA
SP1	0.4-0.5	<25	<50	<b>180</b>	<b>110</b>	<0.2	<0.5	<1	<1	<b>0.3</b>
SP2	0.3-0.4	<25	<50	<b>190</b>	<b>200</b>	<0.2	<0.5	<1	<1	<b>0.4</b>
SP3	0.4-0.5	<50	<b>150</b>	<b>330</b>	<b>260</b>	<0.4	<1	<2	<2	<b>0.5</b>
SP4	0.4-0.5	<25	<50	<b>350</b>	<b>260</b>	<0.2	<0.5	<1	<1	<b>0.4</b>
SDUP301	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NA
SDUP301	0-0.1	<25	<50	<b>190</b>	<100	<0.2	<0.5	<1	<1	NA
SDUP302	0-0.1	<25	<50	<b>290</b>	<b>280</b>	<0.2	<0.5	<1	<1	NA
SDUP304	0-0.1	<25	<50	<100	<100	<0.20	<0.50	<1.0	<1.0	NA
<b>Total Number of Samples</b>		32	32	32	32	32	32	32	32	25
<b>Maximum Value</b>		<PQL	150	440	280	<PQL	<PQL	<PQL	<PQL	0.5
Concentration above the SAC		<b>VALUE</b>								
Concentration above the PQL		<b>Bold</b>								

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

FIELD DATA														LABORATORY DATA												
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample reference	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														0.04												
No														0.001												
0.04														0.001												
7/04/2025	BH301	0-0.1	No	10	10,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH301	0-0.1	571.27	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
7/04/2025	BH301	0.1-0.25	NA	10	10,580	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	BH301	0.25-0.5	NA	10	10,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	BH301	0.5-0.75	NA	<10	6,340	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	BH302	0-0.1	No	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH302	0-0.1	597.06	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
7/04/2025	BH302	0.1-0.5	NA	10	11,840	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH303	0-0.1	No	10	10,310	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH303	0-0.1	642.39	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
9/04/2025	BH303	0.1-0.4	NA	10	11,370	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH303	0.4-0.7	NA	<10	3,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH304	0-0.1	No	10	10,770	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH304	0-0.1	649.57	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
9/04/2025	BH304	0.1-0.45	NA	10	10,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP305	0-0.1	No	10	10,760	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP305	0-0.1	735.51	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
7/04/2025	TP305	0.1-0.2	NA	10	12,210	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP305	0.2-0.5	NA	10	10,690	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH306	0-0.1	No	10	11,560	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH306	0-0.1	562.95	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
9/04/2025	BH306	0.1-0.6	NA	10	11,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH307	0-0.1	No	10	11,470	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH307	0-0.1	540.39	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
9/04/2025	BH307	0.1-0.4	NA	10	10,560	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	BH308	0-0.1	No	10	12,340	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH308	0-0.1	723.42	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
7/04/2025	BH308	0.1-0.45	NA	10	11,690	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	BH308	0.45-0.75	NA	10	10,530	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH309	0-0.1	No	10	10,830	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH309	0-0.1	588	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
9/04/2025	BH309	0.1-0.2	NA	10	11,340	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP310	0-0.1	No	10	11,530	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP310	0-0.1	456.82	No asbestos detected at reporting limit of 0.1g/kg; Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
7/04/2025	TP310	0.1-0.4	NA	10	10,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP311	0-0.1	Yes	10	10,780	16.0	2.4	0.0223	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP311	0-0.1	712.99	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
7/04/2025	TP311	0.1-0.6	NA	10	11,380	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP311	0.6-0.8	NA	10	11,140	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH312	0-0.1	No	10	10,460	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH312	0-0.1	475.13	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
9/04/2025	BH312	0.1-0.4	NA	10	10,060	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH313	0-0.1	No	10	10,950	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH313	0-0.1	509.7	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
9/04/2025	BH313	0.4-0.5	NA	10	10,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP314	0-0.1	No	10	14,940	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP314	0-0.1	938.53	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
7/04/2025	TP314	0.1-0.4	NA	10	10,510	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP315	0-0.1	No	10	11,470	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP315	0-0.1	755.96	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
7/04/2025	TP315	0.1-0.2	NA	10	11,380	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP315	0.2-0.4	NA	10	12,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP315	0.2-0.4	606.53	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
7/04/2025	TP315	0.4-0.7	NA	10	10,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP315	0.7-1.4	NA	10	10,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP316	0-0.1	No	10	10,580	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	TP316	0-0.1	788.7	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
7/04/2025	TP316	0.1-0.2	NA	10	10,830	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP316	0.2-0.6	NA	10	10,930	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/04/2025	TP316	0.6-1.4	NA	10	11,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	BH317	0-0.1	No	10	10,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	BH317	0-0.1	567.32	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
9/04/2025	BH317	0.1-0.5	NA	10	10,040	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/04/2025	SP1	0-0.1	No	10	10,390	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	SP1	0.4-0.5	509.08	No asbestos detected at reporting limit of 0.1g/kg; Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
9/04/2025	SP2	0-0.1	NA	10	10,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	SP2	0.3-0.4	387.81	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
9/04/2025	SP3	0-0.1	No	10360	10,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	377981	SP3	0.4-0.5	266.24	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
9/04/2025	SP4	0-0.1	Yes	10	11,120	17.0	2.55	0.0229	No ACM <7mm observed	--	--	No FA observed	--	--	377981	SP4	0.4-0.5	351.23	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																				
Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs									
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	>C <sub>16</sub> -C <sub>34</sub> (F3)	>C <sub>34</sub> -C <sub>40</sub> (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P	
PQL - EnviroLab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05	
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	
BH301	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	7	22	72	230	6	150	<1	0.1	<25	<50	400	240	<0.2	<0.5	<1	<1	0.71	
BH301	0-0.1	Lab Duplicate	Fine	6.95	35.5	12.5	6	24	73	250	5	150	<1	0.2	<25	<50	440	120	<0.2	<0.5	<1	<1	0.7	
BH301	0.6-0.7	Silty Clay	Fine	NA	NA	NA	12	25	12	19	3	6	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
BH302	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	7	11	26	94	2	45	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.2	
BH303	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	29	34	38	610	4	100	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.5	
BH304	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	10	15	38	210	6	160	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.66	
TP305	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	<4	8	34	700	5	78	<1	<0.1	<25	<50	140	100	<0.2	<0.5	<1	<1	1	
BH306	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	5	9	17	96	3	48	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.1	
BH307	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	8	12	38	200	3	150	<1	0.1	<25	<50	220	270	<0.2	<0.5	<1	<1	1.1	
BH308	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	70	12	29	92	5	55	<1	<0.1	<25	<50	<100	140	140	<0.2	<0.5	<1	<1	<0.05
BH308	0.5-0.6	Silty Clay	Fine	NA	NA	NA	13	29	6	18	3	7	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
BH309	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	11	13	10	30	3	25	<1	<0.1	<25	<50	120	280	<0.2	<0.5	<1	<1	0.05	
BH309	0-0.1	Lab Duplicate	Fine	NA	NA	NA	13	15	11	33	3	27	<1	<0.1	<25	<50	110	210	<0.2	<0.5	<1	<1	0.05	
TP310	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	9	13	99	260	6	340	<1	<0.1	<25	<50	340	280	<0.2	<0.5	<1	<1	0.2	
TP311	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	15	15	88	180	5	360	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.4	
TP311	1.0-1.1	Silty Clay	Fine	NA	NA	NA	7	20	8	12	4	17	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
BH312	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	5	10	39	72	2	63	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.07	
BH313	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	17	22	100	120	6	210	<1	<0.1	<25	<50	240	220	<0.2	<0.5	<1	<1	0.2	
TP314	0-0.1	Fill: Silty Gravelly Sand	Coarse	8.7	26	16	<4	83	27	14	72	51	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
TP315	0-0.1	Fill: Silty Gravelly Clay	Fine	6.95	35.5	12.5	6	18	15	39	10	77	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
TP315	0.2-0.4	Fill: Silty Clay	Fine	6.95	35.5	12.5	7	10	10	24	<1	6	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
TP316	0-0.1	Fill: Silty Sand	Coarse	NA	NA	NA	10	11	22	96	5	79	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.07	
BH317	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	12	21	46	190	5	360	<1	<0.1	<25	<50	200	120	<0.2	<0.5	<1	<1	2.7	
BH317	0-0.1	Lab Duplicate	Fine	6.95	35.5	12.5	13	18	54	240	5	450	<1	<0.1	<25	<50	170	110	<0.2	<0.5	<1	<1	2.5	
SP1	0.4-0.5	Fill: Silty Sand	Coarse	7.4	30	13	340	24	86	1000	6	320	<1	<0.1	<25	<50	180	110	<0.2	<0.5	<1	<1	0.4	
SP2	0.3-0.4	Fill: Silty Sand	Coarse	7.4	30	13	12	15	81	260	6	350	<1	<0.1	<25	<50	190	200	<0.2	<0.5	<1	<1	0.2	
SP3	0.4-0.5	Fill: Silty Sand	Coarse	7.4	30	13	8	14	55	180	7	320	<2	<0.1	<50	150	330	260	<0.4	<1	<2	<2	0.1	
SP3 - Silica gel	0.4-0.5	Fill: Silty Sand	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	<100	<100	NA	NA	NA	NA	NA	
SP4	0.4-0.5	Fill: Silty Sand	Coarse	7.4	30	13	16	22	52	190	6	260	<1	<0.1	<25	<50	350	260	<0.2	<0.5	<1	<1	0.3	
SP4 - Silica gel	0.4-0.5	Fill: Silty Sand	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	<100	<100	NA	NA	NA	NA	NA	
SP4 - Silica gel	0.4-0.5	Lab replicate	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	<100	<100	NA	NA	NA	NA	NA	
SDUP301	0-0.1	Duplicate of TP314	Coarse	8.7	26	16	<4	77	24	19	67	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05	
SDUP301	0-0.1	Lab Duplicate	Coarse	8.7	26	16	<4	71	21	9	61	35	<1	<0.1	<25	<50	190	100	<0.2	<0.5	<1	<1	<0.05	
SDUP301	0-0.1	Lab triplicate	Coarse	8.7	26	16	4	91	29	15	76	76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SDUP302	0-0.1	Duplicate of BH302	Fine	6.95	35.5	12.5	10	13	110	300	7	380	<1	<0.1	<25	<50	290	280	<0.2	<0.5	<1	<1	0.2	
SDUP304	0-0.1	Duplicate of BH306	Fine	6.95	35.5	12.5	4.9	9.6	40	80	2.4	58	<1.0	NA	<25	<50	<100	<100	<0.20	<0.50	<1.0	<1.0	0.13	
<b>Total Number of Samples</b>				28	28	28	33	33	33	33	33	33	32	28	32	32	32	32	32	32	32	32	32	32
<b>Maximum Value</b>				8.7	35.5	16	340	91	110	1000	76	450	<PQL	0.2	<PQL	150	440	280	<PQL	<PQL	<PQL	<PQL	<PQL	2.7
Concentration above the SAC				<b>VALUE</b>																				
Concentration above the PQL				<b>Bold</b>																				
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 <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	>C <sub>16</sub> -C <sub>34</sub> (F3)	>C <sub>34</sub> -C <sub>40</sub> (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH301	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH301	0-0.1	Lab Duplicate	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH301	0.6-0.7	Silty Clay	Fine	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	1300	5600	65	105	125	45	20
BH302	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH303	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH304	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
TP305	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH306	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH307	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH308	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5	100	410	250	1300	420	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH308	0.5-0.6	Silty Clay	Fine	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	1300	5600	65	105	125	45	20
BH309	0-0.1	Fill: Silty Clay	Fine	6.95	35.5	12.5																	

TABLE G1 SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC All results in µg/L unless stated otherwise.									
	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES						
			MW101	MW101 Lab replicate	MW102	MW102 Lab replicate	MW103	WDUP101	WDUP102
<b>Inorganic Compounds and Parameters</b>									
pH		6.5 - 8.5	4.6	NA	6.7	NA	6	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	790	NA	2200	NA	1400	NA	NA
<b>Metals and Metalloids</b>									
Arsenic (As III)	1	24	<1	[NT]	3	3	<1	<1	3
Cadmium	0.1	0.2	<0.1	[NT]	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	3.3	<1	[NT]	<1	<1	<1	<1	<1
Copper	1	1.4	4	[NT]	<1	<1	<1	4	<1
Lead	1	3.4	<1	[NT]	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05	<0.05	[NT]	<0.05	<0.05	<0.05
Nickel	1	11	12	[NT]	19	19	36	12	18
Zinc	1	8	69	[NT]	27	27	160	70	32
<b>Monocyclic Aromatic Hydrocarbons (BTEX Compounds)</b>									
Benzene	1	950	<1	<1	<1	NA	<1	<1	<1
Toluene	1	180	<1	<1	<1	NA	<1	<1	<1
Ethylbenzene	1	80	<1	<1	<1	NA	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	NA	<2	<2	<2
o-xylene	1	350	<1	<1	<1	NA	<1	<1	<1
Total xylenes	2	NSL	<2	<2	<2	NA	<2	<2	<2
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>									
Naphthalene	0.2	16	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Concentration above the SAC			VALUE						
Concentration above the PQL			Bold						
GIL >PQL			Red						

**TABLE G2**  
**SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILS**  
 All results in µg/L unless stated otherwise.

	PQL EnviroLab Services	Recreational (10 x NHMRC ADWG)	SAMPLES						
			MW101	MW101 Lab replicate	MW102	MW102 Lab replicate	MW103	WDUP101	WDUP102
<b>Inorganic Compounds and Parameters</b>									
pH		6.5 - 8.5	4.6	NA	6.7	NA	6	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	790	NA	2200	NA	1400	NA	NA
<b>Metals and Metalloids</b>									
Arsenic (As III)	1	100	<1	[NT]	3	3	<1	<1	3
Cadmium	0.1	20	<0.1	[NT]	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (total)	1	500	<1	[NT]	<1	<1	<1	<1	<1
Copper	1	20000	4	[NT]	<1	<1	<1	4	<1
Lead	1	100	<1	[NT]	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	<0.05	[NT]	<0.05	<0.05	<0.05
Nickel	1	200	12	[NT]	19	19	36	12	18
Zinc	1	30000	69	[NT]	27	27	160	70	32
<b>Monocyclic Aromatic Hydrocarbons (BTEX Compounds)</b>									
Benzene	1	10	<1	<1	<1	NA	<1	<1	<1
Toluene	1	8000	<1	<1	<1	NA	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	NA	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	NA	<2	<2	<2
o-xylene	1	NSL	<1	<1	<1	NA	<1	<1	<1
Total xylenes	2	6000	<2	<2	<2	NA	<2	<2	<2
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>									
Naphthalene	0.2	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1
Concentration above the SAC <b>VALUE</b> Concentration above the PQL <b>Bold</b> GIL >PQL <b>Red</b>									

TABLE G4 GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs All data in µg/L unless stated otherwise											
				C <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services				10	50	1	1	1	2	1	
NEPM 2013 - Land Use Category				HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	Water Depth	Depth Category	Soil Category								
MW101	6.12	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
MW101 - Lab replicate	6.12	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
MW102	6.93	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
MW102 - Lab replicate	6.93	0m to <2m	Sand	NA	NA	NA	NA	NA	NA	NA	0.3
MW103	7.01	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0
WDUP101	6.12	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
WDUP102	6.93	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
<b>Total Number of Samples</b>				6	6	6	6	6	6	6	7
<b>Maximum Value</b>				<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.3
Concentration above the SAC				<b>VALUE</b>							
Site specific assesment (SSA) required				<b>VALUE</b>							
Concentration above the PQL				<b>Bold</b>							
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 <sub>6</sub> -C <sub>10</sub> (F1)	>C <sub>10</sub> -C <sub>16</sub> (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
MW101	6.12	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW101 - Lab replicate	6.12	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW102	6.93	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW102 - Lab replicate	6.93	0m to <2m	Sand	NA	NA	NA	NA	NA	NA	NA
MW103	7.01	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
WDUP101	6.12	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
WDUP102	6.93	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA

TABLE G5 GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT All results in µg/L unless stated otherwise.										
	PQL	NHMRC	WHO 2008	USEPA RSL	SAMPLES					
	Envirolab Services	ADWG 2011		Tapwater 2017	MW101	MW101 Lab replicate	MW102	MW103	WDUP101	WDUP102
<b>Total Recoverable Hydrocarbons (TRH)</b>										
C <sub>6</sub> -C <sub>9</sub> Aliphatics (assessed using F1)	10	-	100	-	<10	<10	<10	<10	<10	<10
>C <sub>9</sub> -C <sub>14</sub> Aliphatics (assessed using F2)	50	-	100	-	<50	<50	<50	<50	<50	<50
<b>Monocyclic Aromatic Hydrocarbons (BTEX Compounds)</b>										
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1
Total xylenes	2	600	-	-	<2	<2	<2	<2	<2	<2
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>										
Naphthalene	1	-	-	6.1	<1	<1	<1	<1	<1	<1
Concentration above the SAC <b>VALUE</b> Concentration above the PQL <b>Bold</b> GIL >PQL <b>Red</b>										



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, k)fluoranthene	Benzo(e)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenz(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	
	PQL Envirolab SYD	10	50	100	100	1	1	1	2	1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1	
	PQL Envirolab VIC	10	50	100	100	1.0	1.0	1.0	2.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1	
Intra laboratory duplicate	MW101	<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	4	<1	<0.05	12	69	
	WDUP101	<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	4	<1	<0.05	12	70	
	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4	nc	nc	12	69.5
	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	0%	nc	nc	0%	1%	
Intra laboratory duplicate	MW102	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	3	<0.1	<1	<1	<1	<0.05	19	27	
	WDUP102	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	3	<0.1	<1	<1	<1	<0.05	18	32	
	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	3	nc	nc	nc	nc	nc	18.5	29.5
	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	0%	nc	nc	nc	nc	nc	5%	17%
Field Blank	TB-W201 16/04/2025	<10	280	<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	
Trip Spike	TS-W201 16/04/2025	-	-	-	-	93%	94%	92%	91%	91%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Result outside of QA/QC acceptance criteria		Value																																



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## Appendix C: Borehole and Test pit Logs

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH301**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** HAND AUGER      **R.L. Surface:** N/A  
**Date:** 7/4/25      **Datum:** -  
**Plant Type:** HAND AUGER      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION	█	█	█	█	█	0	[Cross-hatched pattern]	CI-CH	FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, slag, ash, roots and root fibres.	w<PL			SCREEN: 10.91kg 0-0.1m, NO FCF
						0.1-0.25m, NO FCF			FILL: Silty clay, medium to high plasticity, orange brown, trace of sandstone and ironstone gravel, ash and root fibres.	w≈PL			SCREEN: 10.58kg
						0.25-0.5m, NO FCF	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone bands.	w≈PL				SCREEN: 10.61kg	
						0.5-0.75m, NO FCF							SCREEN: 6.34kg
						0.75m			END OF BOREHOLE AT 0.75m				RESIDUAL REFUSAL ON IRONSTONE BANDS
						1							
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH302**  
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP302: 0-0.1m

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** HAND AUGER      **R.L. Surface:** N/A  
**Date:** 7/4/25      **Datum:** -  
**Plant Type:** HAND AUGER      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, glass and plastic fragments, and ash.	w<PL			GRASS COVER SCREEN: 10.71kg 0-0.1m, NO FCF SCREEN: 11.84kg 0.1-0.5m, NO FCF
							0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone bands. END OF BOREHOLE AT 0.6m	w~PL			RESIDUAL
							1							REFUSAL ON IRONSTONE BANDS
							1.5							
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH303**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** HAND AUGER      **R.L. Surface:** N/A  
**Date:** 9/4/25      **Datum:** -  
**Plant Type:** HAND AUGER      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION	█	█	█	█	█	0	[Cross-hatched pattern]		FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, ash, roots and root fibres.	w<PL			SCREEN: 10.31kg 0-0.1m, NO FCF SCREEN: 11.37kg 0.1-0.4m, NO FCF
	█	█	█	█	█	0.5			FILL: Silty clay, medium to high plasticity, orange brown and light brown, trace of igneous gravel, ash and root fibres.	w<PL			SCREEN: 3.81kg 0.4-0.7m, NO FCF
	█	█	█	█	█	0.85		CI-CH	Silty CLAY: medium to high plasticity, orange brown.	w<PL			RESIDUAL
						1			END OF BOREHOLE AT 0.85m				
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH304**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** HAND AUGER      **R.L. Surface:** N/A  
**Date:** 9/4/25      **Datum:** -  
**Plant Type:** HAND AUGER      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, glass, slag, ash, roots and root fibres.	w<PL			SCREEN: 10.77kg 0-0.1m, NO FCF SCREEN: 10.70kg 0.1-0.45m, NO FCF
						0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown.	w<PL			RESIDUAL
						1			END OF BOREHOLE AT 0.75m				
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP305**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** TEST PIT      **R.L. Surface:** N/A  
**Date:** 9/4/25      **Datum:** -  
**Plant Type:** 1.7T EXCAVATOR      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION	█	█	█	█	█		0			FILL: Silty clay, medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, concrete and tile fragments, roots and root fibres.	w<PL			GRASS COVER
	█	█	█	█	█		0.5			FILL: Silty clay, medium to high plasticity, light brown, trace of igneous gravel, ash and root fibres.	w≈PL			SCREEN: 10.76kg 0-0.1m, NO FCF SCREEN: 12.29kg 0.1-0.2m, NO FCF SCREEN: 10.69kg 0.2-0.5m, NO FCF
	█	█	█	█	█		1		CI-CH	Silty CLAY: medium to high plasticity, orange brown and light brown, trace of ironstone bands and root fibres.	w≈PL			RESIDUAL
							1.5			END OF TEST PIT AT 1.1m				
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH306**  
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP304: 0-0.1m

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 9/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, plastic and root fibres.	w <sub>z</sub> PL			GRASS COVER SCREEN: 11.55kg 0-0.1m, NO FCF SCREEN: 11.65kg 0.1-0.6m, NO FCF
						0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone gravel and ash.	w <sub>z</sub> PL			RESIDUAL
						1			END OF BOREHOLE AT 0.9m				
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH307**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 9/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty sandy clay, low to medium plasticity, brown, trace of sand, igneous and sandstone gravel, roots and root fibres.	w<PL			GRASS COVER
						0.5			FILL: Silty clay, medium to high plasticity, orange brown, trace of igneous and ironstone gravel and ash.	w<PL			SCREEN: 11.47kg 0-0.1m, NO FCF SCREEN: 10.56kg 0.1-0.4m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone gravel and ash.	w<PL		
						1			END OF BOREHOLE AT 0.8m				
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH308**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 7/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel and ash.	w<PL			SCREEN: 12.34kg 0-0.1m, NO FCF SCREEN: 11.69kg 0.1-0.45m, NO FCF
						0.5		CI	Silty CLAY: medium plasticity, orange brown, trace of ironstone bands and ash.	w≈PL			RESIDUAL SCREEN: 10.53kg 0.45-0.75m, NO FCF
						1			END OF BOREHOLE AT 0.75m				REFUSAL ON IRONSTONE BANDS
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH309**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 9/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty clay, medium plasticity, light brown and brown, trace of igneous and ironstone gravel, glass and root fibres.	w <sub>z</sub> PL			GRASS COVER
							0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone gravel and ash.	w <sub>z</sub> PL			SCREEN: 10.83kg 0-0.1m, NO FCF SCREEN: 11.34kg 0.1-0.2m, NO FCF RESIDUAL
							1			END OF BOREHOLE AT 0.7m				
							1.5							
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP310**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** TEST PIT      **R.L. Surface:** N/A  
**Date:** 7/4/25      **Datum:** -  
**Plant Type:** 1.7T EXCAVATOR      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, dark brown, trace of igneous and sandstone gravel, sandstone boulders and plastic.	w<PL			SCREEN: 11.53kg 0-0.1m, NO FCF SCREEN: 10.81kg 0.1-0.4m, NO FCF
						0.5			as above, but brown. END OF TEST PIT AT 0.45m	w≈PL			INSUFFICIENT RETURN FOR BULK SCREEN REFUSAL ON SANDSTONE BOULDERS
						1							
						1.5							
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP311**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** TEST PIT      **R.L. Surface:** N/A  
**Date:** 7/4/25      **Datum:** -  
**Plant Type:** 1.7T EXCAVATOR      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, dark brown, trace of igneous and sandstone gravel, sandstone, bricks, ash, roots and root fibres.	w<PL			SCREEN: 10.78kg 0-0.1m, FCF1 SCREEN: 11.38kg 0.1-0.6m, NO FCF
						0.5			FILL: Silty clay, low to medium plasticity, brown, trace of sand, igneous and sandstone gravel, ash and root fibres.	w≈PL			SCREEN: 11.14kg 0.6-0.8m, NO FCF
						1		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone bands and ash.	w≈PL			RESIDUAL
									as above, but without ash.				
						1.5		END OF TEST PIT AT 1.3m					
						2							
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH312**  
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP303: 0-0.1m

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** HAND AUGER      **R.L. Surface:** N/A  
**Date:** 9/4/25      **Datum:** -  
**Plant Type:** HAND AUGER      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous, sandstone and ironstone gravel, roots and root fibres.	w<PL			GRASS COVER
							0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ironstone gravel and ash.	w≈PL			SCREEN: 10.46kg 0-0.1m, NO FCF SCREEN: 10.06kg 0.1-0.4m, NO FCF RESIDUAL
							1			END OF BOREHOLE AT 0.8m				
							1.5							
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH313**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 9/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, sandstone and igneous gravel, ash, roots and root fibres.	w<PL			GRASS COVER
							0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown, trace of ash. END OF BOREHOLE AT 0.5m	w<PL			SCREEN: 10.95kg 0-0.1m, NO FCF SCREEN: 10.41kg 0.1-0.4m, NO FCF RESIDUAL
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP314**  
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP301: 0-0.1m

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> TEST PIT	<b>R.L. Surface:</b> N/A
<b>Date:</b> 7/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> 1.7T EXCAVATOR <b>Logged/Checked by:</b> C.B./V.B.		

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty gravelly sand, fine to medium grained, dark brown, fine to medium grained, sub-angular and angular igneous gravel, trace of sandstone gravel, asphalt and tile, glass, and root fibres.	D			GRASS COVER
							0.5		CI-CH	FILL: Silty clay, medium to high plasticity, orange brown, trace of sandstone gravel, plastic, ash and root fibres. Silty CLAY: medium to high plasticity, red brown and grey, trace of ironstone bands, roots and root fibres.	w≈PL			SCREEN: 14.94kg 0-0.1m, NO FCF SCREEN: 10.51kg 0.1-0.4m, NO FCF RESIDUAL
							1			END OF TEST PIT AT 0.9m				
							1.5							
							2							
							2.5							
							3							
							3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP315**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> TEST PIT	<b>R.L. Surface:</b> N/A
<b>Date:</b> 7/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> 1.7T EXCAVATOR <b>Logged/Checked by:</b> C.B./V.B.		

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty gravelly clay, medium plasticity, dark brown, fine to medium grained, sub-angular and angular igneous gravel, trace of sand, sandstone gravel, glass, concrete and plastic fragments, ash and root fibres.	w $\approx$ PL			GRASS COVER
						0.5		FILL: Silty clay, medium plasticity, grey brown and orange brown, trace of sand, igneous and sandstone gravel, concrete fragments and root fibres.	w<PL				SCREEN: 11.47kg 0-0.1m, NO FCF
						1		FILL: Silty clay, medium to high plasticity, orange brown, trace of igneous gravel, ash, roots and root fibres.	w<PL				SCREEN: 11.38kg 0.1-0.2m, NO FCF
						1.5		as above, but dark brown.	w<PL				SCREEN: 12.12kg 0.2-0.4m, NO FCF
						1.5	CI-CH	Silty CLAY: medium to high plasticity, orange brown and red brown, trace of ironstone bands.	w $\approx$ PL				SCREEN: 10.19kg 0.4-0.7m, NO FCF
						2		END OF TEST PIT AT 1.8m					SCREEN: 10.48kg 0.7-1.4m, NO FCF
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**TP316**  
1/1

Environmental logs are not to be used for geotechnical purposes

**Client:** SUNDALE NORTHLAND DEVELOPMENT PTY LTD  
**Project:** PROPOSED RESIDENTIAL DEVELOPMENT  
**Location:** 12-16 BENT STREET, LINDFIELD, NSW

**Job No.:** E35535BW      **Method:** TEST PIT      **R.L. Surface:** N/A  
**Date:** 7/4/25      **Datum:** -  
**Plant Type:** 1.7T EXCAVATOR      **Logged/Checked by:** C.B./V.B.

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty sand, fine to medium grained, dark brown, trace of igneous, sandstone and quartz gravel, roots and root fibres.	D			GRASS AND SHRUB COVER  SCREEN: 10.58kg 0-0.1m, NO FCF SCREEN: 10.83kg 0.1-0.2m, NO FCF SCREEN: 10.93kg 0.2-0.6m, NO FCF SCREEN: 11.76kg 0.6-1.4m, NO FCF
						0.5			FILL: Silty clay, low to medium plasticity, dark brown, trace of igneous gravel and ash.	w<PL			
						1			FILL: Silty clay, medium to high plasticity, orange brown and red brown, trace of sandstone gravel, ash and root fibres.	w<PL			
						1.5		CI-CH	Silty CLAY: medium to high plasticity, grey and orange brown.	w<PL			RESIDUAL
						2			END OF TEST PIT AT 1.8m				
						2.5							
						3							
						3.5							

# JKEnvironments

## ENVIRONMENTAL LOG



Log No.  
**BH317**  
1/1

Environmental logs are not to be used for geotechnical purposes

<b>Client:</b>	SUNDALE NORTHLAND DEVELOPMENT PTY LTD
<b>Project:</b>	PROPOSED RESIDENTIAL DEVELOPMENT
<b>Location:</b>	12-16 BENT STREET, LINDFIELD, NSW

<b>Job No.:</b> E35535BW	<b>Method:</b> HAND AUGER	<b>R.L. Surface:</b> N/A
<b>Date:</b> 9/4/25	<b>Datum:</b> -	
<b>Plant Type:</b> HAND AUGER	<b>Logged/Checked by:</b> C.B./V.B.	

Groundwater Record	SAMPLES					Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL	DB									
DRY ON COMPLETION							0			FILL: Silty clay, low to medium plasticity, dark brown, trace of sand, igneous and sandstone gravel, plastic, slag, ash, roots and root fibres.	w<PL			GRASS COVER SCREEN: 10.92kg 0-0.1m, NO FCF SCREEN: 10.04kg 0.1-0.5m, NO FCF
							0.5		CI-CH	Silty CLAY: medium to high plasticity, orange brown.	w<PL			RESIDUAL
							1			END OF BOREHOLE AT 0.8m				
							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<sub>c</sub>’ 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.

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## 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 68% 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	

**Laboratory Classification Criteria**

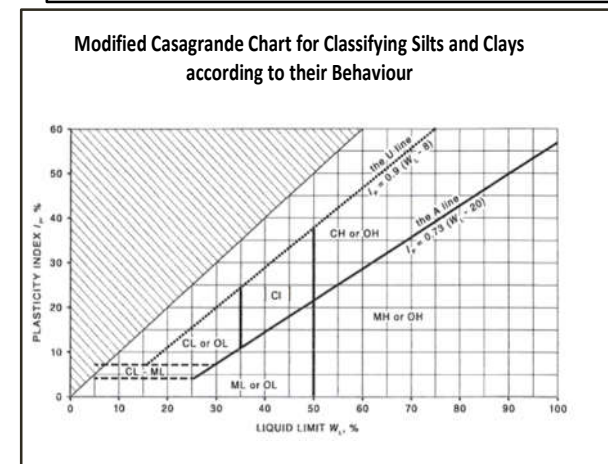
A well graded coarse grained soil is one for which the coefficient of uniformity  $C_u > 4$  and the coefficient of curvature  $1 < C_c < 3$ . Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_u = \frac{D_{60}}{D_{10}} \quad \text{and} \quad C_c = \frac{(D_{30})^2}{D_{10} D_{60}}$$

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:**
- 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.
  - 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.
  - Clay soils with liquid limits  $> 35\%$  and  $\leq 50\%$  may be classified as being of medium plasticity.
  - The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	
fine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–





## 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 <sub>c</sub> =	5	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.	
		7		
		3R		
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	Moisture content estimated to be greater than plastic limit.		
	w ≈ PL	Moisture content estimated to be approximately equal to plastic limit.		
	w < PL	Moisture content estimated to be less than plastic limit.		
	w ≈ LL	Moisture content estimated to be near liquid limit.		
	w > LL	Moisture content estimated to be wet of liquid limit.		
	(Coarse Grained Soils)	D	DRY – runs freely through fingers.	
M		MOIST – does not run freely but no free water visible on soil surface.		
W		WET – free water visible on soil surface.		
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – unconfined compressive strength ≤ 25kPa.		
	S	SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa.		
	F	FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa.		
	St	STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa.		
	VSt	VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa.		
	Hd	HARD – unconfined compressive strength > 400kPa.		
	Fr	FRIABLE – strength not attainable, soil crumbles.		
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.		
Density Index/ Relative Density (Cohesionless Soils)		<b>Density Index (I<sub>D</sub>) Range (%)</b>	<b>SPT 'N' Value Range (Blows/300mm)</b>	
	VL	VERY LOOSE	≤ 15	0 – 4
	L	LOOSE	> 15 and ≤ 35	4 – 10
	MD	MEDIUM DENSE	> 35 and ≤ 65	10 – 30
	D	DENSE	> 65 and ≤ 85	30 – 50
	VD	VERY DENSE	> 85	> 50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other assessment.		



Log Column	Symbol	Definition
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
Remarks	'V' bit 'TC' bit <b>T</b> <sub>60</sub> Soil Origin	<p>Hardened steel 'V' shaped bit.</p> <p>Twin pronged tungsten carbide bit.</p> <p>Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.</p> <p>The geological origin of the soil can generally be described as:</p> <p><b>RESIDUAL</b> – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock.</p> <p><b>EXTREMELY WEATHERED</b> – 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.</p> <p><b>ALLUVIAL</b> – soil deposited by creeks and rivers.</p> <p><b>ESTUARINE</b> – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents.</p> <p><b>MARINE</b> – soil deposited in a marine environment.</p> <p><b>AEOLIAN</b> – soil carried and deposited by wind.</p> <p><b>COLLUVIAL</b> – 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.</p> <p><b>LITTORAL</b> – beach deposited soil.</p>



## 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)	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		
Slightly Weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	Rock shows no sign of decomposition of individual minerals or colour changes.

**NOTE 1:** The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: 'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'. There is some change in rock strength.

## Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.



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## **Appendix D: Laboratory Reports & COC Documents**



## **CERTIFICATE OF ANALYSIS 377981**

### **Client Details**

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang
<b>Address</b>	PO Box 976, North Ryde BC, NSW, 1670

### **Sample Details**

<b>Your Reference</b>	<b><u>E35535BW, Lindfield, NSW</u></b>
<b>Number of Samples</b>	59 Soil, 2 Material, 1 Water
<b>Date samples received</b>	10/04/2025
<b>Date completed instructions received</b>	10/04/2025

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### **Report Details**

<b>Date results requested by</b>	17/04/2025
<b>Date of Issue</b>	16/04/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### **Asbestos Approved By**

Analysed by Asbestos Approved Analyst: Nyovan Moonean, Amanda Lee

Authorised by Asbestos Approved Signatory: Lucy Zhu

#### **Results Approved By**

Dragana Tomas, Senior Chemist  
Giovanni Agosti, Group Technical Manager  
Lucy Zhu, Asbestos Supervisor  
Timothy Toll, Senior Chemist

#### **Authorised By**

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		377981-1	377981-3	377981-4	377981-6	377981-9
Your Reference	UNITS	BH301	BH301	BH302	BH303	BH304
Depth		0-0.1	0.6-0.7	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	7/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	86	87	86	88	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		377981-11	377981-14	377981-16	377981-19	377981-20
Your Reference	UNITS	TP305	BH306	BH307	BH308	BH308
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	88	86	88	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		377981-21	377981-23	377981-25	377981-27	377981-29
Your Reference	UNITS	BH309	TP310	TP311	TP311	BH312
Depth		0-0.1	0-0.1	0-0.1	1.0-1.1	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	88	89	96	89	91

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		377981-31	377981-33	377981-36	377981-37	377981-41
Your Reference	UNITS	BH313	TP314	TP315	TP315	TP316
Depth		0-0.1	0-0.1	0-0.1	0.2-0.4	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	95	90	92	90

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		377981-45	377981-48	377981-50	377981-52	377981-54
Your Reference	UNITS	BH317	SP1	SP2	SP3	SP4
Depth		0-0.1	0.4-0.5	0.3-0.4	0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<50	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<50	<25
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	<50	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.4	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<1	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<2	<1
m+p-xylene	mg/kg	<2	<2	<2	<4	<2
o-Xylene	mg/kg	<1	<1	<1	<2	<1
Naphthalene	mg/kg	<1	<1	<1	<2	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<2	<1
Surrogate aaa-Trifluorotoluene	%	91	89	87	86	80

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		377981-55	377981-56	377981-60	377981-61
Your Reference	UNITS	SDUP1	SDUP2	TB-1	TS-1
Depth		-	-	-	-
Date Sampled		7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	[NA]
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	[NA]
vTRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	98%
Toluene	mg/kg	<0.5	<0.5	<0.5	99%
Ethylbenzene	mg/kg	<1	<1	<1	99%
m+p-xylene	mg/kg	<2	<2	<2	99%
o-Xylene	mg/kg	<1	<1	<1	99%
Naphthalene	mg/kg	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	99	90	95	99

svTRH (C10-C40) in Soil						
Our Reference		377981-1	377981-3	377981-4	377981-6	377981-9
Your Reference	UNITS	BH301	BH301	BH302	BH303	BH304
Depth		0-0.1	0.6-0.7	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	7/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	10/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	11/04/2025	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	260	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	220	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	480	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	400	<100	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	240	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	640	<50	<50	<50	<50
Surrogate o-Terphenyl	%	111	103	103	104	103

svTRH (C10-C40) in Soil						
Our Reference		377981-11	377981-14	377981-16	377981-19	377981-20
Your Reference	UNITS	TP305	BH306	BH307	BH308	BH308
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	12/04/2025	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	120	<100	220	100	<100
Total +ve TRH (C10-C36)	mg/kg	120	<50	220	100	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	140	<100	220	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	<100	270	140	<100
Total +ve TRH (>C10-C40)	mg/kg	240	<50	490	140	<50
Surrogate o-Terphenyl	%	102	104	109	103	108

## svTRH (C10-C40) in Soil

Our Reference		377981-21	377981-23	377981-25	377981-27	377981-29
Your Reference	UNITS	BH309	TP310	TP311	TP311	BH312
Depth		0-0.1	0-0.1	0-0.1	1.0-1.1	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	12/04/2025	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	160	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	230	320	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	230	480	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	120	340	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	280	280	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	400	620	<50	<50	<50
Surrogate o-Terphenyl	%	105	111	104	101	104

## svTRH (C10-C40) in Soil

Our Reference		377981-31	377981-33	377981-36	377981-37	377981-41
Your Reference	UNITS	BH313	TP314	TP315	TP315	TP316
Depth		0-0.1	0-0.1	0-0.1	0.2-0.4	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	12/04/2025	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	140	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	180	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	320	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	240	<100	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	220	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	460	<50	<50	<50	<50
Surrogate o-Terphenyl	%	117	104	104	102	104

svTRH (C10-C40) in Soil						
Our Reference		377981-45	377981-48	377981-50	377981-52	377981-54
Your Reference	UNITS	BH317	SP1	SP2	SP3	SP4
Depth		0-0.1	0.4-0.5	0.3-0.4	0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	12/04/2025	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	190	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	130	120	<100	130	120
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	140	120	210	340	350
Total +ve TRH (C10-C36)	mg/kg	270	230	210	660	480
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	150	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	150	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	200	180	190	330	350
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	120	110	200	260	260
Total +ve TRH (>C10-C40)	mg/kg	320	290	390	740	610
Surrogate o-Terphenyl	%	110	106	110	119	128

svTRH (C10-C40) in Soil				
Our Reference		377981-55	377981-56	377981-60
Your Reference	UNITS	SDUP1	SDUP2	TB-1
Depth		-	-	-
Date Sampled		7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	12/04/2025	12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	120	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	310	<100
Total +ve TRH (C10-C36)	mg/kg	<50	430	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	290	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	280	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	570	<50
Surrogate o-Terphenyl	%	106	111	106

PAHs in Soil						
Our Reference		377981-1	377981-3	377981-4	377981-6	377981-9
Your Reference	UNITS	BH301	BH301	BH302	BH303	BH304
Depth		0-0.1	0.6-0.7	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	7/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	<0.1	<0.1	0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1	<0.1	0.2	0.5	0.7
Pyrene	mg/kg	0.9	<0.1	0.2	0.5	0.8
Benzo(a)anthracene	mg/kg	0.6	<0.1	0.1	0.3	0.5
Chrysene	mg/kg	0.6	<0.1	0.1	0.4	0.5
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	0.3	0.7	1
Benzo(a)pyrene	mg/kg	0.71	<0.05	0.2	0.5	0.66
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	<0.1	<0.1	0.2	0.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(g,h,i)perylene	mg/kg	0.4	<0.1	0.1	0.3	0.5
Total +ve PAH's	mg/kg	6.0	<0.05	1.3	3.5	5.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.9	<0.5	<0.5	0.6	1
Benzo(a)pyrene TEQ calc(half)	mg/kg	1	<0.5	<0.5	0.6	1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.0	<0.5	<0.5	0.7	1
Surrogate <i>p</i> -Terphenyl-d14	%	107	108	108	112	111

PAHs in Soil						
Our Reference		377981-11	377981-14	377981-16	377981-19	377981-20
Your Reference	UNITS	TP305	BH306	BH307	BH308	BH308
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	<0.1	0.4	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.3	0.2	1.4	<0.1	<0.1
Pyrene	mg/kg	1.2	0.2	1.4	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.7	0.1	0.7	<0.1	<0.1
Chrysene	mg/kg	0.7	0.1	0.9	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	2	0.2	2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	1.0	0.1	1.1	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6	<0.1	0.6	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.2	<0.1	0.2	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.7	<0.1	0.7	<0.1	<0.1
Total +ve PAH's	mg/kg	8.6	0.86	9.4	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.5	<0.5	1.6	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.5	<0.5	1.6	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.5	<0.5	1.6	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	107	112	111	107	106

PAHs in Soil						
Our Reference		377981-21	377981-23	377981-25	377981-27	377981-29
Your Reference	UNITS	BH309	TP310	TP311	TP311	BH312
Depth		0-0.1	0-0.1	0-0.1	1.0-1.1	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.3	0.4	<0.1	0.1
Pyrene	mg/kg	0.1	0.3	0.4	<0.1	0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	0.6	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	0.2	0.4	<0.05	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	1.7	2.9	<0.05	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	110	111	106	107	110

PAHs in Soil						
Our Reference		377981-31	377981-33	377981-36	377981-37	377981-41
Your Reference	UNITS	BH313	TP314	TP315	TP315	TP316
Depth		0-0.1	0-0.1	0-0.1	0.2-0.4	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.1	<0.05	<0.05	<0.05	0.07
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	112	109	108	112	106

PAHs in Soil						
Our Reference		377981-45	377981-48	377981-50	377981-52	377981-54
Your Reference	UNITS	BH317	SP1	SP2	SP3	SP4
Depth		0-0.1	0.4-0.5	0.3-0.4	0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.9	0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	0.6	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	4.2	0.4	0.3	0.1	0.4
Pyrene	mg/kg	4.1	0.4	0.3	0.1	0.4
Benzo(a)anthracene	mg/kg	2.5	0.3	0.2	<0.1	0.2
Chrysene	mg/kg	2.1	0.3	0.2	0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	3.6	0.5	0.4	<0.2	0.4
Benzo(a)pyrene	mg/kg	2.7	0.4	0.2	0.1	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	1.0	0.2	0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1.3	0.2	0.2	<0.1	0.2
Total +ve PAH's	mg/kg	25	2.8	1.8	0.4	2.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	3.8	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	3.8	0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	3.8	0.6	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	95	110	107	123	117

PAHs in Soil				
Our Reference		377981-55	377981-56	377981-60
Your Reference	UNITS	SDUP1	SDUP2	TB-1
Depth		-	-	-
Date Sampled		7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.3	<0.1
Pyrene	mg/kg	<0.1	0.3	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	0.1	1.7	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	109	108	111

Organochlorine Pesticides in soil						
Our Reference		377981-1	377981-4	377981-6	377981-9	377981-11
Your Reference	UNITS	BH301	BH302	BH303	BH304	TP305
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	0.7	<0.1	0.3	0.2	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	1	<0.1	0.3	0.2	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	114	120	123	120	114

Organochlorine Pesticides in soil						
Our Reference		377981-14	377981-16	377981-19	377981-21	377981-23
Your Reference	UNITS	BH306	BH307	BH308	BH309	TP310
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		9/04/2025	9/04/2025	7/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	0.8	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	123	118	118	115	122

Organochlorine Pesticides in soil						
Our Reference		377981-25	377981-29	377981-31	377981-33	377981-36
Your Reference	UNITS	TP311	BH312	BH313	TP314	TP315
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	121	120	117	116

Organochlorine Pesticides in soil						
Our Reference		377981-37	377981-41	377981-45	377981-48	377981-50
Your Reference	UNITS	TP315	TP316	BH317	SP1	SP2
Depth		0.2-0.4	0-0.1	0-0.1	0.4-0.5	0.3-0.4
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	0.1	0.1	0.2
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	0.1	0.1	0.2
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	111	102	118	118

Organochlorine Pesticides in soil					
Our Reference		377981-52	377981-54	377981-55	377981-56
Your Reference	UNITS	SP3	SP4	SDUP1	SDUP2
Depth		0.4-0.5	0.4-0.5	-	-
Date Sampled		9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	135	130	121	119

Organophosphorus Pesticides in Soil						
Our Reference		377981-1	377981-4	377981-6	377981-9	377981-11
Your Reference	UNITS	BH301	BH302	BH303	BH304	TP305
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	114	120	123	120	114

Organophosphorus Pesticides in Soil						
Our Reference		377981-14	377981-16	377981-19	377981-21	377981-23
Your Reference	UNITS	BH306	BH307	BH308	BH309	TP310
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		9/04/2025	9/04/2025	7/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	123	118	118	115	122

Organophosphorus Pesticides in Soil						
Our Reference		377981-25	377981-29	377981-31	377981-33	377981-36
Your Reference	UNITS	TP311	BH312	BH313	TP314	TP315
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	121	120	117	116

Organophosphorus Pesticides in Soil						
Our Reference		377981-37	377981-41	377981-45	377981-48	377981-50
Your Reference	UNITS	TP315	TP316	BH317	SP1	SP2
Depth		0.2-0.4	0-0.1	0-0.1	0.4-0.5	0.3-0.4
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	111	102	118	118

Organophosphorus Pesticides in Soil					
Our Reference		377981-52	377981-54	377981-55	377981-56
Your Reference	UNITS	SP3	SP4	SDUP1	SDUP2
Depth		0.4-0.5	0.4-0.5	-	-
Date Sampled		9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	135	130	121	119

PCBs in Soil						
Our Reference		377981-1	377981-4	377981-6	377981-9	377981-11
Your Reference	UNITS	BH301	BH302	BH303	BH304	TP305
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	117	122	118	122	117

PCBs in Soil						
Our Reference		377981-14	377981-16	377981-19	377981-21	377981-23
Your Reference	UNITS	BH306	BH307	BH308	BH309	TP310
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		9/04/2025	9/04/2025	7/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	123	121	120	119	125

PCBs in Soil						
Our Reference		377981-25	377981-29	377981-31	377981-33	377981-36
Your Reference	UNITS	TP311	BH312	BH313	TP314	TP315
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	121	123	123	119	119

PCBs in Soil						
Our Reference		377981-37	377981-41	377981-45	377981-48	377981-50
Your Reference	UNITS	TP315	TP316	BH317	SP1	SP2
Depth		0.2-0.4	0-0.1	0-0.1	0.4-0.5	0.3-0.4
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	122	114	109	120	120

PCBs in Soil					
Our Reference		377981-52	377981-54	377981-55	377981-56
Your Reference	UNITS	SP3	SP4	SDUP1	SDUP2
Depth		0.4-0.5	0.4-0.5	-	-
Date Sampled		9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	138	133	121	121

Acid Extractable metals in soil						
Our Reference		377981-1	377981-3	377981-4	377981-6	377981-9
Your Reference	UNITS	BH301	BH301	BH302	BH303	BH304
Depth		0-0.1	0.6-0.7	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	7/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	7	12	7	29	10
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	22	25	11	34	15
Copper	mg/kg	72	12	26	38	38
Lead	mg/kg	230	19	94	610	210
Mercury	mg/kg	0.2	<0.1	0.2	0.2	0.2
Nickel	mg/kg	6	3	2	4	6
Zinc	mg/kg	150	6	45	100	160

Acid Extractable metals in soil						
Our Reference		377981-11	377981-14	377981-16	377981-19	377981-20
Your Reference	UNITS	TP305	BH306	BH307	BH308	BH308
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	<4	5	8	70	13
Cadmium	mg/kg	<0.4	<0.4	0.5	<0.4	<0.4
Chromium	mg/kg	8	9	12	12	29
Copper	mg/kg	34	17	38	29	6
Lead	mg/kg	700	96	200	92	18
Mercury	mg/kg	0.1	2.3	0.2	<0.1	<0.1
Nickel	mg/kg	5	3	3	5	3
Zinc	mg/kg	78	48	150	55	7

Acid Extractable metals in soil						
Our Reference		377981-21	377981-23	377981-25	377981-27	377981-29
Your Reference	UNITS	BH309	TP310	TP311	TP311	BH312
Depth		0-0.1	0-0.1	0-0.1	1.0-1.1	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	11	9	15	7	5
Cadmium	mg/kg	<0.4	0.7	<0.4	<0.4	<0.4
Chromium	mg/kg	13	13	15	20	10
Copper	mg/kg	10	99	88	8	39
Lead	mg/kg	30	260	180	12	72
Mercury	mg/kg	<0.1	0.3	0.3	<0.1	0.1
Nickel	mg/kg	3	6	5	4	2
Zinc	mg/kg	25	340	360	17	63

Acid Extractable metals in soil						
Our Reference		377981-31	377981-33	377981-36	377981-37	377981-41
Your Reference	UNITS	BH313	TP314	TP315	TP315	TP316
Depth		0-0.1	0-0.1	0-0.1	0.2-0.4	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	17	<4	6	7	10
Cadmium	mg/kg	0.5	<0.4	<0.4	<0.4	0.5
Chromium	mg/kg	22	83	18	10	11
Copper	mg/kg	100	27	15	10	22
Lead	mg/kg	120	14	39	24	96
Mercury	mg/kg	1.6	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	72	10	<1	5
Zinc	mg/kg	210	51	77	6	79

Acid Extractable metals in soil						
Our Reference		377981-45	377981-48	377981-50	377981-52	377981-54
Your Reference	UNITS	BH317	SP1	SP2	SP3	SP4
Depth		0-0.1	0.4-0.5	0.3-0.4	0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	12	340	12	8	16
Cadmium	mg/kg	0.7	1	1	0.8	0.6
Chromium	mg/kg	21	24	15	14	22
Copper	mg/kg	46	86	81	55	52
Lead	mg/kg	190	1,000	260	180	190
Mercury	mg/kg	0.2	0.3	0.2	0.2	0.2
Nickel	mg/kg	5	6	6	7	6
Zinc	mg/kg	360	320	350	320	260

Acid Extractable metals in soil					
Our Reference		377981-55	377981-56	377981-60	377981-63
Your Reference	UNITS	SDUP1	SDUP2	TB-1	SDUP1 - [TRIPLICATE]
Depth		-	-	-	-
Date Sampled		7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Arsenic	mg/kg	<4	10	<4	4
Cadmium	mg/kg	<0.4	0.8	<0.4	<0.4
Chromium	mg/kg	77	13	3	91
Copper	mg/kg	24	110	<1	29
Lead	mg/kg	19	300	3	15
Mercury	mg/kg	<0.1	0.3	<0.1	<0.1
Nickel	mg/kg	67	7	<1	76
Zinc	mg/kg	47	380	2	76

Moisture						
Our Reference		377981-1	377981-3	377981-4	377981-6	377981-9
Your Reference	UNITS	BH301	BH301	BH302	BH303	BH304
Depth		0-0.1	0.6-0.7	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	7/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Moisture	%	19	24	20	30	20

Moisture						
Our Reference		377981-11	377981-14	377981-16	377981-19	377981-20
Your Reference	UNITS	TP305	BH306	BH307	BH308	BH308
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Moisture	%	15	26	24	17	22

Moisture						
Our Reference		377981-21	377981-23	377981-25	377981-27	377981-29
Your Reference	UNITS	BH309	TP310	TP311	TP311	BH312
Depth		0-0.1	0-0.1	0-0.1	1.0-1.1	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Moisture	%	21	33	19	21	23

Moisture						
Our Reference		377981-31	377981-33	377981-36	377981-37	377981-41
Your Reference	UNITS	BH313	TP314	TP315	TP315	TP316
Depth		0-0.1	0-0.1	0-0.1	0.2-0.4	0-0.1
Date Sampled		9/04/2025	7/04/2025	7/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Moisture	%	26	8.5	15	15	14

Moisture						
Our Reference		377981-45	377981-48	377981-50	377981-52	377981-54
Your Reference	UNITS	BH317	SP1	SP2	SP3	SP4
Depth		0-0.1	0.4-0.5	0.3-0.4	0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025
Moisture	%	22	28	31	62	43

Moisture			
Our Reference		377981-55	377981-56
Your Reference	UNITS	SDUP1	SDUP2
Depth		-	-
Date Sampled		7/04/2025	7/04/2025
Type of sample		Soil	Soil
Date prepared	-	11/04/2025	11/04/2025
Date analysed	-	14/04/2025	14/04/2025
Moisture	%	8.4	33

Asbestos ID - soils NEPM - ASB-001						
Our Reference		377981-1	377981-4	377981-6	377981-9	377981-11
Your Reference	UNITS	BH301	BH302	BH303	BH304	TP305
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Sample mass tested	g	571.27	597.06	642.39	649.57	735.51
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos <sup>#1</sup>	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-	-	-	-
FA and AF Estimation*	g	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil

## Asbestos ID - soils NEPM - ASB-001

Our Reference		377981-14	377981-16	377981-19	377981-21	377981-23
Your Reference	UNITS	BH306	BH307	BH308	BH309	TP310
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		9/04/2025	9/04/2025	7/04/2025	9/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Sample mass tested	g	562.95	540.39	723.42	588	456.82
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos <sup>#1</sup>	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-	-	-	-
FA and AF Estimation*	g	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - soils NEPM - ASB-001						
Our Reference		377981-25	377981-29	377981-31	377981-33	377981-36
Your Reference	UNITS	TP311	BH312	BH313	TP314	TP315
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		7/04/2025	9/04/2025	9/04/2025	7/04/2025	7/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Sample mass tested	g	712.99	475.13	509.7	938.53	755.96
Sample Description	-	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos <sup>#1</sup>	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-	-	-	-
FA and AF Estimation*	g	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - soils NEPM - ASB-001						
Our Reference		377981-37	377981-41	377981-45	377981-48	377981-50
Your Reference	UNITS	TP315	TP316	BH317	SP1	SP2
Depth		0.2-0.4	0-0.1	0-0.1	0.4-0.5	0.3-0.4
Date Sampled		7/04/2025	7/04/2025	9/04/2025	9/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Sample mass tested	g	606.53	788.7	567.32	509.08	387.81
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-	-	-	-
FA and AF Estimation*	g	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - soils NEPM - ASB-001			
Our Reference		377981-52	377981-54
Your Reference	UNITS	SP3	SP4
Depth		0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025
Type of sample		Soil	Soil
Date analysed	-	16/04/2025	16/04/2025
Sample mass tested	g	266.24	351.23
Sample Description	-	Brown fine-grained soil, rocks & mulch	Brown fine-grained soil, rocks & mulch
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg  Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg  Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-
FA and AF Estimation*	g	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001
Asbestos comments	-	Nil	Nil

vTRH(C6-C10)/BTEXN in Water		
Our Reference		377981-62
Your Reference	UNITS	FR-S301-HA
Depth		-
Date Sampled		9/04/2025
Type of sample		Water
Date extracted	-	14/04/2025
Date analysed	-	15/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	µg/L	58
TRH C <sub>6</sub> - C <sub>10</sub>	µg/L	65
TRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	µg/L	65
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	101
Surrogate Toluene-d8	%	103
Surrogate 4-Bromofluorobenzene	%	103

svTRH (C10-C40) in Water		
Our Reference		377981-62
Your Reference	UNITS	FR-S301-HA
Depth		-
Date Sampled		9/04/2025
Type of sample		Water
Date extracted	-	11/04/2025
Date analysed	-	15/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	µg/L	<50
TRH C <sub>15</sub> - C <sub>28</sub>	µg/L	<100
TRH C <sub>29</sub> - C <sub>36</sub>	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C <sub>10</sub> - C <sub>16</sub>	µg/L	<50
TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	µg/L	<50
TRH >C <sub>16</sub> - C <sub>34</sub>	µg/L	<100
TRH >C <sub>34</sub> - C <sub>40</sub>	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	91

PAHs in Water		
Our Reference		377981-62
Your Reference	UNITS	FR-S301-HA
Depth		-
Date Sampled		9/04/2025
Type of sample		Water
Date extracted	-	11/04/2025
Date analysed	-	15/04/2025
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	<0.1
Surrogate <i>p</i> -Terphenyl-d14	%	73

Metals in Waters - Acid extractable		
Our Reference		377981-62
Your Reference	UNITS	FR-S301-HA
Depth		-
Date Sampled		9/04/2025
Type of sample		Water
Date prepared	-	14/04/2025
Date analysed	-	15/04/2025
Arsenic - Total	mg/L	<0.05
Cadmium - Total	mg/L	<0.01
Chromium - Total	mg/L	<0.01
Copper - Total	mg/L	0.2
Lead - Total	mg/L	<0.03
Mercury - Total	mg/L	<0.0005
Nickel - Total	mg/L	<0.02
Zinc - Total	mg/L	0.04

Asbestos ID - materials			
Our Reference		377981-58	377981-59
Your Reference	UNITS	FCF1-TP311	SP4-FCF1
Depth		0-0.1	0-0.1
Date Sampled		7/04/2025	9/04/2025
Type of sample		Material	Material
Date analysed	-	14/04/2025	14/04/2025
Mass / Dimension of Sample	-	59x53x5mm	87x33x5mm
Sample Description	-	Beige fibre cement material	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected	Chrysotile asbestos detected
Trace Analysis	-	[NT]	[NT]

Method ID	Methodology Summary
<b>ASB-001</b>	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
<b>ASB-001</b>	<p>Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004.</p> <p>Results reported denoted with * are outside our scope of NATA accreditation.</p> <p>NOTE#1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM &gt;7mm, &lt;7mm and FA/AF relative to the sample mass tested)</p> <p>NOTE#2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.</p> <p>Estimation = Estimated asbestos weight</p> <p>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.</p>
<b>Inorg-008</b>	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
<b>Metals-020</b>	<p>Determination of various metals by ICP-AES.</p> <p>Total Phosphate determined stoichiometrically from Phosphorus (assumed to be present as Phosphate).</p> <p>Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.</p>
<b>Metals-021</b>	Determination of Mercury by Cold Vapour AAS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.  F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.  Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS.  Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.

Method ID	Methodology Summary
<b>Org-023</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
<b>Org-023</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-023	<25	1	<25	<25	0	97	88
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-023	<25	1	<25	<25	0	97	88
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	99	85
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	97	90
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	99	92
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	94	87
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	100	91
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	90	1	86	89	3	89	86

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-023	[NT]	21	<25	<25	0	94	92
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-023	[NT]	21	<25	<25	0	94	92
Benzene	mg/kg	0.2	Org-023	[NT]	21	<0.2	<0.2	0	92	88
Toluene	mg/kg	0.5	Org-023	[NT]	21	<0.5	<0.5	0	94	92
Ethylbenzene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	97	94
m+p-xylene	mg/kg	2	Org-023	[NT]	21	<2	<2	0	94	92
o-Xylene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	97	95
Naphthalene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	21	88	93	6	94	88

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-023	[NT]	45	<25	<25	0	[NT]	[NT]
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-023	[NT]	45	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	45	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	45	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	45	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	45	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	45	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	45	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	45	91	91	0	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-023	[NT]	55	<25	<25	0	[NT]	[NT]
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-023	[NT]	55	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	55	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	55	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	55	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	55	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	55	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	55	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	55	99	96	3	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			12/04/2025	1	12/04/2025	12/04/2025		12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	<50	1	<50	<50	0	98	100
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	<100	1	260	320	21	94	102
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	<100	1	220	180	20	100	74
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	<50	1	<50	<50	0	98	100
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	<100	1	400	440	10	94	102
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	<100	1	240	120	67	100	74
Surrogate o-Terphenyl	%		Org-020	108	1	111	107	4	115	98

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	12/04/2025	12/04/2025		12/04/2025	12/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	[NT]	21	<50	<50	0	126	96
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	[NT]	21	<100	<100	0	94	96
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	[NT]	21	230	190	19	105	104
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	[NT]	21	<50	<50	0	126	96
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	[NT]	21	120	110	9	94	96
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	[NT]	21	280	210	29	105	104
Surrogate o-Terphenyl	%		Org-020	[NT]	21	105	108	3	106	101

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	12/04/2025	12/04/2025		[NT]	[NT]
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	[NT]	45	<50	<50	0	[NT]	[NT]
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	[NT]	45	130	120	8	[NT]	[NT]
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	[NT]	45	140	<100	33	[NT]	[NT]
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	[NT]	45	<50	<50	0	[NT]	[NT]
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	[NT]	45	200	170	16	[NT]	[NT]
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	[NT]	45	120	110	9	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	45	110	102	8	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	12/04/2025	12/04/2025		[NT]	[NT]
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	[NT]	55	<50	<50	0	[NT]	[NT]
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	[NT]	55	<100	160	46	[NT]	[NT]
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	[NT]	55	<100	<100	0	[NT]	[NT]
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	[NT]	55	<50	<50	0	[NT]	[NT]
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	[NT]	55	<100	190	62	[NT]	[NT]
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	[NT]	55	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	55	106	105	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	82
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	86
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	84
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.3	29	112	82
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	1	0.8	22	110	81
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.9	0.8	12	110	79
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.6	0.5	18	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	0.6	0.5	18	82	74
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	1	1	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	0.71	0.70	1	88	80
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.4	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.4	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	112	1	107	113	5	100	96

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	90	90
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	94	92
Fluorene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	90	92
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	92	105
Anthracene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	21	0.1	<0.1	0	92	119
Pyrene	mg/kg	0.1	Org-022/025	[NT]	21	0.1	<0.1	0	92	119
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	86	97
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	21	0.05	0.05	0	90	113
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	21	110	111	1	106	109

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	45	0.2	0.2	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	45	1.9	1.6	17	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	45	0.6	0.4	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	45	4.2	4.1	2	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	45	4.1	4.0	2	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	45	2.5	2.6	4	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	45	2.1	2.0	5	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	45	3.6	3.5	3	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	45	2.7	2.5	8	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	45	1.0	1.0	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	45	0.3	0.3	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	45	1.3	1.2	8	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	45	95	116	20	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	55	0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	55	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	55	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	55	109	111	2	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	86
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	80
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	78
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	86
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	92
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	0.7	0.7	0	108	82
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	128	98
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	62	70
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	112	88
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.2	67	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	92
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	121	1	114	123	8	109	105

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	94	92
HCB	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	88	86
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	82	90
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	92	96
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	98	112
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	88	131
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	106	114
Endrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	74	96
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	92	111
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	90	101
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	21	115	118	3	113	114

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	45	0.1	0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	45	102	118	15	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	55	121	121	0	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organophosphorus Pesticides in Soil				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	110
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	124	96
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	122	118
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	138	126
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	128	100
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	124	106
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	136	116
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	121	1	114	123	8	109	105

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organophosphorus Pesticides in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	118	118
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	100	104
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	116	132
Malathion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	130	140
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	106	110
Fenthion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	104	123
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	116	132
Phosalone	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	21	115	118	3	113	114

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	45	102	118	15	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Methodathion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	55	121	121	0	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: PCBs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	377981-4
Date extracted	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	97	72
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	122	1	117	126	7	108	107

QUALITY CONTROL: PCBs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	377981-48
Date extracted	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	78	79
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	21	119	121	2	116	117

QUALITY CONTROL: PCBs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	45	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	45	109	122	11	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: PCBs in Soil				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	55	121	122	1	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	377981-4
Date prepared	-			11/04/2025	1	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			14/04/2025	1	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Arsenic	mg/kg	4	Metals-020	<4	1	7	6	15	109	110
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	0.4	0	109	103
Chromium	mg/kg	1	Metals-020	<1	1	22	24	9	106	107
Copper	mg/kg	1	Metals-020	<1	1	72	73	1	108	112
Lead	mg/kg	1	Metals-020	<1	1	230	250	8	105	103
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.2	0.2	0	118	121
Nickel	mg/kg	1	Metals-020	<1	1	6	5	18	108	106
Zinc	mg/kg	1	Metals-020	<1	1	150	150	0	104	100

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	377981-48
Date prepared	-			[NT]	21	11/04/2025	11/04/2025		11/04/2025	11/04/2025
Date analysed	-			[NT]	21	14/04/2025	14/04/2025		14/04/2025	14/04/2025
Arsenic	mg/kg	4	Metals-020	[NT]	21	11	13	17	106	#
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	107	94
Chromium	mg/kg	1	Metals-020	[NT]	21	13	15	14	104	99
Copper	mg/kg	1	Metals-020	[NT]	21	10	11	10	106	108
Lead	mg/kg	1	Metals-020	[NT]	21	30	33	10	103	#
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	111	102
Nickel	mg/kg	1	Metals-020	[NT]	21	3	3	0	106	97
Zinc	mg/kg	1	Metals-020	[NT]	21	25	27	8	101	90

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	45	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	45	14/04/2025	14/04/2025		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	45	12	13	8	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	45	0.7	0.9	25	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	45	21	18	15	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	45	46	54	16	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	45	190	240	23	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	45	0.2	0.2	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	45	5	5	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	45	360	450	22	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	55	11/04/2025	11/04/2025		[NT]	[NT]
Date analysed	-			[NT]	55	14/04/2025	14/04/2025		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	55	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	55	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	55	77	71	8	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	55	24	21	13	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	55	19	9	71	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	55	67	61	9	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	55	47	35	29	[NT]	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			14/04/2025	[NT]	[NT]	[NT]	[NT]	14/04/2025	[NT]
Date analysed	-			15/04/2025	[NT]	[NT]	[NT]	[NT]	15/04/2025	[NT]
TRH C <sub>6</sub> - C <sub>9</sub>	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C <sub>6</sub> - C <sub>10</sub>	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	82	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate Toluene-d8	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	98	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			11/04/2025	[NT]	[NT]	[NT]	[NT]	11/04/2025	[NT]
Date analysed	-			15/04/2025	[NT]	[NT]	[NT]	[NT]	15/04/2025	[NT]
TRH C <sub>10</sub> - C <sub>14</sub>	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C <sub>15</sub> - C <sub>28</sub>	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C <sub>29</sub> - C <sub>36</sub>	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
TRH >C <sub>10</sub> - C <sub>16</sub>	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C <sub>16</sub> - C <sub>34</sub>	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH >C <sub>34</sub> - C <sub>40</sub>	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate o-Terphenyl	%		Org-020	97	[NT]	[NT]	[NT]	[NT]	117	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			11/04/2025	[NT]	[NT]	[NT]	[NT]	11/04/2025	[NT]
Date analysed	-			15/04/2025	[NT]	[NT]	[NT]	[NT]	15/04/2025	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	76	[NT]	[NT]	[NT]	[NT]	83	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			14/04/2025	[NT]	[NT]	[NT]	[NT]	14/04/2025	[NT]
Date analysed	-			15/04/2025	[NT]	[NT]	[NT]	[NT]	15/04/2025	[NT]
Arsenic - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Chromium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Copper - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead - Total	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury - Total	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	99	[NT]
Nickel - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	100	[NT]
Zinc - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]

## Result Definitions

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

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

### TRH\_BTEX\_S\_V\_NEPM:

The PQL has been raised due to the high moisture content in sample/s 377981-52, resulting in a high dilution factor.

vTRH & BTEXN in Water NEPM - TRH C6-C9/C6-C10 Results are positive (or in part positive) due to the presence of THMs within the sample.

### Acid Extractable Metals in Soil:

- The laboratory RPD acceptance criteria has been exceeded for 377981-55 for Pb. Therefore a triplicate result has been issued as laboratory sample number 377981-63.

- # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

### Asbestos-ID in soil: NEPM

This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang

### Sample Login Details

<b>Your reference</b>	E35535BW, Lindfield, NSW
<b>Envirolab Reference</b>	377981
<b>Date Sample Received</b>	10/04/2025
<b>Date Instructions Received</b>	10/04/2025
<b>Date Results Expected to be Reported</b>	17/04/2025

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	59 Soil, 2 Material, 1 Water
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	4
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

*Analysis Underway, details on the following page:*



Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	Asbestos ID - materials	On Hold
BH301-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH301-0.35-0.45														✓
BH301-0.6-0.7	✓	✓	✓				✓							
BH302-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH302-0.5-0.6														✓
BH303-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH303-0.4-0.5														✓
BH303-0.7-0.8														✓
BH304-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH304-0.6-0.7														✓
TP305-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP305-0.4-0.5														✓
TP305-1.0-1.1														✓
BH306-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH306-0.8-0.9														✓
BH307-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH307-0.4-0.5														✓
BH307-0.7-0.8														✓
BH308-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH308-0.5-0.6	✓	✓	✓				✓							
BH309-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH309-0.6-0.7														✓
TP310-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP310-0.4-0.45														✓
TP311-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP311-0.7-0.8														✓
TP311-1.0-1.1	✓	✓	✓				✓							
TP311-1.2-1.3														✓
BH312-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH312-0.7-0.8														✓
BH313-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH313-0.4-0.5														✓



Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	Asbestos ID - materials	On Hold
TP314-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP314-0.2-0.3														✓
TP314-0.8-0.9														✓
TP315-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP315-0.2-0.4	✓	✓	✓	✓	✓	✓	✓	✓						
TP315-0.5-0.6														✓
TP315-0.8-0.9														✓
TP315-1.7-1.8														✓
TP316-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
TP316-0.3-0.4														✓
TP316-0.8-0.9														✓
TP316-1.4-1.5														✓
BH317-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓						
BH317-0.7-0.8														✓
SP1-0-0.1														✓
SP1-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓						
SP2-0-0.1														✓
SP2-0.3-0.4	✓	✓	✓	✓	✓	✓	✓	✓						
SP3-0-0.1														✓
SP3-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓						
SP4-0-0.1														✓
SP4-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓						
SDUP1	✓	✓	✓	✓	✓	✓	✓							
SDUP2	✓	✓	✓	✓	✓	✓	✓							
SDUP4														✓
FCF1-TP311-0-0.1													✓	
SP4-FCF1-0-0.1													✓	
TB-1	✓	✓	✓				✓							
TS-1	✓													
FR-S301-HA									✓	✓	✓	✓		

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



**Envirolab Services Pty Ltd**

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

## Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201  Attention: Aileen	<b>JKE Job Number:</b> E35535BW  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 1 of 3	<b>FROM:</b> <b>JK Environments</b>  REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Harley Wang HWang@jkenvironments.com.au
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Location:		Sample Preserved in Esky on Ice																
Sampler:		Tests Required																
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a/NEPM	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX						
7/04/2025	1	BH301	0-0.1	G, A	0.2	F: Silty Clay	X											
7/04/2025	2	BH301	0.35-0.45	G, A	0.3	F: Silty Clay												
7/04/2025	3	BH301	0.6-0.7	G, A	0.3	Silty Clay				X								
7/04/2025	4	BH302	0-0.1	G, A	0.3	F: Silty Clay	X											
7/04/2025	5	BH302	0.5-0.6	G, A	0.3	Silty Clay												
9/04/2025	6	BH303	0-0.1	G, A	0.3	F: Silty Clay	X											
9/04/2025	7	BH303	0.4-0.5	G, A	0.3	F: Silty Clay												
9/04/2025	8	BH303	0.7-0.8	G, A	0.4	Silty Clay												
9/04/2025	9	BH304	0-0.1	G, A	0.2	F: Silty Clay	X											
9/04/2025	10	BH304	0.6-0.7	G, A	0.4	Silty Clay												
7/04/2025	11	TP305	0-0.1	G, A	0.1	F: Silty Clay	X											
7/04/2025	12	TP305	0.4-0.5	G, A	0.3	F: Silty Clay												
7/04/2025	13	TP305	1.0-1.1	G, A	0.4	Silty Clay												
9/04/2025	14	BH306	0-0.1	G, A	0.4	F: Silty Clay	X											
9/04/2025	15	BH306	0.8-0.9	G, A	0.4	Silty Clay												
9/04/2025	16	BH307	0-0.1	G, A	0.3	F: Silty Clay	X											
9/04/2025	17	BH307	0.4-0.5	G, A	0.5	F: Silty Clay												
9/04/2025	18	BH307	0.7-0.8	G, A	0.5	Silty Clay												
7/04/2025	19	BH308	0-0.1	G, A	0.3	F: Silty Clay	X											
7/04/2025	20	BH308	0.5-0.6	G, A	0.4	Silty Clay				X								
9/04/2025	21	BH309	0-0.1	G, A	0.4	F: Silty Clay	X											
9/04/2025	22	BH309	0.6-0.7	G, A	0.5	Silty Clay												
7/04/2025	23	TP310	0-0.1	G, A	0.2	F: Silty Clay	X											
7/04/2025	24	TP310	0.4-0.45	G, A	0.2	F: Silty Clay												
7/04/2025	25	TP311	0-0.1	G, A	0.1	F: Silty Clay	X											

Remarks (comments/detection limits required):				Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag			
Relinquished By: HW		Date: 10/04/2025		Time: 12:30pm	Received By: O.WILCOX	Date: 10/4/25	

**Envirolab Services**  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200  
  
**Job No: 377981**  
  
 Date Received: 10/4/25  
 Time Received: 1530  
 Received By: OW  
 Temp: Cool/Ambient  
 Cooling: Ice/Icepack  
 Security: Intact/Broken/None

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201  Attention: Aileen	<b>JKE Job Number:</b> E355358W  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 2 of 3	<b>FROM:</b> <b>JK Environments</b>  REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: <b>Harley Wang</b> HWang@jkenvironments.com.au
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Location: Lindfield, NSW	Sample Preserved in Esky on Ice
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Sampler: CB	Tests Required
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Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Tests Required													
							Combo 6a/NEPM	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX								
7/04/2025	26	TP311	0.7-0.8	G, A	0.2	F: Silty Clay														
7/04/2025	27	TP311	1.0-1.1	G, A	0.2	Silty Clay							X							
7/04/2025	28	TP311	1.2-1.3	G	0.3	Silty Clay														
9/04/2025	29	BH312	0-0.1	G, A	0.3	F: Silty Clay	X													
9/04/2025	30	BH312	0.7-0.8	G, A	0.3	Silty Clay														
9/04/2025	31	BH313	0-0.1	G, A	0.4	F: Silty Clay	X													
9/04/2025	32	BH313	0.4-0.5	G, A	0.3	Silty Clay														
7/04/2025	33	TP314	0-0.1	G, A	0.4	F: Silty Gravelly Sand	X													
7/04/2025	34	TP314	0.2-0.3	G, A	0.4	F: Silty Clay														
7/04/2025	35	TP314	0.8-0.9	G, A	0.4	Silty Clay														
7/04/2025	36	TP315	0-0.1	G, A	0.3	F: Silty Gravelly Clay	X													
7/04/2025	37	TP315	0.2-0.4	G, A	0.4	F: Silty Clay	X													
7/04/2025	38	TP315	0.5-0.6	G, A	0.4	F: Silty Clay														
7/04/2025	39	TP315	0.8-0.9	G, A	0.3	F: Silty Clay														
7/04/2025	40	TP315	1.7-1.8	G, A	0.4	Silty Clay														
7/04/2025	41	TP316	0-0.1	G, A	0.3	F: Silty Sand	X													
7/04/2025	42	TP316	0.3-0.4	G, A	0.3	F: Silty Clay														
7/04/2025	43	TP316	0.8-0.9	G, A	0.4	F: Silty Clay														
7/04/2025	44	TP316	1.4-1.5	G, A	0.4	Silty Clay														
9/04/2025	45	BH317	0-0.1	G, A	0.4	F: Silty Clay	X													
9/04/2025	46	BH317	0.7-0.8	G, A	0.5	Silty Clay														
9/04/2025	47	SP1	0-0.1	G, A	0.3	F: Silty Sand														
9/04/2025	48	SP1	0.4-0.5	G, A	0.3	F: Silty Sand	X													
9/04/2025	49	SP2	0-0.1	G, A	0.3	F: Silty Sand														
9/04/2025	50	SP2	0.3-0.4	G, A	0.4	F: Silty Sand	X													

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag
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Relinquished By: HW	Date: 10/04/2025	Time: 12:30pm	Received By: O-W	Date: 10/4/25
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377981

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201  Attention: Aileen	<b>JKE Job Number:</b> E35535BW  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 3 of 3	<b>FROM:</b> <b>JK Environments</b>  REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Harley Wang HWang@jkenvironments.com.au
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Location:		Sample Preserved in Esky on Ice																		
Sampler:		Tests Required																		
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a (NEPM)	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX								
9/04/2025	51	SP3	0-0.1	G, A	0.3	F: Silty Sand														
9/04/2025	52	SP3	0.4-0.5	G, A	0.5	F: Silty Sand	X													
9/04/2025	53	SP4	0-0.1	G, A	0.4	F: Silty Sand														
9/04/2025	54	SP4	0.4-0.5	G, A	0.4	F: Silty Sand	X													
7/04/2025	55	SDUP1	-	G	NA	Duplicate		X												
7/04/2025	56	SDUP2	-	G	NA	Duplicate		X												
9/04/2025	57	SDUP3	-	G	NA	Duplicate				X										Send to VIC
9/04/2025	58	SDUP4	-	G	NA	Duplicate														
7/04/2025	59	FCF1-TP311	0-0.1	A	NA	FCF					X									
9/04/2025	60	SP4-FCF1	0-0.1	A	NA	FCF					X									
7/04/2025	61	TB-1	-	V	NA	Soil Blank				X										
7/04/2025	62	TS-1	-	V	NA	Soil Spike						X								
9/04/2025	63	FR-S301-HA	-	#	NA	Water				X										

50  
 57  
 58  
 59  
 60  
 61  
 62

<b>Remarks (comments/detection limits required):</b> Send SDUP3 to Melbourne as inter-lab duplicate.		<b>Sample Containers:</b> G - 250mg Glass Jar A - Ziplock Asbestos Bag # - 2x BTEX vials, 1x HNO3 preserved PVC, 2x 100mL glass ambers	
Relinquished By: HW	Date: 10/04/2025	Time: 12:30pm	Received By: O.W Date: 10/4/25

377981



## **CERTIFICATE OF ANALYSIS 377981-A**

### **Client Details**

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang
<b>Address</b>	PO Box 976, North Ryde BC, NSW, 1670

### **Sample Details**

<b>Your Reference</b>	<b><u>E35535BW, Lindfield, NSW</u></b>
<b>Number of Samples</b>	Additional analysis
<b>Date samples received</b>	10/04/2025
<b>Date completed instructions received</b>	17/04/2025

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### **Report Details**

<b>Date results requested by</b>	29/04/2025
<b>Date of Issue</b>	29/04/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### **Results Approved By**

Diego Bigolin, Inorganics Supervisor  
Dragana Tomas, Senior Chemist  
Giovanni Agosti, Group Technical Manager  
Timothy Toll, Senior Chemist

#### **Authorised By**

Nancy Zhang, Laboratory Manager

svTRH (C10-C40) in Soil NEPM Silica gel			
Our Reference		377981-A-52	377981-A-54
Your Reference	UNITS	SP3	SP4
Depth		0.4-0.5	0.4-0.5
Date Sampled		9/04/2025	9/04/2025
Type of sample		Soil	Soil
Date extracted	-	22/04/2025	22/04/2025
Date analysed	-	23/04/2025	23/04/2025
TRH (Silica) C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50
TRH (Silica) C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100
TRH (Silica) C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100
TRH (Silica) >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50
TRH (Silica) >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	<100
TRH (Silica) >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	<100
Surrogate 1-Chlorooctadecane	%	86	85

Misc Inorg - Soil					
Our Reference		377981-A-23	377981-A-31	377981-A-33	377981-A-48
Your Reference	UNITS	TP310	BH313	TP314	SP1
Depth		0-0.1	0-0.1	0-0.1	0.4-0.5
Date Sampled		7/04/2025	9/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	29/04/2025	23/04/2025	23/04/2025	23/04/2025
Date analysed	-	29/04/2025	23/04/2025	23/04/2025	23/04/2025
pH 1:5 soil:water	pH Units	7.0	6.9	8.7	7.4

CEC					
Our Reference		377981-A-23	377981-A-31	377981-A-33	377981-A-48
Your Reference	UNITS	TP310	BH313	TP314	SP1
Depth		0-0.1	0-0.1	0-0.1	0.4-0.5
Date Sampled		7/04/2025	9/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025
Date analysed	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025
Exchangeable Ca	meq/100g	49	14	23	25
Exchangeable K	meq/100g	0.4	0.8	0.3	0.6
Exchangeable Mg	meq/100g	2.8	2.8	2.0	4.2
Exchangeable Na	meq/100g	<0.1	0.2	0.1	<0.1
Cation Exchange Capacity	meq/100g	53	18	26	30

Client Reference: E35535BW, Lindfield, NSW

Clay 50-120g					
Our Reference		377981-A-23	377981-A-31	377981-A-33	377981-A-48
Your Reference	UNITS	TP310	BH313	TP314	SP1
Depth		0-0.1	0-0.1	0-0.1	0.4-0.5
Date Sampled		7/04/2025	9/04/2025	7/04/2025	9/04/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025
Clay in soils <2µm	% (w/w)	12	13	16	13

Method ID	Methodology Summary
<b>AS1289.3.6.3</b>	Particle Size Distribution using in house method INORG-107 by way of sieving and/or hydrometer sedimentation testing. Clay fraction at <2µm reported.
<b>Inorg-001</b>	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
<b>Metals-020</b>	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
<b>Org-020</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: svTRH (C10-C40) in Soil NEPM Silica gel						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			22/04/2025	54	22/04/2025	22/04/2025		22/04/2025	[NT]
Date analysed	-			23/04/2025	54	23/04/2025	23/04/2025		23/04/2025	[NT]
TRH (Silica) C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	<50	54	<50	<50	0	101	[NT]
TRH (Silica) C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	<100	54	<100	<100	0	99	[NT]
TRH (Silica) C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	<100	54	<100	<100	0	100	[NT]
TRH (Silica) >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	<50	54	<50	<50	0	101	[NT]
TRH (Silica) >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	<100	54	<100	<100	0	99	[NT]
TRH (Silica) >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	<100	54	<100	<100	0	100	[NT]
Surrogate 1-Chlorooctadecane	%		Org-020	87	54	85	100	16	88	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: Misc Inorg - Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date prepared	-			23/04/2025	[NT]	[NT]	[NT]	[NT]	23/04/2025	[NT]
Date analysed	-			23/04/2025	[NT]	[NT]	[NT]	[NT]	23/04/2025	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

Client Reference: E35535BW, Lindfield, NSW

QUALITY CONTROL: CEC				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	377981-A-23
Date prepared	-			28/04/2025	[NT]	[NT]	[NT]	[NT]	28/04/2025	28/04/2025
Date analysed	-			28/04/2025	[NT]	[NT]	[NT]	[NT]	28/04/2025	28/04/2025
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	88	#
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	97
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	95	95
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	88	92

## Result Definitions

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

## Quality Control Definitions

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

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

## Report Comments

CEC - # Poor spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the poor recovery was confirmed. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

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

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang

### Sample Login Details

<b>Your reference</b>	E35535BW, Lindfield, NSW
<b>Envirolab Reference</b>	377981-A
<b>Date Sample Received</b>	10/04/2025
<b>Date Instructions Received</b>	17/04/2025
<b>Date Results Expected to be Reported</b>	29/04/2025

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Holding time exceedance
<b>No. of Samples Provided</b>	Additional analysis
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	4
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Please contact the laboratory within 24 hours if you wish to cancel the aforementioned testing. Otherwise testing will proceed as per the COC and hence invoiced accordingly.

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

*Analysis Underway, details on the following page:*



Sample ID	svTRH (C10-C40) in Soil NEPM Silica gel	svTRH (C10-C40) in Soil Pre Clean Up	Misc Inorg - Soil	CEC	Clay 50-120g	On Hold
BH301-0-0.1						✓
BH301-0.35-0.45						✓
BH301-0.6-0.7						✓
BH302-0-0.1						✓
BH302-0.5-0.6						✓
BH303-0-0.1						✓
BH303-0.4-0.5						✓
BH303-0.7-0.8						✓
BH304-0-0.1						✓
BH304-0.6-0.7						✓
TP305-0-0.1						✓
TP305-0.4-0.5						✓
TP305-1.0-1.1						✓
BH306-0-0.1						✓
BH306-0.8-0.9						✓
BH307-0-0.1						✓
BH307-0.4-0.5						✓
BH307-0.7-0.8						✓
BH308-0-0.1						✓
BH308-0.5-0.6						✓
BH309-0-0.1						✓
BH309-0.6-0.7						✓
TP310-0-0.1			✓	✓	✓	
TP310-0.4-0.45						✓
TP311-0-0.1						✓
TP311-0.7-0.8						✓
TP311-1.0-1.1						✓
TP311-1.2-1.3						✓
BH312-0-0.1						✓
BH312-0.7-0.8						✓
BH313-0-0.1			✓	✓	✓	
BH313-0.4-0.5						✓



Sample ID	svTRH (C10-C40) in Soil NEPM Silica gel	svTRH (C10-C40) in Soil Pre Clean Up	Misc Inorg - Soil	CEC	Clay 50-120g	On Hold
TP314-0-0.1			✓	✓	✓	
TP314-0.2-0.3						✓
TP314-0.8-0.9						✓
TP315-0-0.1						✓
TP315-0.2-0.4						✓
TP315-0.5-0.6						✓
TP315-0.8-0.9						✓
TP315-1.7-1.8						✓
TP316-0-0.1						✓
TP316-0.3-0.4						✓
TP316-0.8-0.9						✓
TP316-1.4-1.5						✓
BH317-0-0.1						✓
BH317-0.7-0.8						✓
SP1-0-0.1						✓
SP1-0.4-0.5			✓	✓	✓	
SP2-0-0.1						✓
SP2-0.3-0.4						✓
SP3-0-0.1						✓
SP3-0.4-0.5	✓	✓				
SP4-0-0.1						✓
SP4-0.4-0.5	✓	✓				
SDUP1						✓
SDUP2						✓
SDUP4						✓
FCF1-TP311-0-0.1						✓
SP4-FCF1-0-0.1						✓
TB-1						✓
TS-1						✓
FR-S301-HA						✓
SDUP1 - [TRIPLICATE]						✓

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



**Envirolab Services Pty Ltd**

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

## Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

## Anna Bui

---

**From:** Anna Bui  
**Sent:** Thursday, 17 April 2025 6:58 PM  
**To:** Stuart Chen; Harley Wang; Envirolab Sydney Sample Receipt  
**Subject:** RE: Results for Registration 377981 E35535BW, Lindfield, NSW

Hi Harley,

I will assume you mean:

4. SP1 (0.4-0.5), sample no. **48**
1. SP3 (0.4-0.5), sample no. **52**

Thanks,

---

**From:** Stuart Chen <SChen2@envirolab.com.au>  
**Sent:** Thursday, 17 April 2025 5:50 PM  
**To:** Harley Wang <HWang@jkenvironments.com.au>; Envirolab Sydney Sample Receipt <Samplereceipt@envirolab.com.au>  
**Subject:** RE: Results for Registration 377981 E35535BW, Lindfield, NSW

Hey Harley,

No problems, we will arrange this for you.

[@Envirolab Sydney Sample Receipt](#) Please book in A-job.

Kind Regards,

**Stuart Chen | Report Coordinator | Envirolab Services**

**Great Science. Great Service.**

12 Ashley Street Chatswood NSW 2067  
T 612 9910 6200  
E [SChen2@envirolab.com.au](mailto:SChen2@envirolab.com.au) | W [www.envirolab.com.au](http://www.envirolab.com.au)

Follow us on: [LinkedIn](#) | [Facebook](#) | [Twitter](#)

**Samples will be analysed per our T&C's.**

---

**From:** Harley Wang <HWang@jkenvironments.com.au>  
**Sent:** Thursday, 17 April 2025 5:11 PM  
**To:** Stuart Chen <SChen2@envirolab.com.au>  
**Cc:** Envirolab Sydney Sample Receipt <Samplereceipt@envirolab.com.au>  
**Subject:** RE: Results for Registration 377981 E35535BW, Lindfield, NSW

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Hi Stuart,

EU REF: 377981-A  
TAT: STANDARD  
DUE: 29/4/25  
AB

Can I please order additional analysis on the following:

**pH, CEC (cmolc/kg) and clay content (% clay) for:**

- 23 1. BH310 (0-0.1), sample no. 23;  
31 2. BH313 (0-0.1), sample no. 31;  
33 3. BH314 (0-0.1), sample no. 33; and  
48 4. SP1 (0.4-0.5), sample no. 47.

**Silica gel clean up for TRH (F2 and F3) for:**

- 52 1. SP3 (0.4-0.5), sample no. 51; and  
54 2. SP4 (0.4-0.5), sample no. 54.

Results on standard TAT please.

Thanks.

Regards

Harley Wang

Senior Environmental Scientist



T: +61 2 9888 5000

D: +61 468 678 416

E: [HWang@jkenvironments.com.au](mailto:HWang@jkenvironments.com.au)

[www.jkenvironments.com.au](http://www.jkenvironments.com.au)

PO Box 976

NORTH RYDE BC NSW 1670

115 Wicks Road

MACQUARIE PARK NSW 2113

## JK Environments

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---

**From:** Stuart Chen <[SChen2@envirolab.com.au](mailto:SChen2@envirolab.com.au)>

**Sent:** Wednesday, 16 April 2025 5:57 PM

**To:** Harley Wang <[HWang@jkenvironments.com.au](mailto:HWang@jkenvironments.com.au)>

**Subject:** Results for Registration 377981 E35535BW, Lindfield, NSW

**This message originated outside the JKG network. If this looks to be from a staff member, it is likely to be malicious (spam/phish attack). Do not click links of open attachments unless you recognise the sender and know the content is safe.**

---

Please refer to attached for:

a copy of the Certificate of Analysis

a copy of the COC/paperwork received from you

an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:

[customerservice@envirolab.com.au](mailto:customerservice@envirolab.com.au)

To view information on uncertainty guidelines click [here](#)

[How did we do? Send Feedback](#)

Kind Regards,

## CERTIFICATE OF ANALYSIS 378527

### Client Details

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang
<b>Address</b>	PO Box 976, North Ryde BC, NSW, 1670

### Sample Details

<b>Your Reference</b>	<u>E35535BW Lindfield</u>
<b>Number of Samples</b>	6 Water
<b>Date samples received</b>	16/04/2025
<b>Date completed instructions received</b>	16/04/2025

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

<b>Date results requested by</b>	23/04/2025
<b>Date of Issue</b>	23/04/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
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#### **Results Approved By**

Giovanni Agosti, Group Technical Manager  
 Priya Samarawickrama, Senior Chemist  
 Timothy Toll, Senior Chemist

#### **Authorised By**

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		378527-1	378527-2	378527-3	378527-4	378527-5
Your Reference	UNITS	MW101	MW102	MW103	WDUP101	TB-W201
Date Sampled		16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/04/2025	22/04/2025	17/04/2025	17/04/2025	17/04/2025
Date analysed	-	22/04/2025	23/04/2025	22/04/2025	22/04/2025	22/04/2025
TRH C <sub>6</sub> - C <sub>9</sub>	µg/L	<10	<10	<10	<10	<10
TRH C <sub>6</sub> - C <sub>10</sub>	µg/L	<10	<10	<10	<10	<10
TRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	92	97	98	95	93
Surrogate Toluene-d8	%	97	99	93	93	93
Surrogate 4-Bromofluorobenzene	%	87	90	109	108	108

vTRH(C6-C10)/BTEXN in Water		
Our Reference		378527-6
Your Reference	UNITS	TS-W201
Date Sampled		16/04/2025
Type of sample		Water
Date extracted	-	22/04/2025
Date analysed	-	23/04/2025
Benzene	µg/L	93%
Toluene	µg/L	94%
Ethylbenzene	µg/L	92%
m+p-xylene	µg/L	91%
o-xylene	µg/L	91%
Surrogate Dibromofluoromethane	%	96
Surrogate Toluene-d8	%	99
Surrogate 4-Bromofluorobenzene	%	89

svTRH (C10-C40) in Water						
Our Reference		378527-1	378527-2	378527-3	378527-4	378527-5
Your Reference	UNITS	MW101	MW102	MW103	WDUP101	TB-W201
Date Sampled		16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	µg/L	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	µg/L	<100	<100	<100	<100	280
TRH C <sub>29</sub> - C <sub>36</sub>	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	280
TRH >C <sub>10</sub> - C <sub>16</sub>	µg/L	<50	<50	<50	<50	280
TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	µg/L	<50	<50	<50	<50	280
TRH >C <sub>16</sub> - C <sub>34</sub>	µg/L	<100	<100	<100	<100	<100
TRH >C <sub>34</sub> - C <sub>40</sub>	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	280
Surrogate o-Terphenyl	%	98	94	111	105	96

PAHs in Water						
Our Reference		378527-1	378527-2	378527-3	378527-4	378527-5
Your Reference	UNITS	MW101	MW102	MW103	WDUP101	TB-W201
Date Sampled		16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Naphthalene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate <i>p</i> -Terphenyl-d14	%	102	93	90	88	89

HM in water - dissolved						
Our Reference		378527-1	378527-2	378527-3	378527-4	378527-5
Your Reference	UNITS	MW101	MW102	MW103	WDUP101	TB-W201
Date Sampled		16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Arsenic-Dissolved	µg/L	<1	3	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	4	<1	<1	4	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	12	19	36	12	<1
Zinc-Dissolved	µg/L	69	27	160	70	<1

Miscellaneous Inorganics				
Our Reference		378527-1	378527-2	378527-3
Your Reference	UNITS	MW101	MW102	MW103
Date Sampled		16/04/2025	16/04/2025	16/04/2025
Type of sample		Water	Water	Water
Date prepared	-	17/04/2025	17/04/2025	17/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025
pH	pH Units	4.6	6.7	6.0
Electrical Conductivity	µS/cm	790	2,200	1,400

Method ID	Methodology Summary
<b>Inorg-001</b>	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
<b>Inorg-002</b>	Conductivity and Salinity - measured using a conductivity cell.
<b>Metals-021</b>	Determination of Mercury by Cold Vapour AAS.
<b>Metals-022</b>	Determination of various metals by ICP-MS.  Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.  Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
<b>Org-020</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
<b>Org-022/025</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
<b>Org-023</b>	Water samples are analysed directly by purge and trap GC-MS.
<b>Org-023</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Client Reference: E35535BW Lindfield

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			17/04/2025	1	17/04/2025	22/04/2025		17/04/2025	[NT]
Date analysed	-			22/04/2025	1	22/04/2025	23/04/2025		22/04/2025	[NT]
TRH C <sub>6</sub> - C <sub>9</sub>	µg/L	10	Org-023	<10	1	<10	<10	0	114	[NT]
TRH C <sub>6</sub> - C <sub>10</sub>	µg/L	10	Org-023	<10	1	<10	<10	0	114	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	118	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	117	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	118	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	112	1	92	96	4	92	[NT]
Surrogate Toluene-d8	%		Org-023	97	1	97	98	1	92	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	102	1	87	92	6	100	[NT]

Client Reference: E35535BW Lindfield

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	378527-2
Date extracted	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	17/04/2025
Date analysed	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	17/04/2025
TRH C <sub>10</sub> - C <sub>14</sub>	µg/L	50	Org-020	<50	1	<50	<50	0	121	120
TRH C <sub>15</sub> - C <sub>28</sub>	µg/L	100	Org-020	<100	1	<100	<100	0	118	120
TRH C <sub>29</sub> - C <sub>36</sub>	µg/L	100	Org-020	<100	1	<100	<100	0	100	111
TRH >C <sub>10</sub> - C <sub>16</sub>	µg/L	50	Org-020	<50	1	<50	<50	0	121	120
TRH >C <sub>16</sub> - C <sub>34</sub>	µg/L	100	Org-020	<100	1	<100	<100	0	118	120
TRH >C <sub>34</sub> - C <sub>40</sub>	µg/L	100	Org-020	<100	1	<100	<100	0	100	111
Surrogate o-Terphenyl	%		Org-020	89	1	98	108	10	122	94

Client Reference: E35535BW Lindfield

QUALITY CONTROL: PAHs in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	378527-2
Date extracted	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	17/04/2025
Date analysed	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	17/04/2025
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	86
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	83
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	90
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	92
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	91
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	91
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	82
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	131	126
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	1	102	97	5	100	95

Client Reference: E35535BW Lindfield

QUALITY CONTROL: HM in water - dissolved				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	[NT]
Date analysed	-			17/04/2025	1	17/04/2025	17/04/2025		17/04/2025	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		96	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		96	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	4	[NT]		96	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	103	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	12	[NT]		96	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	69	[NT]		98	[NT]

QUALITY CONTROL: HM in water - dissolved				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	17/04/2025	17/04/2025		[NT]	[NT]
Date analysed	-			[NT]	2	17/04/2025	17/04/2025		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	2	3	3	0	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	2	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	2	<0.05	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	2	19	19	0	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	2	27	27	0	[NT]	[NT]

Client Reference: E35535BW Lindfield

QUALITY CONTROL: Miscellaneous Inorganics				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/04/2025	[NT]	[NT]	[NT]	[NT]	17/04/2025	[NT]
Date analysed	-			17/04/2025	[NT]	[NT]	[NT]	[NT]	17/04/2025	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

**Result Definitions**

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

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

TRH Water(C10-C40) NEPM - The positive result in the blank/rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang

### Sample Login Details

<b>Your reference</b>	E35535BW Lindfield
<b>Envirolab Reference</b>	378527
<b>Date Sample Received</b>	16/04/2025
<b>Date Instructions Received</b>	16/04/2025
<b>Date Results Expected to be Reported</b>	23/04/2025

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	6 Water
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	6
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

*Analysis Underway, details on the following page:*



Sample ID	VTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - dissolved	pH	Electrical Conductivity
MW101	✓	✓	✓	✓	✓	✓
MW102	✓	✓	✓	✓	✓	✓
MW103	✓	✓	✓	✓	✓	✓
WDUP101	✓	✓	✓	✓		
TB-W201	✓	✓	✓	✓		
TS-W201	✓					

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

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	<b>JKE Job Number:</b> E35535BW  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 1 of 1	<b>FROM:</b> <b>JK Environments</b> REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Harley Wang HWang@jkenvironments.com.au
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Location:		Sample Preserved in Esky on Ice																	
Sampler:		Tests Required																	
Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness					
16/04/2025	1	MW101	2xG2, 4xV, 1xH, 1x PVC	0.3	Water Sample		X		X										
16/04/2025	2	MW102	2xG2, 4xV, 1xH, 1x PVC	0.3	Water Sample		X		X										
16/04/2025	3	MW103	2xG2, 4xV, 1xH, 1x PVC	0	Water Sample		X		X										
16/04/2025	4	WDUP101	2xG2, 4xV, 1xH,	NA	Water Duplicate		X												
16/04/2025	5/0	WDUP102	2xG2, 4xV, 1xH,	NA	Water Duplicate		X		Send to VIC										
16/04/2025	5	TB-W201	2xG2, 2xV, 1xH	NA	Trip Blank		X												
16/04/2025	6	TS-W201	V	NA	Trip Spike								X						
		Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200																	
		Job No: 378527 Date Received: 16/4/25 Time Received: 16:10 Received By: HM																	
		Temp: Cool/Ambient Cooling: Ice/Icepack Integrity: Intact/Broken/None																	

<b>Remarks (comments/detection limits required):</b> Send WDUP102 to Melbourne as inter-lab duplicate.		<b>Sample Containers:</b> G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles		
Relinquished By: HW	Date: 16/04/2025	Time: 1:30pm	Received By: BJS SXD	
		Date: 16/4/25 16:10		



## **CERTIFICATE OF ANALYSIS 379109**

### **Client Details**

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang
<b>Address</b>	PO Box 976, North Ryde BC, NSW, 1670

### **Sample Details**

<b>Your Reference</b>	<b><u>E35535BW, Lindfield NSW</u></b>
<b>Number of Samples</b>	1 Material
<b>Date samples received</b>	28/04/2025
<b>Date completed instructions received</b>	28/04/2025

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

### **Report Details**

<b>Date results requested by</b>	29/04/2025
<b>Date of Issue</b>	29/04/2025

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#### **Asbestos Approved By**

Analysed by Asbestos Approved Analyst: Lucy Zhu  
Authorised by Asbestos Approved Signatory: Lucy Zhu

#### **Results Approved By**

Lucy Zhu, Asbestos Supervisor

#### **Authorised By**

Nancy Zhang, Laboratory Manager

Asbestos ID - materials		
Our Reference		379109-1
Your Reference	UNITS	FCF-Area
Date Sampled		14/04/2025
Type of sample		Material
Date analysed	-	29/04/2025
Mass / Dimension of Sample	-	103x101x5mm
Sample Description	-	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected
Trace Analysis	-	[NT]

Method ID	Methodology Summary
<b>ASB-001</b>	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

**Result Definitions**

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

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	JK Environments
<b>Attention</b>	Harley Wang

### Sample Login Details

<b>Your reference</b>	E35535BW, Lindfield NSW
<b>Envirolab Reference</b>	379109
<b>Date Sample Received</b>	28/04/2025
<b>Date Instructions Received</b>	28/04/2025
<b>Date Results Expected to be Reported</b>	29/04/2025

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	1 Material
<b>Turnaround Time Requested</b>	1 day
<b>Temperature on Receipt (°C)</b>	23
<b>Cooling Method</b>	None
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

*Analysis Underway, details on the following page:*



Envirolab Services Pty Ltd

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	Asbestos ID - materials
FCF-Area	✓

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

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.



## Certificate of Analysis MGD0305

### Client Details

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<b>Client</b>	JK Environments
<b>Contact</b>	Harley Wang
<b>Address</b>	115 Wicks Road, Macquarie Park, NSW, 2113

### Sample Details

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<b>Your Reference</b>	E35535BW
<b>Number of Samples</b>	1 Soil
<b>Date Samples Received</b>	15/04/2025
<b>Date Instructions Received</b>	15/04/2025

### Analysis Details

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Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

### Report Details

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<b>Date Results Requested by</b>	23/04/2025
<b>Date of Issue</b>	22/04/2025

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### Authorisation Details

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<b>Results Approved By</b>	Tara White, Metals Supervisor Tianna Milburn, Operations Manager
<b>Laboratory Manager</b>	Chris De Luca

# Certificate of Analysis MGD0305

## Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MGD0305-01	SDUP3	Soil	09/04/2025	15/04/2025

# Certificate of Analysis MGD0305

## Volatile TRH and BTEX (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	MGD0305-01 SDUP3 09/04/2025
TRH C6-C9	mg/kg	25	<25
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 less BTEX (F1)	mg/kg	25	<25
Methyl tert butyl ether (MTBE)	mg/kg	0.50	<0.50
Benzene	mg/kg	0.20	<0.20
Toluene	mg/kg	0.50	<0.50
Ethylbenzene	mg/kg	1.0	<1.0
meta+para Xylene	mg/kg	2.0	<2.0
ortho-Xylene	mg/kg	1.0	<1.0
Total +ve Xylenes	mg/kg	1.0	<1.0
Naphthalene (value used in F2 calc)	mg/kg	1.0	<1.0
Total +ve BTEX	mg/kg	0.20	<0.20
Surrogate <i>aaa-Trifluorotoluene</i>	%		82.4

# Certificate of Analysis MGD0305

## Semi-volatile TRH (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	MGD0305-01 SDUP3 09/04/2025
TRH C10-C14	mg/kg	50	<50
TRH C15-C28	mg/kg	100	<100
TRH C29-C36	mg/kg	100	<100
Total +ve TRH C10-C36	mg/kg	50	<50
TRH >C10-C16	mg/kg	50	<50
TRH >C10-C16 less Naphthalene F2	mg/kg	50	<50
TRH >C16-C34 (F3)	mg/kg	100	<100
TRH >C34-C40 (F4)	mg/kg	100	<100
Total +ve TRH >C10-C40	mg/kg	50	<50
Surrogate o-Terphenyl	%		75.6

# Certificate of Analysis MGD0305

## Polycyclic Aromatic Hydrocarbons (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	MGD0305-01 SDUP3 09/04/2025
Naphthalene	mg/kg	0.10	<0.10
Acenaphthylene	mg/kg	0.10	<0.10
Acenaphthene	mg/kg	0.10	<0.10
Fluorene	mg/kg	0.10	<0.10
Phenanthrene	mg/kg	0.10	<0.10
Anthracene	mg/kg	0.10	<0.10
Fluoranthene	mg/kg	0.10	0.19
Pyrene	mg/kg	0.10	0.18
Benzo(a)anthracene	mg/kg	0.10	<0.10
Chrysene	mg/kg	0.10	0.16
Benzo(b,j,k)fluoranthene	mg/kg	0.20	0.36
Benzo(a)pyrene	mg/kg	0.050	0.13
Indeno(1,2,3-c,d)pyrene	mg/kg	0.10	0.11
Dibenzo(a,h)anthracene	mg/kg	0.10	<0.10
Benzo(g,h,i)perylene	mg/kg	0.10	0.11
Total +ve PAH	mg/kg	0.050	1.2
Benzo(a)pyrene TEQ calc zero	mg/kg	0.50	<0.50
Benzo(a)pyrene TEQ calc Half	mg/kg	0.50	<0.50
Benzo(a)pyrene TEQ calc PQL	mg/kg	0.50	<0.50
<i>Surrogate p-Terphenyl-D14</i>	%		<i>103</i>

# Certificate of Analysis MGD0305

## Acid Extractable Metals (Soil)

Envirolab ID	Units	PQL	MGD0305-01
Your Reference			SDUP3
Date Sampled			09/04/2025
Arsenic	mg/kg	4.0	4.9
Cadmium	mg/kg	0.40	<0.40
Chromium	mg/kg	1.0	9.6
Copper	mg/kg	1.0	40
Mercury	mg/kg	0.10	<0.10
Nickel	mg/kg	1.0	2.4
Lead	mg/kg	1.0	80
Zinc	mg/kg	1.0	58

# Certificate of Analysis MGD0305

## Inorganics - Moisture (Soil)

Envirolab ID	Units	PQL	MGD0305-01
Your Reference			SDUP3
Date Sampled			09/04/2025
Moisture	%	0.10	24

# Certificate of Analysis MGD0305

## Method Summary

Method ID	Methodology Summary
INORG-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
METALS-020	Determination of various metals by ICP-OES. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
METALS-021	Determination of Mercury by Cold Vapour AAS.
ORG-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
ORG-022_PAH	Determination of semi-volatile organic compounds (SVOCs) by GC-MS. Water samples are extracted by LLE and solids using DCM/Acetone/Methanol. For PAHs:- Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, for Total +ve calculations, the PQL is reflective of the lowest individual PQL and therefore, for example, "Total +ve PAHs" is simply a sum of the positive individual PAHs.
ORG-023_F1_TOT	Determination of volatile organic compounds (VOCs) by P&T-GC-MS. Water samples are analysed directly by purge and trap GC-MS. Solids are extracted with Methanol, diluted and analysed by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

# Certificate of Analysis MGD0305

## Result Definitions

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Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

## Quality Control Definitions

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### Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

### Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

### LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

### Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

### Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

# Certificate of Analysis MGD0305

## Laboratory Acceptance Criteria

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Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

## Miscellaneous Information

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10\*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

# Data Quality Assessment Summary MGD0305

## Client Details

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<b>Client</b>	JK Environments
<b>Your Reference</b>	E35535BW
<b>Date Issued</b>	22/04/2025

## Recommended Holding Time Compliance

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No recommended holding time exceedances

## Quality Control and QC Frequency

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QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	No	Duplicate Outliers Exist - See detailed list below
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

# Data Quality Assessment Summary MGD0305

## Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
vTRH&MBTEXN   Soil	1	09/04/2025	17/04/2025	18/04/2025	Yes
sTRH   Soil	1	09/04/2025	17/04/2025	17/04/2025	Yes
PAH   Soil	1	09/04/2025	17/04/2025	18/04/2025	Yes
Metals   Soil	1	09/04/2025	17/04/2025	17/04/2025	Yes
Metals-Hg   Soil	1	09/04/2025	17/04/2025	17/04/2025	Yes
Moisture   Soil	1	09/04/2025	17/04/2025	22/04/2025	Yes

## Outliers: Duplicates

### ORG-020 | Semi-volatile TRH (Soil) | Batch BGD3473

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BGD3473-DUP1#	DUP1	TRH >C34-C40 (F4)	50.00	200

## Outliers: Matrix Spike

### ORG-020 | Semi-volatile TRH (Soil) | Batch BGD3473

Sample ID	Analyte	% Limits	% Recovery
BGD3473-MS1#	o-Terphenyl	60 - 140	##[2]
BGD3473-MS1#	TRH >C10-C16	60 - 140	##[1]
BGD3473-MS1#	TRH >C16-C34 (F3)	60 - 140	##[1]
BGD3473-MS1#	TRH C10-C14	60 - 140	##[1]
BGD3473-MS1#	TRH C15-C28	60 - 140	##[1]

# Quality Control MGD0305

## ORG-023\_F1\_TOT | Volatile TRH and BTEX (Soil) | Batch BGD3472

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %	Spike %
				BGD3472-DUP1# Samp   QC   RPD %	BGD3472-DUP2# Samp   QC   RPD %		BGD3472-MS2#
TRH C6-C9	mg/kg	25	<25	<25   <25   [NA]	<25   <25   [NA]	100	116
TRH C6-C10	mg/kg	25	<25	<25   <25   [NA]	<25   <25   [NA]	101	70.2
Methyl tert butyl ether (MTBE)	mg/kg	0.50	<0.50	<0.50   <0.50   [NA]	<0.50   <0.50   [NA]	[NA]	[NA]
Benzene	mg/kg	0.20	<0.20	<0.20   <0.20   [NA]	<0.20   <0.20   [NA]	87.5	90.5
Toluene	mg/kg	0.50	<0.50	<0.50   <0.50   [NA]	<0.50   <0.50   [NA]	88.7	93.4
Ethylbenzene	mg/kg	1.0	<1.0	<1.0   <1.0   [NA]	<1.0   <1.0   [NA]	80.2	90.1
meta+para Xylene	mg/kg	2.0	<2.0	<2.0   <2.0   [NA]	<2.0   <2.0   [NA]	80.6	94.4
ortho-Xylene	mg/kg	1.0	<1.0	<1.0   <1.0   [NA]	<1.0   <1.0   [NA]	83.8	98.9
Naphthalene (value used in F2 calc)	mg/kg	1.0	<1.0	<1.0   <1.0   [NA]	<1.0   <1.0   [NA]	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%		89.8	95.8 / 95.8	88.4 / 88.4	93.0	90.9

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## ORG-020 | Semi-volatile TRH (Soil) | Batch BGD3473

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %	Spike %
				BGD3473-DUP1# Samp   QC   RPD %	BGD3473-DUP2# Samp   QC   RPD %		BGD3473-MS1#
TRH C10-C14	mg/kg	50	<50	108   135   [NA]		134	##[1]
TRH C15-C28	mg/kg	100	<100	444   550   [NA]		94.0	##[1]
TRH C29-C36	mg/kg	100	<100	<100   <100   [NA]		115	106
TRH >C10-C16	mg/kg	50	<50	229   284   21.4		104	##[1]
TRH >C16-C34 (F3)	mg/kg	100	<100	312   388   [NA]		95.5	##[1]
TRH >C34-C40 (F4)	mg/kg	100	<100	<100   686   200		104	95.2
Surrogate o-Terphenyl	%		74.5	##   ##[NA] [2]		85.8	##[2]

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				BGD3473-DUP3# Samp   QC   RPD %	BGD3473-DUP4# Samp   QC   RPD %	
TRH C10-C14	mg/kg	50		<50   <50   [NA]		[NA]
TRH C15-C28	mg/kg	100		<100   <100   [NA]		[NA]
TRH C29-C36	mg/kg	100		<100   <100   [NA]		[NA]
TRH >C10-C16	mg/kg	50		<50   <50   [NA]		[NA]
TRH >C16-C34 (F3)	mg/kg	100		<100   <100   [NA]		[NA]
TRH >C34-C40 (F4)	mg/kg	100		<100   <100   [NA]		[NA]
Surrogate o-Terphenyl	%			76.7 / 76.5		[NA]

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

# Quality Control MGD0305

## ORG-022\_PAH | Polycyclic Aromatic Hydrocarbons (Soil) | Batch BGD3473

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %	Spike %
				BGD3473-DUP1# Samp   QC   RPD %	BGD3473-DUP2# Samp   QC   RPD %		
Naphthalene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		99.5	74.6
Acenaphthylene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
Acenaphthene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		104	85.4
Fluorene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		98.6	69.9
Phenanthrene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		103	83.7
Anthracene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
Fluoranthene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		103	105
Pyrene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		107	93.7
Benzo(a)anthracene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
Chrysene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		100	104
Benzo(b,j,k)fluoranthene	mg/kg	0.20	<0.20	<0.20   <0.20   [NA]		[NA]	[NA]
Benzo(a)pyrene	mg/kg	0.050	<0.050	<0.050   <0.050   [NA]		104	108
Indeno(1,2,3-c,d)pyrene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
Dibenzo(a,h)anthracene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
Benzo(g,h,i)perylene	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		[NA]	[NA]
<i>Surrogate p-Terphenyl-D14</i>	%		108	100 / 98.6		106	98.0

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				BGD3473-DUP3# Samp   QC   RPD %	BGD3473-DUP4# Samp   QC   RPD %	
Naphthalene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Acenaphthylene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Acenaphthene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Fluorene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Phenanthrene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Anthracene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Fluoranthene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Pyrene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Benzo(a)anthracene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Chrysene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Benzo(b,j,k)fluoranthene	mg/kg	0.2		<0.20   <0.20   [NA]		[NA]
Benzo(a)pyrene	mg/kg	0.05		<0.050   <0.050   [NA]		[NA]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Dibenzo(a,h)anthracene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Benzo(g,h,i)perylene	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
<i>Surrogate p-Terphenyl-D14</i>	%			103 / 99.3		[NA]

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

# Quality Control MGD0305

## METALS-020 | Acid Extractable Metals (Soil) | Batch BGD3471

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %	Spike %
				BGD3471-DUP1# Samp   QC   RPD %	BGD3471-DUP2# Samp   QC   RPD %		
Arsenic	mg/kg	4.0	<4.0	11.1   6.69   [NA]		103	101
Cadmium	mg/kg	0.40	<0.40	<0.40   <0.40   [NA]		97.9	78.3
Chromium	mg/kg	1.0	<1.0	8.44   9.11   7.69		99.4	91.4
Copper	mg/kg	1.0	<1.0	6.63   7.80   16.1		102	112
Lead	mg/kg	1.0	<1.0	2.04   2.18   [NA]		96.9	82.8
Mercury	mg/kg	0.10	<0.10	<0.10   <0.10   [NA]		93.6	97.8
Nickel	mg/kg	1.0	<1.0	6.01   5.80   3.47		97.3	81.4
Zinc	mg/kg	1.0	<1.0	3.87   4.16   [NA]		96.2	75.8

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				BGD3471-DUP3# Samp   QC   RPD %	BGD3471-DUP4# Samp   QC   RPD %	
Arsenic	mg/kg	4		9.18   8.36   [NA]		[NA]
Cadmium	mg/kg	0.4		<0.40   <0.40   [NA]		[NA]
Chromium	mg/kg	1		10.7   10.7   0.110		[NA]
Copper	mg/kg	1		11.7   11.8   1.30		[NA]
Lead	mg/kg	1		26.0   29.0   11.0		[NA]
Mercury	mg/kg	0.1		<0.10   <0.10   [NA]		[NA]
Nickel	mg/kg	1		9.99   10.3   2.92		[NA]
Zinc	mg/kg	1		21.0   22.9   8.70		[NA]

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## INORG-008 | Inorganics - Moisture (Soil) | Batch BGD3468

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %
				BGD3468-DUP1# Samp   QC   RPD %	BGD3468-DUP2# Samp   QC   RPD %	
Moisture	%	0.1		4.09   3.91   4.50	10.3   10.1   1.67	[NA]

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## QC Comments

Identifier	Description
[1]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.
[2]	Surrogate recovery is outside routine acceptance criteria (60-140%) as a result of the high concentration of analyte(s) in the sample.



**EnviroLab Services Pty Ltd**

**ABN 37 112 535 645 - 002**

25 Research Drive Croydon South VIC 3136

ph +61 3 9763 2500

melbourne@envirolab.com.au

www.envirolab.com.au

## Sample Receipt Advice MGD0305

### Client Details

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**Client** JK Environments  
**Attention** Harley Wang

### Sample Login Details

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**Your Reference** E35535BW  
**EnviroLab Reference** MGD0305  
**Date Sample Received** 15/04/2025  
**Date Instructions Received** 15/04/2025  
**Date Final Results Expected** 23/04/2025

### Sample Condition

---

**Samples received in appropriate condition for analysis** Yes  
**Number of Samples** 1 Soil  
**Turnaround Time** 4 Days  
**Temperatures / Cooling Methods** 20.1°C Ice Pack

### Additional Info

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Sample storage - waters are routinely disposed at approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Where no sampling date has been supplied for some or all samples, the date of sample receipt has been used as the associated sampling date. The sampling dates are used to assess compliance to recommended Technical Holding Times.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default).

Please direct any queries to:

#### Chris De Luca

**Phone** 03 9763 2500  
**Email** cdeluca@envirolab.com.au

#### Tianna Milburn

**Phone** 03 9763 2500  
**Email** tmilburn@envirolab.com.au

**Analysis underway, details on the following page**

# Sample Receipt Advice MGD0305

## Analysis Grid

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

	Combination 3	Moisture
MGD0305-01 Soil   09/04/2025 SDUP3	•	•

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## Suite Details

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Suite Name	Suite Analyses
Combination 3   Soil	vTRH&MBTEXN, sTRH, PAH, As, Cd, Cr, Cu, Hg, Ni, Pb, Zn

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	<b>JKE Job Number:</b> E35535BW  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 1 of 3	<b>FROM:</b> <b>JK Environments</b> REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: <b>Harley Wang</b> HWang@jkenvironments.com.au
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<b>Location:</b> Lindfield, NSW <b>Sampler:</b> CB	Sample Preserved in Esky on Ice Tests Required
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Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a/NEPM	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX									
7/04/2025	1	BH301	0-0.1	G, A	0.2	F: Silty Clay	X														
7/04/2025	2	BH301	0.35-0.45	G, A	0.3	F: Silty Clay															
7/04/2025	3	BH301	0.6-0.7	G, A	0.3	Silty Clay					X										
7/04/2025	4	BH302	0-0.1	G, A	0.3	F: Silty Clay	X														
7/04/2025	5	BH302	0.5-0.6	G, A	0.3	Silty Clay															
9/04/2025	6	BH303	0-0.1	G, A	0.3	F: Silty Clay	X														
9/04/2025	7	BH303	0.4-0.5	G, A	0.3	F: Silty Clay															
9/04/2025	8	BH303	0.7-0.8	G, A	0.4	Silty Clay															
9/04/2025	9	BH304	0-0.1	G, A	0.2	F: Silty Clay	X														
9/04/2025	10	BH304	0.6-0.7	G, A	0.4	Silty Clay															
7/04/2025	11	TP305	0-0.1	G, A	0.1	F: Silty Clay	X														
7/04/2025	12	TP305	0.4-0.5	G, A	0.3	F: Silty Clay															
7/04/2025	13	TP305	1.0-1.1	G, A	0.4	Silty Clay															
9/04/2025	14	BH306	0-0.1	G, A	0.4	F: Silty Clay	X														
9/04/2025	15	BH306	0.8-0.9	G, A	0.4	Silty Clay															
9/04/2025	16	BH307	0-0.1	G, A	0.3	F: Silty Clay	X														
9/04/2025	17	BH307	0.4-0.5	G, A	0.5	F: Silty Clay															
9/04/2025	18	BH307	0.7-0.8	G, A	0.5	Silty Clay															
7/04/2025	19	BH308	0-0.1	G, A	0.3	F: Silty Clay	X														
7/04/2025	20	BH308	0.5-0.6	G, A	0.4	Silty Clay					X										
9/04/2025	21	BH309	0-0.1	G, A	0.4	F: Silty Clay	X														
9/04/2025	22	BH309	0.6-0.7	G, A	0.5	Silty Clay															
7/04/2025	23	TP310	0-0.1	G, A	0.2	F: Silty Clay	X														
7/04/2025	24	TP310	0.4-0.45	G, A	0.2	F: Silty Clay															
7/04/2025	25	TP311	0-0.1	G, A	0.1	F: Silty Clay	X														

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

Relinquished By: HW	Date: 10/04/2025	Time: 12:30pm	Received By:	Date: 10/4/25
---------------------	------------------	---------------	--------------	---------------

*Relinquished by: ELS SYD*  
*14/4/25 1055*  
*ca*

Envirolab Services  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200  
 Job No: 377981  
 Date Received: 10/4/25  
 Time Received: 1530  
 Received By:   
 Temp: Cool/Ambient  
 Cooling: Ice/Icepack  
 Security: Intact/Broken/None

**SAMPLE AND CHAIN OF CUSTODY FORM**

**TO:**  
 ENVIROLAB SERVICES PTY LTD  
 12 ASHLEY STREET  
 CHATSWOOD NSW 2067  
 P: (02) 99106200  
 F: (02) 99106201  
 Attention: Aileen

**JKE Job Number:** E35535BW  
**Date Results Required:** STANDARD  
**Page:** 2 of 3

**FROM:**  
  
**JKE Environments**  
 REAR OF 115 WICKS ROAD  
 MACQUARIE PARK, NSW 2113  
 P: 02-9888 5000 F: 02-9888 5001  
 Attention: **Harley Wang**  
 HWang@jkenvironments.com.au


**Location:** Lindfield, NSW **Sample Preserved in Esky on Ice**

**Sampler:** CB **Tests Required**

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a/NEPM	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX						
7/04/2025	26	TP311	0.7-0.8	G, A	0.2	F: Silty Clay												
7/04/2025	27	TP311	1.0-1.1	G, A	0.2	Silty Clay				X								
7/04/2025	28	TP311	1.2-1.3	G	0.3	Silty Clay												
9/04/2025	29	BH312	0-0.1	G, A	0.3	F: Silty Clay	X											
9/04/2025	30	BH312	0.7-0.8	G, A	0.3	Silty Clay												
9/04/2025	31	BH313	0-0.1	G, A	0.4	F: Silty Clay	X											
9/04/2025	32	BH313	0.4-0.5	G, A	0.3	Silty Clay												
7/04/2025	33	TP314	0-0.1	G, A	0.4	F: Silty Gravelly Sand	X											
7/04/2025	34	TP314	0.2-0.3	G, A	0.4	F: Silty Clay												
7/04/2025	35	TP314	0.8-0.9	G, A	0.4	Silty Clay												
7/04/2025	36	TP315	0-0.1	G, A	0.3	F: Silty Gravelly Clay	X											
7/04/2025	37	TP315	0.2-0.4	G, A	0.4	F: Silty Clay	X											
7/04/2025	38	TP315	0.5-0.6	G, A	0.4	F: Silty Clay												
7/04/2025	39	TP315	0.8-0.9	G, A	0.3	F: Silty Clay												
7/04/2025	40	TP315	1.7-1.8	G, A	0.4	Silty Clay												
7/04/2025	41	TP316	0-0.1	G, A	0.3	F: Silty Sand	X											
7/04/2025	42	TP316	0.3-0.4	G, A	0.3	F: Silty Clay												
7/04/2025	43	TP316	0.8-0.9	G, A	0.4	F: Silty Clay												
7/04/2025	44	TP316	1.4-1.5	G, A	0.4	Silty Clay												
9/04/2025	45	BH317	0-0.1	G, A	0.4	F: Silty Clay	X											
9/04/2025	46	BH317	0.7-0.8	G, A	0.5	Silty Clay												
9/04/2025	47	SP1	0-0.1	G, A	0.3	F: Silty Sand												
9/04/2025	48	SP1	0.4-0.5	G, A	0.3	F: Silty Sand	X											
9/04/2025	49	SP2	0-0.1	G, A	0.3	F: Silty Sand												
9/04/2025	50	SP2	0.3-0.4	G, A	0.4	F: Silty Sand	X											

**Remarks (comments/detection limits required):**

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

Relinquished By: HW 

Date: 10/04/2025

Time: 12:30pm

Received By: O.W

Date: 10/4/25

Relinquished by: ELS 540  
 14/4/25 1055  
 OG

377981

**SAMPLE AND CHAIN OF CUSTODY FORM**

**TO:**  
 ENVIROLAB SERVICES PTY LTD  
 12 ASHLEY STREET  
 CHATSWOOD NSW 2067  
 P: (02) 99106200  
 F: (02) 99106201  
 Attention: Aileen

**JKE Job** E35535BW  
**Number:**  
**Date Results** STANDARD  
**Required:**  
**Page:** 3 of 3

**FROM:**  
  
**JK Environments**  
 REAR OF 115 WICKS ROAD  
 MACQUARIE PARK, NSW 2113  
 P: 02-9888 5000 F: 02-9888 5001  
 Attention: **Harley Wang**  
 HWang@jkenvironments.com.au

**Location:** Lindfield, NSW Sample Preserved in Esky on Ice

**Sampler:** CB Tests Required

1 80  
57  
58  
59  
60  
61  
62

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a NEPM	Combo 6	Combo 6a	Combo 3	Asbestos (detection)	BTEX							
9/04/2025	51	SP3	0-0.1	G, A	0.3	F: Silty Sand													
9/04/2025	52	SP3	0.4-0.5	G, A	0.5	F: Silty Sand	X												
9/04/2025	53	SP4	0-0.1	G, A	0.4	F: Silty Sand													
9/04/2025	54	SP4	0.4-0.5	G, A	0.4	F: Silty Sand	X												
7/04/2025	55	SDUP1	-	G	NA	Duplicate		X											
7/04/2025	56	SDUP2	-	G	NA	Duplicate		X											
9/04/2025	57	SDUP3	-	G	NA	Duplicate				X									Send to VIC
9/04/2025	58	SDUP4	-	G	NA	Duplicate													
7/04/2025	59	FCF1-TP311	0-0.1	A	NA	FCF					X								
9/04/2025	60	SP4-FCF1	0-0.1	A	NA	FCF					X								
7/04/2025	61	TB-1	-	V	NA	Soil Blank					X								
7/04/2025	62	TS-1	-	V	NA	Soil Spike						X							
9/04/2025	63	FR-S301-HA	-	#	NA	Water					X								

**Remarks (comments/detection limits required):**  
 Send SDUP3 to Melbourne as inter-lab duplicate.

**Sample Containers:**  
 G - 250mg Glass Jar  
 A - Ziplock Asbestos Bag  
 # - 2x BTEX vials, 1x HNO3 preserved PVC, 2x 100mL glass ambers

**Relinquished By:** HW *[Signature]* **Date:** 10/04/2025  
**Time:** 12:30pm **Received By:** O.W. **Date:** 10/4/25

Relinquished by: ELS 540  
 14/4/25 1055  
 OG

377981

## Certificate of Analysis MGD0399

### Client Details

---

<b>Client</b>	JK Environments
<b>Contact</b>	Harley Wang
<b>Address</b>	115 Wicks Road, Macquarie Park, NSW, 2113

### Sample Details

---

<b>Your Reference</b>	E35535BW
<b>Number of Samples</b>	1 Water
<b>Date Samples Received</b>	23/04/2025
<b>Date Instructions Received</b>	23/04/2025

### Analysis Details

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Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

### Report Details

---

<b>Date Results Requested by</b>	30/04/2025
<b>Date of Issue</b>	29/04/2025

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**Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with \*.**

### Authorisation Details

---

<b>Results Approved By</b>	Maggie Hu, Organics Supervisor Tara White, Metals Supervisor
<b>Laboratory Manager</b>	Chris De Luca

# Certificate of Analysis MGD0399

## Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MGD0399-01	WDUP102	Water	16/04/2025	23/04/2025

# Certificate of Analysis MGD0399

## Volatile TRH and BTEX (Water)

Envirolab ID Your Reference Date Sampled	Units	PQL	MGD0399-01 WDUP102 16/04/2025
TRH C6-C9	µg/L	10	<10
TRH C6-C10	µg/L	10	<10
TRH C6-C10 less BTEX (F1)	µg/L	10	<10
Methyl tert butyl ether (MTBE)	µg/L	1.0	<1.0
Benzene	µg/L	1.0	<1.0
Toluene	µg/L	1.0	<1.0
Ethylbenzene	µg/L	1.0	<1.0
meta+para Xylene	µg/L	2.0	<2.0
ortho-Xylene	µg/L	1.0	<1.0
Total +ve Xylenes	µg/L	1.0	<1.0
Naphthalene (value used in F2 calc)	µg/L	1.0	<1.0
Total +ve BTEX	µg/L	1.0	<1.0
<i>Surrogate Dibromofluoromethane</i>	%		<i>105</i>
<i>Surrogate Toluene-D8</i>	%		<i>99.5</i>
<i>Surrogate 4-Bromofluorobenzene</i>	%		<i>96.2</i>

# Certificate of Analysis MGD0399

## Semi-volatile TRH (Water)

Envirolab ID	Units	PQL	MGD0399-01
Your Reference			WDUP102
Date Sampled			16/04/2025
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	100	<100
TRH C29-C36	µg/L	100	<100
Total +ve TRH C10-C36	µg/L	50	<50
TRH >C10-C16	µg/L	50	<50
TRH >C10-C16 less Naphthalene F2	µg/L	50	<50
TRH >C16-C34 (F3)	µg/L	100	<100
TRH >C34-C40 (F4)	µg/L	100	<100
Total +ve TRH >C10-C40	µg/L	50	<50
Surrogate <i>o</i> -Terphenyl	%		73.5

# Certificate of Analysis MGD0399

## Polycyclic Aromatic Hydrocarbons (Water)

Envirolab ID Your Reference Date Sampled	Units	PQL	MGD0399-01 WDUP102 16/04/2025
Naphthalene	µg/L	0.10	<0.10
Acenaphthylene	µg/L	0.10	<0.10
Acenaphthene	µg/L	0.10	<0.10
Fluorene	µg/L	0.10	<0.10
Phenanthrene	µg/L	0.10	<0.10
Anthracene	µg/L	0.10	<0.10
Fluoranthene	µg/L	0.10	<0.10
Pyrene	µg/L	0.10	<0.10
Benzo(a)anthracene	µg/L	0.10	<0.10
Chrysene	µg/L	0.10	<0.10
Benzo(b,j,k)fluoranthene	µg/L	0.20	<0.20
Benzo(a)pyrene	µg/L	0.10	<0.10
Indeno(1,2,3-c,d)pyrene	µg/L	0.10	<0.10
Dibenzo(a,h)anthracene	µg/L	0.10	<0.10
Benzo(g,h,i)perylene	µg/L	0.10	<0.10
Total +ve PAH	µg/L	0.10	<0.10
<i>Surrogate p-Terphenyl-D14</i>	%		<i>101</i>

# Certificate of Analysis MGD0399

## Dissolved Low Level Metals (Water)

Envirolab ID	Units	PQL	MGD0399-01
Your Reference			WDUP102
Date Sampled			16/04/2025
Arsenic	µg/L	1.0	3.0
Cadmium	µg/L	0.10	<0.10
Chromium	µg/L	1.0	<1.0
Copper	µg/L	1.0	<1.0
Mercury	µg/L	0.050	<0.050
Nickel	µg/L	1.0	18
Lead	µg/L	1.0	<1.0
Zinc	µg/L	1.0	32

# Certificate of Analysis MGD0399

## Method Summary

Method ID	Methodology Summary
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
ORG-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
ORG-022_PAH	Determination of semi-volatile organic compounds (SVOCs) by GC-MS. Water samples are extracted by LLE and solids using DCM/Acetone/Methanol. For PAHs:- Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, for Total +ve calculations, the PQL is reflective of the lowest individual PQL and therefore, for example, "Total +ve PAHs" is simply a sum of the positive individual PAHs.
ORG-023_F1_TOT	Determination of volatile organic compounds (VOCs) by P&T-GC-MS. Water samples are analysed directly by purge and trap GC-MS. Solids are extracted with Methanol, diluted and analysed by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

# Certificate of Analysis MGD0399

## Result Definitions

---

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

## Quality Control Definitions

---

### Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

### Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

### LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

### Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

### Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

# Certificate of Analysis MGD0399

## Laboratory Acceptance Criteria

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Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

## Miscellaneous Information

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10\*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volume(s) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

# Data Quality Assessment Summary MGD0399

## Client Details

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<b>Client</b>	JK Environments
<b>Your Reference</b>	E35535BW
<b>Date Issued</b>	29/04/2025

## Recommended Holding Time Compliance

---

Recommended holding time exceedances exist - See detailed list below

## Quality Control and QC Frequency

---

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

# Data Quality Assessment Summary MGD0399

## Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
vTRH&MBTEXN   Water	1	16/04/2025	28/04/2025	29/04/2025	Yes
sTRH   Water	1	16/04/2025	24/04/2025	28/04/2025	No
PAH   Water	1	16/04/2025	24/04/2025	28/04/2025	No
Dissolved Metals (LL)   Water	1	16/04/2025	24/04/2025	29/04/2025	Yes
Dissolved Metals (LL)-Hg   Water	1	16/04/2025	24/04/2025	29/04/2025	Yes

## Outliers: QC Frequency

### ORG-020 | Semi-volatile TRH (Water) | Batch BGD4434

Analysis	QC Type	Expected	Reported
sTRH	Duplicate	1	0
	Matrix Spike	1	0

### ORG-022\_PAH | Polycyclic Aromatic Hydrocarbons (Water) | Batch BGD4434

Analysis	QC Type	Expected	Reported
PAH	Duplicate	1	0
	Matrix Spike	1	0

# Quality Control MGD0399

## ORG-023\_F1\_TOT | Volatile TRH and BTEX (Water) | Batch BGD4711

Analyte	Units	PQL	Blank	DUP1	LCS %	Spike %
				BGD4711-DUP1# Samp   QC   RPD %		
TRH C6-C9	µg/L	10	<10	<10   <10   [NA]	98.3	94.5
TRH C6-C10	µg/L	10	<10	<10   <10   [NA]	95.7	91.0
Methyl tert butyl ether (MTBE)	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	[NA]	[NA]
Benzene	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	98.8	106
Toluene	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	101	107
Ethylbenzene	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	96.9	104
meta+para Xylene	µg/L	2.0	<2.0	<2.0   <2.0   [NA]	96.9	103
ortho-Xylene	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	96.0	103
Naphthalene (value used in F2 calc)	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	[NA]	[NA]
Surrogate Dibromofluoromethane	%		102	104 / 104	101	101
Surrogate Toluene-D8	%		99.2	98.6 / 99.0	101	101
Surrogate 4-Bromofluorobenzene	%		96.2	97.9 / 96.9	96.0	95.0

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## ORG-020 | Semi-volatile TRH (Water) | Batch BGD4434

Analyte	Units	PQL	Blank	LCS %
TRH C10-C14	µg/L	50	<50	85.2
TRH C15-C28	µg/L	100	<100	78.0
TRH C29-C36	µg/L	100	<100	93.5
TRH >C10-C16	µg/L	50	<50	69.9
TRH >C16-C34 (F3)	µg/L	100	<100	81.1
TRH >C34-C40 (F4)	µg/L	100	<100	87.5
Surrogate o-Terphenyl	%		63.7	77.4

Batch QC Comments: [1]

## ORG-022\_PAH | Polycyclic Aromatic Hydrocarbons (Water) | Batch BGD4434

Analyte	Units	PQL	Blank	LCS %
Naphthalene	µg/L	0.10	<0.10	76.4
Acenaphthylene	µg/L	0.10	<0.10	[NA]
Acenaphthene	µg/L	0.10	<0.10	74.5
Fluorene	µg/L	0.10	<0.10	71.9
Phenanthrene	µg/L	0.10	<0.10	73.0
Anthracene	µg/L	0.10	<0.10	[NA]
Fluoranthene	µg/L	0.10	<0.10	78.9
Pyrene	µg/L	0.10	<0.10	81.6
Benzo(a)anthracene	µg/L	0.10	<0.10	[NA]
Chrysene	µg/L	0.10	<0.10	83.2
Benzo(b,j,k)fluoranthene	µg/L	0.20	<0.20	[NA]
Benzo(a)pyrene	µg/L	0.10	<0.10	69.2
Indeno(1,2,3-c,d)pyrene	µg/L	0.10	<0.10	[NA]
Dibenzo(a,h)anthracene	µg/L	0.10	<0.10	[NA]
Benzo(g,h,i)perylene	µg/L	0.10	<0.10	[NA]
Surrogate p-Terphenyl-D14	%		88.9	87.8

Batch QC Comments: [1]

# Quality Control MGD0399

## METALS-022 | Dissolved Low Level Metals (Water) | Batch BGD4276

Analyte	Units	PQL	Blank	DUP1	LCS %	Spike %
				BGD4276-DUP1# Samp   QC   RPD %		
Arsenic	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	94.5	99.4
Cadmium	µg/L	0.10	<0.10	0.330   0.360   [NA]	96.0	100
Chromium	µg/L	1.0	<1.0	<1.0   <1.0   [NA]	95.8	98.0
Copper	µg/L	1.0	<1.0	8.19   7.79   5.01	96.1	98.4
Lead	µg/L	1.0	<1.0	3.24   3.29   [NA]	90.0	88.1
Nickel	µg/L	1.0	<1.0	1.84   1.89   [NA]	94.7	95.2
Zinc	µg/L	1.0	<1.0	536   542   1.18	95.4	98.5

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## METALS-021 | Dissolved Low Level Metals (Water) | Batch BGD4389

Analyte	Units	PQL	Blank	DUP1	LCS %	Spike %
				BGD4389-DUP1# Samp   QC   RPD %		
Mercury	µg/L	0.050	<0.050	<0.050   <0.050   [NA]	106	108

# The QC reported was not specifically part of this workorder but formed part of the QC process batch.

## QC Comments

Identifier	Description
[1]	Unable to perform all QC according to our internal guidelines due to the limited amount of sample(s) available for testing.



**EnviroLab Services Pty Ltd**

**ABN 37 112 535 645 - 002**

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ph +61 3 9763 2500

melbourne@envirolab.com.au

www.envirolab.com.au

## Sample Receipt Advice MGD0399

### Client Details

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**Client** JK Environments  
**Attention** Harley Wang

### Sample Login Details

---

**Your Reference** E35535BW  
**EnviroLab Reference** MGD0399  
**Date Sample Received** 23/04/2025  
**Date Instructions Received** 23/04/2025  
**Date Final Results Expected** 30/04/2025

### Sample Condition

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**Samples received in appropriate condition for analysis** Yes  
**Number of Samples** 1 Water  
**Turnaround Time** 4 Days  
**Temperatures / Cooling Methods** 15.6°C Ice Pack

### Additional Info

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Sample storage - waters are routinely disposed at approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Where no sampling date has been supplied for some or all samples, the date of sample receipt has been used as the associated sampling date. The sampling dates are used to assess compliance to recommended Technical Holding Times.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default).

Please direct any queries to:

#### Chris De Luca

**Phone** 03 9763 2500  
**Email** cdeluca@envirolab.com.au

#### Tianna Milburn

**Phone** 03 9763 2500  
**Email** tmilburn@envirolab.com.au

**Analysis underway, details on the following page**

# Sample Receipt Advice MGD0399

## Analysis Grid

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

	Combination 3 (D)
MGD0399-01 Water   16/04/2025 WDUP102	•

## Suite Details

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Suite Name	Suite Analyses
Combination 3 (D)   Water	vTRH&MBTEXN, sTRH, PAH, As - Dissolved (LL), Cd - Dissolved (LL), Cr - Dissolved (LL), Cu - Dissolved (LL), Hg - Dissolved, Ni - Dissolved (LL), Pb - Dissolved (LL), Zn - Dissolved (LL)

**SAMPLE AND CHAIN OF CUSTODY FORM**

<b>TO:</b> ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201  Attention: Aileen	<b>JKE Job Number:</b> E35535BW  <b>Date Results Required:</b> STANDARD  <b>Page:</b> 1 of 1	<b>FROM:</b> <b>JK Environments</b>  REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: <b>Harley Wang</b> HWang@jkenvironments.com.au
---	--	---

<b>Location:</b> Lindfield, NSW	<b>Sample Preserved in Esky on Ice</b>
<b>Sampler:</b> OB/CB	<b>Tests Required</b>

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness
16/04/2025	1	MW101	2xG2, 4xV, 1xH, 1x PVC	0.3	Water Sample		X		X					
16/04/2025	2	MW102	2xG2, 4xV, 1xH, 1x PVC	0.3	Water Sample		X		X					
16/04/2025	3	MW103	2xG2, 4xV, 1xH, 1x PVC	0	Water Sample		X		X					
16/04/2025	4	WDUP101	2xG2, 4xV, 1xH,	NA	Water Duplicate		X							
16/04/2025	5/0	WDUP102	2xG2, 4xV, 1xH,	NA	Water Duplicate		X		Send to VIC					
16/04/2025	5	TB-W201	2xG2, 2xV, 1xH	NA	Trip Blank		X							
16/04/2025	6	TS-W201	V	NA	Trip Spike								X	

**Envirolab Services**  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 8200  
  
 Job No: 378527  
 Date Received: 16/4/25  
 Time Received: 16:10  
 Received By: HW  
 Temp: Cool/Ambient  
 Cooling: Ice/Icepack  
 Security: Intact/Broken/None

**Envirolab Services**  
 25 Research Drive  
 Croydon South VIC 3136  
 Ph: (03) 9763 2500  
  
 Job No: MG00399  
 Date Received: 23/04/25  
 Time Received: 3:45  
 Received By: [Signature]  
 Temp: Cool/Ambient  
 Cooling: Ice/Icepack  
 Security: Intact/Broken/None

<b>Remarks (comments/detection limits required):</b>  Send WDUP102 to Melbourne as inter-lab duplicate.	<b>Sample Containers:</b> G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles
<b>Relinquished By:</b> HW	<b>Date:</b> 16/04/2025
<b>Time:</b> 1:30pm	<b>Received By:</b> [Signature]
	<b>Date:</b> 16/4/25 16:10

Relinquished by: ELS SYD  
 K. Chavez  
 22/4/25 11:55  
 WC



---

## Appendix E: Report Explanatory Notes



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## 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)<sup>19</sup> methods and those described in *Environmental Sampling and Analysis, A Practical Guide*, (1991)<sup>20</sup>. 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 handling and analysis protocols and use of proper chain-of-custody and documentation procedures.

### E. **Completeness**

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

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

<sup>20</sup> Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*



- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

#### F. **Comparability**

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

#### G. **Blanks**

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

#### H. **Matrix Spikes**

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

#### 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 F: Data (QA/QC) Evaluation



## Data (QA/QC) Evaluation

### A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in the SAQP attached in Appendix G of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

#### 1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

#### 2. Field QA/QC Samples and Analysis

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table Q1 and Table Q2) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report. A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Number Analysed	Frequency (of Sample Type)
Intra-laboratory duplicate (soil)	2	Approximately 9% of primary samples
Inter-laboratory duplicate (soil)	1	Approximately 4% of primary samples
Intra-laboratory duplicate (groundwater)	1	Approximately 33% of primary samples
Inter-laboratory duplicate (groundwater)	1	As above
Trip spikes		One for the investigation to demonstrate adequacy of preservation, storage and transport methods
Soil	1	
Water	1	
Trip blanks		One for the investigation to demonstrate adequacy of storage and transport methods
Soil	1	
Water	1	
Rinsate (hand auger)	1	One for the investigation to demonstrate adequacy of decontamination methods



### 3. Data Assessment Criteria

JK Environments adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

#### ***Field Duplicates***

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

#### ***Field/Trip Blanks and Rinsates***

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to typical background concentrations in soils and published drinking water guidelines for waters.

#### ***Trip Spikes***

Acceptable targets for trip spike samples in this report will be 70% to 130%.

#### ***Laboratory QA/QC***

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

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

#### ***RPDs***

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

#### ***Laboratory Control Samples (LCS) and Matrix Spikes***

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

#### ***Surrogate Spikes***

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

#### ***Method Blanks***

- All results less than PQL.



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## **B. DATA EVALUATION**

### **1. Sample Collection, Storage, Transport and Analysis**

Samples were collected by trained field staff in accordance with our standard sampling procedures. Field sampling procedures were designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times generally in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

### **2. Laboratory PQLs**

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC.

### **3. Field QA/QC Sample Results**

#### ***Field Duplicates***

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:

- Elevated RPDs were reported for phenanthrene and lead in SQUP301/TP314 (0-0.1m);
- Elevated RPDs were reported for TRH F3 and F4, several PAH compounds (fluoranthene, pyrene, benzo(a)anthracene, chrysene, indeno(1,2,3-c,d)pyrene and benzo(g,h,i)perylene) and several heavy metals (arsenic, cadmium, copper, lead, mercury, nickel and zinc) in SDUP302/BH302 (0-0.1m); and
- Elevated RPDs were reported for several PAH compounds (benzo(a)anthracene, chrysene, indeno(1,2,3-c,d)pyrene and benzo(g,h,i)perylene) and several heavy metals (copper and mercury) in SDUP304/BH306 (0-0.1m).

Values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. Where applicable, the higher duplicate value has been adopted as a conservative measure (see attached report tables).

#### ***Trip Blanks***

During the investigation, one soil trip blank was placed in the esky during sampling and transported back to the laboratory.



The soil trip blank analysis results were all less than the PQLs with the exception of chromium, lead and zinc with reported concentrations of 3mg/kg, 3mg/kg and 2mg/kg. Low level metals concentrations are typical in washed sand which is utilised as blank material. In JKE's experience, the concentrations reported were consistent with background concentrations in a sand matrix and were not indicative of cross-contamination. On this basis, cross contamination between samples that may have significance for data validity did not occur.

#### ***Rinsates***

Trace concentrations of TRH F1, copper and zinc were detected in the rinsate sample. The detectable concentration of light fraction TRH is most likely attributed to trihalomethanes. These compounds are breakdown products from the chlorination process and are common in potable water at the concentration reported (the Australian drinking water guideline for total trihalomethanes is 250µg/L). The detection of trace heavy metal concentrations is likely attributed to background concentration of potable water used to make up the rinsate sample. Therefore, these detections are not considered to be cross-contamination during sampling.

#### ***Trip Spikes***

The results ranged from 98% to 99% for soil and 91% to 94% for groundwater which indicated that field preservation methods were appropriate.

#### **4. Laboratory QA/QC**

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation.

A review of the laboratory QA/QC data identified the following minor non-conformances:

##### Lab report 377981:

- The PQL for TRH and BTEX were raised in laboratory sample 377981-52 (SP3 0.4-0.5m) due to high moisture content in the samples requiring a high dilution factor;
- The positive TRH results in the rinsate water sample was due to the presence of THMs within the sample;
- The laboratory RPD acceptance criteria were exceeded for laboratory sample 377981-55 (SDUP1) for lead. A triplicate result was issued as laboratory sample number 377981-63; and
- Percentage recovery was not possible for some laboratory samples due to high contraptions of the elements in the samples. However, an acceptable recovery was obtained for the LCS.

##### Lab report 377981-A:

- Poor spike recovery for CEC was obtained for laboratory sample number 377981-A—54 (SP4 0.4-0.5m) due to matrix interferences. However, an acceptable recovery was obtained for the LCS; and
- The samples scheduled for TRH silica gel clean-up analysis were outside of the recommended holding times.



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Lab report MGD0305:

- Spike recovery was not applicable for laboratory sample MGD0305-01 (SDUP3) due to relatively high analyte background concentrations in the sample. However, the LCS recovery was within the acceptance range; and
- Surrogate recovery was outside the routine acceptance range of 60%-140% as a result of high concentration of analytes in the sample. However, the LCS recovery was within the acceptance range.

Lab report MGD0399:

The report indicated that not all internal QA analysis were able to be completed due to the limited sample volume provided for testing. However, the laboratory internal QA/QC requirements were fulfilled for the purpose of the analysis performed.

**C. DATA QUALITY SUMMARY**

JKE is of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

The TRH silica gel clean-up analysis for soil outside of the recommended laboratory sample holding time was not considered to materially impact the data quality as the samples were held under a controlled laboratory environment under low temperature.



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## Appendix G: Field Work Documents



**JKE SAQP**



# JKE SAQP

REPORT TO  
**SUNDALE NORTHLAND DEVELOPMENT PTY LTD**  
**ATF SUNDALE NORTHLAND DEVELOPMENT UNIT**  
**TRUST**

ON  
**SAMPLING ANALYSIS AND QUALITY PLAN FOR**  
**DETAILED SITE INVESTIGATION**

FOR  
**PROPOSED RESIDENTIAL DEVELOPMENT**

AT  
**12-16 BENT STREET, LINDFIELD, NSW**

Date: 31 March 2025

Ref: E35535BWrpt-SAQP

**JKEnvironments**  
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## DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E35535BWrpt-SAQP	Final Report	31 March 2025

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This Report has been prepared pursuant to a contract between JKE and the Client and is therefore subject to:

- JKE's proposal in respect of the work covered by the Report;
- The limitations defined in the client's brief to JKE; and
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# JKE SAQP

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## Attachments

- Appendix A: Report Figures**
- Appendix B: Proposed Development Plans**
- Appendix C: Report Explanatory Notes**
- Appendix D: Guidelines and Reference Documents**

# JKE SAQP



## Abbreviations

Ambient Background Concentrations	ABC
Added Contaminant Limits	ACL
Asbestos Containing Material	ACM
Australian Drinking Water Guidelines	ADWG
Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Before You Dig Australia	BYDA
Below Ground Level	BGL
Benzo(a)pyrene Toxicity Equivalent Factor	BaP TEQ
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
Data Quality Indicator	DQI
Data Quality Objective	DQO
Detailed Site Investigation	DSI
Ecological Investigation Level	EIL
Ecological Screening Level	ESL
Environment Protection Authority	EPA
Environmental Site Assessment	ESA
Finished Floor Level	FFL
Health Investigation Level	HIL
Health Screening Level	HSL
Health Screening Level-Site Specific Assessment	HSL-SSA
International Organisation of Standardisation	ISO
JK Environments	JKE
JK Geotechnics	JKG
Lab Control Spike	LCS
Light Non-Aqueous Phase Liquid	LNAPL
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Polychlorinated Biphenyls	PCB
Per- and Polyfluoroalkyl Substances	PFAS
Photo-ionisation Detector	PID
Practical Quantitation Limit	PQL
Quality Assurance	QA
Quality Control	QC
Remediation Action Plan	RAP
Reduced/Relative Level	RL
Relative Percentage Difference	RPD
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
State Environmental Planning Policy	SEPP
State Significant Development Application	SSDA
Site Specific Assessment	SSA
Source, Pathway, Receptor	SPR
Standing Water Level	SWL

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Trip Blank	TB
Total Recoverable Hydrocarbons	TRH
Trip Spike	TS
Upper Confidence Limit	UCL
United States Environmental Protection Agency	USEPA
Virgin Excavated Natural Material	VENM
Volatile Organic Compounds	VOC
World Health Organisation	WHO

**Units**

Litres	L
Metres BGL	mBGL
Metres	m
Millilitres	ml or mL
Percentage	%
Percentage weight for weight	%w/w

## 1 INTRODUCTION

Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust ('the client') commissioned JK Environments (JKE) to prepare a Sampling Analysis and Quality Plan (SAQP) for the Detailed Site Contamination Investigation (DSI) to be undertaken by JKE for the proposed residential development at 12-16 Bent Street, Lindfield, NSW ('the site'). The site location is shown on Figure 1 and the proposed investigation will be confined to the site boundaries as shown on Figure 2 attached in the appendices.

JKE has previously undertaken a Preliminary Site Contamination Investigation (PSI) and Preliminary Groundwater Quality Screening at the site. A summary of the previous reports is included in Section 2.

### 1.1 Proposed Development Details

A review of the supplied information indicates that the proposed development will comprise demolition of the existing residences and associated structures followed by the construction of a new 9-storey residential building over a partial basement Ground Floor (G) level and three common basement levels (B1, B2 and B3).

The proposed finished floor level (FFL) of the lowest basement level B3 is at RL 71.6m Australian Height Datum (AHD), which requires bulk excavation to a depth of approximately 15.5m below ground level (BGL) within the north-eastern high side of the site and to approximately 9mBGL within the south-western low side of the site. The basements will be set back 3m from the north-western and north-eastern site boundaries and 6m from the south-western and south-eastern boundaries as indicated on Figure 2. Landscaped areas are proposed within the basement off-set areas. The supplied proposed development plans are attached in the appendices.

### 1.2 Aims and Objectives

The primary aims of the investigation are to characterise the soil and groundwater contamination conditions in order to assess site risks in relation to contamination and inform the preparation of a Remediation Action Plan (RAP).

The DSI objectives are to:

- Assess the soil and groundwater contamination conditions via implementation of a sampling and analysis program;
- Document an iteration and review of the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

### 1.3 Scope of Work

The SAQP has been prepared generally in accordance with a JKE proposal (Ref: EP71389BW) of 20 March 2025 and written acceptance from the client dated 27 March 2025.

The scope of work included review of the PSI and preparation of an SAQP with regards to National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)<sup>1</sup>, and other guidelines made under or with regards to the Contaminated Land Management Act (1997)<sup>2</sup>.

A list of reference documents/guidelines is included in the appendices.

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<sup>1</sup> National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

<sup>2</sup> Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

## 2 SITE INFORMATION

### 2.1 PSI, JKE 2025a

JKE undertook a PSI<sup>3</sup> at the site for the proposed development. The PSI was completed in December 2024 and subsequently revised in March 2025 as E35535BWrptRev2, dated 18 March 2025. The PSI included a review of historical information, site walkover inspection and soil sampling from six boreholes (BH2, BH3, BH8A, BH9, BH101 and BH102) concurrently with the JKG geotechnical investigation. The PSI included data from 14-16 Bent Street which was obtained in 2022. The 2022 data included site and site history information and sub-surface soil data from boreholes BH2, BH3, BH8A and BH9. No. 12 Bent Street was incorporated into the revised PSI in 2024.

The PSI identified that the site has historically been used for residential purposes since at least 1943. Building demolition and construction activities were identified at the site. The central portion of the site (14 Bent Street) has likely been used for hobby farm type agricultural activities. The site history and site walkover inspection identified the following areas of environmental concern (AEC): imported fill material; historical agricultural activities; use of pesticides; hazardous building materials; and up-gradient off-site dry cleaners, motor garage/service stations and general up-gradient industrial activities.

The boreholes drilled for the PSI generally encountered fill material to depths of approximately 0.1mBGL to 1.2mBGL, underlain by residual silty clay soils and sandstone bedrock. The fill typically comprised sandy silty clay and silty sandy clay with inclusions of igneous, ironstone and sandstone gravel, clay nodules, ceramic, concrete and plastic fragments, roots and root fibres and ash.

The PSI laboratory results identified zinc and nickel in fill above the ecological site assessment criteria (SAC). The source of the zinc was considered to be associated with imported fill soil. The elevations are shown on Figure 3.

The PSI did not identify any contamination that would preclude the proposed development/use of the site. The following was recommended:

- Undertake a DSI to characterise the site contamination conditions and establish whether remediation is required. An SAQP is to be prepared prior to the commencement of the DSI; and
- Undertake a hazardous building materials (HAZMAT) survey for the existing residences and structures prior to demolition.

### 2.2 Preliminary Groundwater Quality Screening, JKE 2025b

JKE undertook a Preliminary Groundwater Quality Screening (Ref: 35535BWrpt2-GW, dated 16 January 2025)<sup>4</sup>. The groundwater quality screening included sampling and laboratory analysis of groundwater from three existing onsite wells (MW101 to MW103 inclusive). The primary objective of the screening was to

<sup>3</sup> JKE, (2025a). Report to Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust on Preliminary Site Contamination Investigation (PSI) for Proposed Residential Development at 12-16 Bent Street, Lindfield, NSW. (Ref: E35535BWrptRev2, dated 18 March 2025) (referred to as PSI)

<sup>4</sup> JKE, (2025b). Report to Sundale Northland Development Pty Ltd ATF Sundale Northland Development Unit Trust on Preliminary Groundwater Quality Screening for Proposed Residential Development at 12-16 Bent Street, Lindfield, NSW. (Ref: E35535BWrpt2-GW, dated 16 January 2025) (referred to as Groundwater Quality Screening)

provide preliminary groundwater quality data that could be used to support an application for a temporary construction dewatering license with WaterNSW.

Groundwater standing water levels (SWL) recorded during sampling within the monitoring wells ranged from approximately 6.67mBGL to 7.38mBGL. Light non-aqueous phase liquid (LNAPL) or odours were not observed within the wells during groundwater development and sampling.

The Preliminary Groundwater Quality Screening identified the following results above the SAC:

- The copper concentrations in one well (MW101) exceeded the ecological SAC;
- The aluminium concentrations in one well (MW101) exceeded the ecological SAC;
- The nickel and zinc concentrations in all three wells exceeded the ecological SAC; and
- The pH in all three wells was outside the range for recreational and fresh waters.

JKE recommended that the groundwater be treated prior to discharge and the relevant consent authorities should be contacted to clarify the requirements to obtain disposal approval to stormwater or sewer. Reference should be made to the Preliminary Groundwater Quality Screening report for details or specific recommendations.

It is noted that per-and polyfluoroalkyl substances (PFAS) and volatile organic compounds (VOCs) were not detected above the SAC in any of the groundwater samples analysed for the screening. Therefore, PFAS and VOCs in groundwater are no longer considered to be contaminants of potential concern (CoPC) for the DSI. This is further discussed in the CSM in Section 3.

## 2.3 Site Identification

Table 2-1: Site Identification

<b>Current Site Owner at time of PSI (certificate of title):</b>	<ul style="list-style-type: none"> <li>• 12 Bent Street: Ku-Ring-Gai Council;</li> <li>• 14 Bent Street (as of November 2022): Mark Haddon Carter and Ruth Louise Charles; and</li> <li>• 16 Bent Street (as of November 2022): Deirdre Elizabeth Hall.</li> </ul>
<b>Site Address:</b>	12-16 Bent Street, Lindfield, NSW
<b>Lot &amp; Deposited Plan:</b>	Lot 1 in DP 318518, Lot 1 in DP 935936, Lot 1 in DP 960015, Lot 1 in DP 960014 and Lot 3 in DP 1226294
<b>Current Land Use:</b>	Residential and vacant land
<b>Proposed Land Use:</b>	Multi-storey residential
<b>Local Government Area:</b>	Ku-ring-gai Council
<b>Current Zoning:</b>	R4 – High Density Residential
<b>Site Area (m<sup>2</sup>) (approx.):</b>	4,300
<b>RL (AHD in m) (approx.):</b>	79-86

<b>Geographical Location (decimal degrees) (approx.):</b>	Latitude: -33.775889 Longitude: 151.166764
<b>Site Plans:</b>	Appendix A

## 2.4 Site Location and Regional Setting

The site is located in a predominantly residential area of Lindfield and is bound by Bent Street to the north. The site is located approximately 1km to the north-east of Little Blue Gum Creek.

## 2.5 Topography

The regional topography is characterised by a west and north-west facing hillside that extends from a ridge feature located along Pacific Highway to the east. The site is located at the mid-slope of the hillside and slopes to the west at approximately 4°-5°, generally in sympathy with the regional topography. No. 12 Bent Street slopes to the west at approximately 3°-4°. A localised valley feature was located towards the south-west of the site, where the wider regional topography generally declines to the south-west towards Little Blue Gum Creek.

## 2.6 Site Inspection

The latest walkover inspection of the site was undertaken by JKE on 14 October 2024 for the PSI. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken. At the time of the inspection, the site was occupied by two adjoining residences identified as 14 Bent Street and 16 Bent Street. 12 Bent Street was vacant and unoccupied at the time of inspection.

## 2.7 Surrounding Land Use

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

- North – Bent Street and residential properties further to the north;
- South – Residential properties and a large on-grade asphaltic concrete (AC) carpark used for public parking;
- East – Vacant and vegetated allotments. The adjacent vacant areas to the east of the site appeared to have been former residential properties that had undergone demolition. Two dry cleaner businesses (Platinum Valet Dry Cleaning and Jeeves Dry cleaners) were located approximately 100m-150m to the south-east and up-gradient of the site. The dry cleaners were located within the Lindfield town centre and shops along the Pacific Highway; and
- West – Two-storey townhouse properties.

The up-gradient dry cleaners located on a ridge line with falls towards the site were considered to be a potential off-site source of contamination.

## 2.8 Underground Services

The 'Before You Dig Australia' (BYDA) plans were reviewed in preparation of this SAQP in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. There were no underground services that were considered to represent a potential preferential pathway for contaminant migration.

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## 2.9 Summary of Regional Geology and Hydrogeology

### 2.9.1 Regional Geology

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

### 2.9.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS risk maps were reviewed for the PSI. The PSI indicated that the site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation (1997).

ASS information presented in a Lotsearch report reviewed as part of the PSI indicated that the site is located within a Class 5 ASS risk area. Works in a Class 5 risk area that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent Class 1,2,3,4 land.

### 2.9.3 Hydrogeology

Hydrogeological information presented in the PSI 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 30 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 560m from the site. This was utilised for water supply purposes. This bore was located up-gradient of the site, along the Pacific Highway ridge feature and is not considered to be a receptor;
- The majority of the bores were registered for monitoring purposes;
- There were no down-gradient bores (i.e. within 1,000m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified sand or clay soil to depths of 1.5mBGL-4mBGL, underlain by shale and sandstone bedrock. Standing water levels (SWLs) in the bores ranged from 2.6mBGL to 65mBGL.

The information reviewed for the PSI indicates that the subsurface conditions at the site are likely to consist of relatively low permeability (residual) soils overlying shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. Use of groundwater is not proposed as part of the development.

Considering the local topography and surrounding land features, JKE anticipate groundwater to flow towards the west or south-west.

## 2.10 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Little Blue Gum Creek located approximately 1km to the south-west of the site. The site location and regional topography indicates that excess surface water flows have the potential to enter the stormwater system which is likely to discharge to the Little Blue Gum Creek. The creek is a tributary of the Lane Cove

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River which hosts a freshwater ecosystem and potentially used for recreational purposes. Little Blue Gum Creek is considered to be a receptor.

### 3 CONCEPTUAL SITE MODEL

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

#### 3.1 Potential Contamination Sources/AEC and CoPC

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

Table 3-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<p><u>Fill material</u> – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated.</p> <p>Fill was observed at the ground surface of the site in areas of exposed soil, especially within 12 Bent Street and the landscaped areas of the site.</p> <p>Historical council records indicated that at least one in-ground pool within 12 Bent Street had been demolished and likely been in-filled by materials of unknown origin. The fill material placed within the former pool excavation may be contaminated.</p> <p>The PSI identified fill to depths ranging from approximately 0.1mBGL to 1.2mBGL. The fill contained inclusions of igneous, ironstone and sandstone gravel, clay nodules, ceramic, concrete and plastic fragments, roots and root fibres and ash.</p>	<p>Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.</p> <p>The PSI encountered elevated concentrations of nickel and zinc above the ecological SAC as outlined in Section 2.1.</p>
<p><u>Historical agricultural use</u> – The central portion of the site appeared to have been occupied by small scale market gardens as observed in the aerial photographs from the 1930s. This could have resulted in contamination across the site via use of machinery, application of pesticides and building/ demolition of various structures. Irrigation pipes made from asbestos cement may also be associated with this AEC.</p>	<p>Heavy metals, TRH, PAHs, OCPs, PCBs and asbestos</p> <p>JKE note that OCPs only became commercially available in the 1940s. Prior to this time pesticides were predominantly heavy metal compounds.</p>
<p><u>Use of pesticides</u> – Pesticides may have been used beneath the buildings and/or around the site.</p>	<p>Heavy metals and OCPs</p>
<p><u>Hazardous Building Material</u> – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.</p> <p>The PSI identified building demolition at the site between 1970 and 1978, and between 2011 and 2016.</p>	<p>Asbestos, lead and PCBs</p>

Source / AEC	CoPC
<p><u>Off-site area 1</u> (Dry Cleaners and Motor Garages/Service Stations) – A current dry cleaner (Platinum Valet Dry Cleaning and Jeeves Dry cleaners) was located approximately 100m-150m to the north-east and up-gradient of the site.</p> <p>The PSI identified two historical dry cleaners, and a motor garage/ service station were located between approximately 100m and 120m the north-east and up-gradient of the site. These historical businesses were registered between 1967 and 1988. Although the dry cleaners and motor garages/service stations were located more than 100m away from the site, due to their up-gradient location and unknown groundwater conditions at the site, these land uses have been included in the CSM.</p>	<p>Heavy metals (lead), TRH, naphthalene and BTEX.</p> <p>We note that concentrations of PFAS and VOCs were not detected (i.e. below PQLs) in any of the groundwater samples analysed groundwater quality screening. As such, the potential for widespread PFAS and VOC contamination impacts from off-site sources via migration of contaminated groundwater to the site is considered low and these contaminants are no longer considered to be CoPC for the DSI.</p>
<p><u>Off-site area 2</u> – General off-site industrial land uses were identified within the vicinity of the site. The off-site industrial activities included a printer, photographic development, taxi/truck operator, microfilm producer and charcoal manufacturer located approximately 200m up-gradient of the site.</p>	<p>As per off-site area 1.</p>

### 3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

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

Table 3-2: CSM

<p><b>Potential mechanism for contamination</b></p>	<p>Potential mechanisms for contamination include:</p> <ul style="list-style-type: none"> <li>• Fill material – importation of impacted material, ‘top-down’ impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material);</li> <li>• Historical agricultural use – ‘top-down’ and spills (e.g. application of pesticides, refuelling or repairing machinery, and other activities at the ground surface level);</li> <li>• Use of pesticides – ‘top-down’ and spills (e.g. during normal use, application and/or improper storage);</li> <li>• Hazardous building materials – ‘top-down’ (e.g. demolition resulting in surficial impacts in unpaved areas); and</li> <li>• Off-site land uses including current and historical dry cleaners and motor garages/service stations – ‘top-down’, spill or sub-surface release. Impacts to the site could occur via migration of contaminated groundwater.</li> </ul>
<p><b>Affected media</b></p>	<p>Soil and groundwater have been identified as potentially affected media for the DSI.</p>
<p><b>Receptor identification</b></p>	<p>Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users and recreational water users within Little Blue Gum Creek. Although Little Blue Gum Creek is located approximately 1km away from the site, due to the down-gradient location and the regional valley feature located to the south-west of the site, the creek is considered to have the potential to form</p>

	<p>groundwater connectivity to the site. In addition, the historical maps reviewed for the PSI indicated that Little Blue Gum Creek could have been historically located closer to the site with potential alteration of the waterway between 1917 and 1936.</p> <p>Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and freshwater ecology in Little Blue Gum Creek.</p>
<p><b>Potential exposure pathways</b></p>	<p>Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion.</p> <p>Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings and basements.</p> <p>Exposure to groundwater is unlikely to occur in the Little Blue Gum Creek through direct migration, however groundwater has the potential to enter the creek via the stormwater system (which is expected to discharge into the creek) during temporary construction dewatering where groundwater is discharged into the stormwater system, as noted above.</p>
<p><b>Potential exposure mechanisms</b></p>	<p>The following have been identified as potential exposure mechanisms for site contamination:</p> <ul style="list-style-type: none"> <li>• Vapour intrusion into the proposed basement and/or building (either from soil contamination or volatilisation of contaminants from groundwater);</li> <li>• Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and</li> <li>• Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation.</li> </ul>
<p><b>Presence of preferential pathways for contaminant movement</b></p>	<p>None were identified onsite.</p>



## 4 SAMPLING, ANALYSIS AND QUALITY PLAN

### 4.1 Data Quality Objectives (DQO)

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

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation will be summarised in the DSI report.

#### 4.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. Investigation data is required to assess the contamination status of the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required. This information will be considered by the consent authority in exercising its planning functions in relation to the approval of the development proposal under Chapter 4, Clause 4.6 of SEPP Resilience and Hazards 2021.

#### 4.1.2 Step 2 - Identify the Decisions of the Study

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

- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is further investigation remediation required and what is this likely to involve?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

#### 4.1.3 Step 3 - Identify Information Inputs

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

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

#### 4.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to a maximum nominated sampling depth of 2mBGL (spatial boundary). The final depth could depend on site

conditions and will be noted in the DSI. At this stage, the sampling is scheduled to be completed between 7 and 14 April 2025 (temporal boundary). Areas not accessible for sampling will be noted in the DSI as data gaps.

#### **4.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)**

##### **4.1.5.1 Tier 1 Screening Criteria**

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 5. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

Where appropriate, data will be assessed against valid statistical parameters to characterise the data population. This will include calculation and application of mean values and/or 95% upper confidence limit (UCL) values for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997.

For the DSI, the following decision rules will be considered:

- If all CoPC (with the exception of asbestos) concentrations are below the SAC, then the data will be compared directly to the SAC without statistical analysis;
- For soil data, if any individual CoPC (with the exception of asbestos) concentration is above the SAC, then statistical analysis will be considered based on the sampling plan. This will include calculation of the 95% upper confidence limit (UCL) value for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997. The UCL will be considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC;
- If asbestos concentrations are encountered above the SAC or in the top 100mm of soil, then asbestos will be deemed a contaminant of concern for remediation purposes; and
- Groundwater data will be compared directly to the SAC and evaluated with regards to valid/complete SPR-linkages.

##### **4.1.5.2 Field and Laboratory QA/QC**

Field QA/QC will include analysis of inter-laboratory duplicates (minimum of 5% of primary samples), intra-laboratory duplicates (minimum of 5% of primary samples), and trip spike (for volatiles), trip blank (for selected organic and inorganic compounds) and rinsate (for selected organic and inorganic compounds) samples (one for each medium sampled to assess the adequacy of field practices).

Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, will be included in the Data Quality (QA/QC) Evaluation presented in the DSI report.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which will be outlined in the laboratory reports. These criteria are developed and implemented in accordance with the laboratory's

National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

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

#### 4.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

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

#### 4.1.6 Step 6 – Specify Limits on Decision Errors

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

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this investigation, the null hypothesis ( $H_0$ ) is that the 95% UCL for the CoPC is greater than the SAC. The alternative hypothesis ( $H_A$ ) is that the 95% UCL for the CoPC is less than the SAC. Alternative considerations are made regarding asbestos based on an assessment of multiple lines of evidence.

Potential outcomes include Type I and Type II errors as follows:

- Type I error of determining that the soil is acceptable for the proposed land use when it is not (wrongly rejects true  $H_0$ ), includes an alpha ( $\alpha$ ) risk of 0.05; and
- Type II error of determining that the soil is unacceptable for the proposed land use when it is (wrongly accepts false  $H_0$ ), includes beta ( $\beta$ ) risk of 0.2.

UCLs will be considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC. However, where statistical analysis is applied in accordance with Step 5 via the calculation of UCL values, the potential for decision errors to occur will also be evaluated using the Combined Risk Value (CRV) method as outlined in Appendix E of the NSW EPA Sampling Design Part 1 – Application (2022)<sup>5</sup> contaminated land guidelines. The CRV method will be used retrospectively to establish whether there is sufficient statistical power in the UCL.

Statistical analysis will not apply to asbestos or groundwater data, therefore these data will be assessed based on a multiple lines of evidence and risk-based approach.

<sup>5</sup> NSW EPA, (2022). *Sampling design part 1 - application*. (referred to as EPA Sampling Design Guidelines 2022)

Data Quality Indicators (DQI) for field and laboratory QA/QC samples are defined below. An assessment of the DQI's is to be made in relation to precision, accuracy, representativeness, completeness and comparability.

**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 and Rinsates**

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to typical background concentrations in soils and published drinking water guidelines for waters.

**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, we will adopt the most conservative concentration reported.

## 4.1.7 Step 7 - Optimise the Design for Obtaining Data

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

## 4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology proposed for the DSI is outlined in the table below:

Table 4-1: Proposed DSI Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	<p>Samples for the DSI will be collected from a total of 17 locations (BH/TP301 to BH/TP317 inclusive) as shown on the attached Figure 2. This number of locations meets the minimum sampling density for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022)<sup>6</sup> contaminated land guidelines.</p> <p>The mound at the south-eastern section of the site within No. 12 Bent Street is estimated to be less than 75m<sup>3</sup>. BH/TP314 to BH/TP317 inclusive will be positioned along the existing mound in order to make an initial assessment of the nature and contamination condition of this material. This number of sampling locations meets the minimum stockpile sampling density recommended in the EPA Sampling Design Guidelines 2022.</p>
Sampling Plan	<p>The sampling locations BH/TP301 to BH/TP313 inclusive, will be placed on a systematic plan with a grid spacing of approximately 20m between sampling location. A systematic plan is considered suitable to identify hotspots to a 95% confidence level and calculate UCLs for specific data populations (UCLs will only be applied where appropriate and in accordance with the DQOs).</p> <p>The sampling locations BH/TP314 to BH/TP317 inclusive, will be spaced evenly along the length of the existing mound.</p>
Set-out and Sampling Equipment	<p>Sampling locations will be set out using a tape measure. In-situ sampling locations will be checked for underground services by an external contractor prior to sampling.</p> <p>Samples will be collected using a combination of excavator and hand auger. Samples will be obtained from the test pit walls or directly from the bucket by hand, and directly from the hand auger. Where sampling occurred from the excavator bucket, JKE will collect samples from the central portion of large soil clods, or from material that is unlikely to have come into contact with the bucket.</p>
Sample Collection and Field QA/QC	<p>Soil samples will be obtained in accordance with our standard field procedures. Soil samples will be collected from the fill and natural profiles based on field observations. The sample depths will be shown on the logs included in the DSI report.</p>

<sup>6</sup> NSW EPA, (2022). *Sampling design part 1 - application*. (referred to as EPA Sampling Design Guidelines 2022)

Aspect	Input
	<p>Soil samples will be placed in glass jars with plastic caps and Teflon seals with minimal headspace. Samples for asbestos analysis will be placed in zip-lock plastic bags.</p> <p>During sampling, soil at selected depths will be split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure includes alternate filling of the sampling containers to obtain a representative split sample. Homogenisation of duplicate samples will not occur to minimise the potential for the release of volatile organic compounds.</p>
Field Screening	<p>A portable Photoionisation Detector (PID) fitted with a 10.6mV lamp will be used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs will be undertaken on soil samples using the soil sample headspace method. VOC data will be obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records will be maintained for the project.</p> <p>The field screening for asbestos quantification will include the following:</p> <ul style="list-style-type: none"> <li>• A representative bulk sample (approximately 10L sample, to the extent achievable based on sample return) is to be collected from fill at 1m intervals, or from each distinct fill profile. The quantity of material for each sample may vary based on the return achieved using the auger. The bulk sample intervals will be shown on the borehole and test pit logs;</li> <li>• Each sample will be weighed using an electronic scale;</li> <li>• Each bulk sample will be passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement. If the soil is cohesive in nature, the samples will be subsequently placed on a contrasting support (blue tarpaulin) and inspected for the presence of fibre cement. Any soil clumps/nodules will be disaggregated;</li> <li>• The condition of fibre cement or any other suspected asbestos materials will be noted on the field records; and</li> <li>• If observed, any fragments of fibre cement in the bulk sample will be collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content will be undertaken based on the requirements outlined in Schedule B1 of NEPM (2013), as summarised in Section 5.1.</li> </ul> <p>Bulk samples in unpaved areas will be taken from the top 100mm, then each distinct fill profile thereafter, with a minimum of one sample per 1m depth of each fill profile.</p> <p>A calibration/check of the accuracy of the scale used for weighing the fibre cement fragments will be undertaken using a set of calibration weights. Calibration/check records are maintained on file by JKE. The scale used to weigh the 10L samples will not be calibrated, however this is not considered significant as this method of providing a weight for the bulk sample is considered to be considerably more accurate than applying a nominal soil density conversion.</p>
Decontamination and Sample Preservation	<p>Sampling personnel will use disposable nitrile gloves during sampling activities. Re-usable sampling equipment will be decontaminated between sampling events using a Decon and potable water solution, followed by a rinse in potable water.</p> <p>Soil samples will be preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples may be stored temporarily in fridges in the JKE warehouse</p>

Aspect	Input
	before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

### 4.3 Groundwater Sampling Plan and Methodology

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

Table 4-2: Proposed Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	<p>Groundwater samples will be collected from three existing onsite monitoring wells (MW101, MW102 and MW103) installed as part of the Preliminary Groundwater Quality Screening.</p> <p>Considering the topography and the location of the nearest down-gradient water body, MW101 and MW102 were considered to be capturing the groundwater conditions in the 'up-gradient' area of the site, and MW103 was considered to be capturing the groundwater conditions in the 'down-gradient' area of the site.</p>
Existing Monitoring Well Specifications	<p>The existing monitoring well construction details documented in the borehole logs for MW101, MW102 and MW103 will be included in the DSI report. The monitoring wells were installed to a depth of approximately 17.92m below ground level (BGL) to 26.05mBGL. The wells were generally constructed as follows:</p> <ul style="list-style-type: none"> <li>• A 50mm diameter Class 18 PVC casing and machine slotted screen (the lower portion of the wells were screened between 5.92-9.26mBGL, to the base of the wells);</li> <li>• A 2mm sand filter pack was installed around the slotted screen to approximately 0.55-1.46m above the screen interval;</li> <li>• A bentonite seal/plug was installed above the filter pack to seal the wells. The bentonite seal/plug ranged in thickness from approximately 2.94m to 6.8m thick;</li> <li>• The void around the casing was backfilled with spoil as required; and</li> <li>• A gatic cover was installed at the surface with a concrete plug to limit the inflow of surface water, and the wells were sealed with an envirocap.</li> </ul> <p>The monitoring well installation, including the screen lengths, is considered suitable for assessment of general groundwater quality with regards to Table 5 in Schedule B2 of NEPM 2013.</p>
Monitoring Well Development	<p>The monitoring wells will be developed after installation using a specialised Waterra foot valve system attached to an electric pump or dedicated disposable plastic bailers if conditions do not allow the use of the foot valve. During development, the following parameters will be monitored using calibrated field instruments:</p> <ul style="list-style-type: none"> <li>• Standing water level (SWL) using an electronic dip meter; and</li> <li>• pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter.</li> </ul> <p>Steady state conditions are considered to have been achieved when the difference in the pH measurements is less than 0.2 units, the difference in conductivity is less than 10%, and when the SWL is not in drawdown.</p> <p>The field monitoring records and calibration data will be included in the DSI report.</p>
Groundwater Sampling	<p>The monitoring wells will be allowed to recharge for approximately 3-4 days after development. Prior to sampling, the monitoring wells will be checked for the presence of LNAPL using an inter-phase probe electronic dip meter.</p>

Aspect	Input
	<p>The monitoring well head space will be checked for VOCs using a calibrated PID unit. The samples will be obtained using a peristaltic pump.</p> <p>During sampling, the following parameters will be monitored using calibrated field instruments:</p> <ul style="list-style-type: none"> <li>• SWL using an electronic dip meter; and</li> <li>• pH, temperature, EC, DO and Eh using a YSI Multi-probe water quality meter.</li> </ul> <p>Steady state conditions is considered to have been achieved when the difference in the pH measurements is less than 0.2 units, the difference in conductivity is less than 10%, and when the SWL was not in drawdown.</p> <p>Groundwater samples will be obtained directly from the single use PVC tubing and placed in the sample containers. Duplicate samples are to be obtained by alternate filling of sample containers. This technique is adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc.</p> <p>Groundwater removed from the wells during development and sampling will be transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal.</p> <p>The field monitoring record and calibration data will be included in the DSI report.</p>
Decontaminant and Sample Preservation	<p>During development, single use foot valve and tubing will be used for each well. The groundwater sampling process utilises a peristaltic pump and single-use tubing. Therefore, no decontamination procedure for the development and sampling is considered necessary. The tip of the inter-phase probe electronic dip meter will be decontaminated between monitoring wells using potable water and Decon solution, followed by a rinse with potable water.</p> <p>The samples will be preserved with reference to the analytical requirements and placed in an insulated container with ice or ice bricks. On completion of the fieldwork, the samples may be temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.</p>

#### 4.4 Laboratory Analysis and Proposed Analytical Schedule

Samples will analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. The laboratory details are provided in the table below:

Table 4-3: Laboratory Details

Samples	Laboratory
All primary samples and field QA/QC samples including intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)

For the DSI, an allowance has been made for the following analysis:

- Up to 20 selected fill/natural soil samples analysed for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); polycyclic aromatic hydrocarbons (PAHs); total recoverable hydrocarbons (TRH); monocyclic aromatic hydrocarbons (BTEX); organochlorine pesticides (OCPs) and organophosphate pesticides (OPPs); polychlorinated biphenyls (PCBs); and asbestos (500ml);
- Up to four selected deeper fill/natural soil samples analysed for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH; and BTEX;
- Up to two selected fill/natural soil samples analysed for: pH; cation exchange capacity (CEC); and clay content (%);
- Up to four selected fibre cement fragments, if found on or in soil, analysed for asbestos; and
- Up to three groundwater samples analysed for: heavy metals; TRH/BTEX; low level PAHs; pH; and electrical conductivity (EC).

The soil analysis will generally target the fill soils and the first contact of natural soils. Deeper samples may be analysed based on the results of the shallow soils and site observations. A staged approach to soil sample analysis has been undertaken to allow for targeting areas based on the results of the initial analysis round.

## 5 SITE ASSESSMENT CRITERIA (SAC)

The following SAC derived from the NEPM 2013 and other guidelines, as discussed in the following sub-sections, will be adopted for the DSI.

### 5.1 Soil

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

#### 5.1.1 Human Health

- Health Investigation Levels (HILs) for a ‘residential with minimum opportunity for soil access’ exposure scenario (HIL-B). This is a conservative approach to account for the proposed landscaped/deep soil area (approximately 1,861.67m<sup>3</sup>) which equates to 48.68% of the site area. Of the proposed landscaped/deep soil area, approximately 1,260m<sup>3</sup> of area is proposed as ‘communal open space’;
- Health Screening Levels (HSLs) for a ‘low-high density residential’ exposure scenario (HSL-A & HSL-B). HSLs will be calculated based on conservative assumptions including a ‘sand’ type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)<sup>7</sup>; and
- Asbestos will be assessed against the HSL-B criteria. A summary of the asbestos criteria is provided in the table below:

Table 5-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	<p>The HSL-B criteria will be adopted for the assessment of asbestos in soil. The SAC adopted for asbestos are derived from the NEPM 2013 and based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)<sup>8</sup>. The SAC include the following:</p> <ul style="list-style-type: none"> <li>• No visible asbestos at the surface/in the top 10cm of soil;</li> <li>• &lt;0.04% w/w bonded asbestos containing material (ACM) in soil; and</li> <li>• &lt;0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil.</li> </ul> <p>Concentrations for bonded ACM concentrations in soil will be based on the following equation which is presented in Schedule B1 of NEPM (2013):</p> $\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content x bonded ACM (kg)}}{\text{Soil volume (L) x soil density (kg/L)}}$ <p>However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample will be weighed using electronic scales and the above equation will be adjusted as follows (we note that the units will also convert to grams):</p>

<sup>7</sup> Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

<sup>8</sup> Western Australian (WA) Department of Health (DoH), (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia. (referred to as WA DoH 2021)

Guideline	Applicability
	$\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content} \times \text{bonded ACM (g)}}{\text{Soil weight (g)}}$

### 5.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an ‘urban residential and public open space’ (URPOS) exposure scenario. The EILs will only be applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene will be increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines<sup>9</sup>;
- ESLs will be adopted based on the soil type; and
- EILs for selected metals will be calculated using site specific soil parameters for pH, cation exchange capacity and clay content. The data will be used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013), and published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)<sup>10</sup>. This method is considered to be adequate for the Tier 1 screening.

### 5.1.3 Management Limits for Petroleum Hydrocarbons

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

## 5.2 Groundwater

Groundwater data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)<sup>11</sup>. Environmental values for the DSI include aquatic ecosystems, human uses (incidental contact and recreational water use), and human-health risks in non-use scenarios (vapour intrusion).

### 5.2.1 Human Health

- HSLs for a ‘low-high density residential’ exposure scenario (HSL-A/HSL-B). HSLs will be calculated based on the soil type and the observed depth to groundwater;
- Should the groundwater be recorded at depths shallower than 2mBGL, a site-specific assessment (SSA) for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater will be undertaken. The assessment will include a selection of alternative Tier 1 criteria that are considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria are based on the following:

<sup>9</sup> Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

<sup>10</sup> 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.

<sup>11</sup> NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination*.

- Australian Drinking Water Guidelines 2011 (updated 2021)<sup>12</sup> for BTEX compounds and selected VOCs;
- World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)<sup>13</sup> for petroleum hydrocarbons. We have conservatively adopted the value of 100µg/L for TRH F1 and F2;
- USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
- The use of the laboratory PQLs for other contaminants where there are no Australian guidelines.
- The Australian Drinking Water Guidelines 2011 (updated 2021)<sup>14</sup> will be multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies or with seepage water encountered in an excavation or in the basement). These have been deemed as ‘recreational’ SAC.

### 5.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species will be adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)<sup>15</sup>. The 99% trigger values will be adopted where required to account for bioaccumulation. Low and moderate reliability trigger values will also be adopted for some contaminants where high-reliability trigger values don’t exist.

<sup>12</sup> National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

<sup>13</sup> World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

<sup>14</sup> National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

<sup>15</sup> Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)



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## 6 DSI REPORTING REQUIREMENTS

A DSI report is to be prepared presenting the results of the investigation, in accordance with the NSW EPA Consultants Reporting on Contaminated Land, Contaminated Land Guidelines (2020)<sup>16</sup>.

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<sup>16</sup> NSW EPA, (2020). *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*

## 7 LIMITATIONS

The report limitations are outlined below:

- This SAQP was developed based on the information available, as documented in this plan. There is always a potential that the proposed investigation will identify contamination impacts (actual or potential) that trigger a need for further investigation;
- 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 plan is 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 preparation of this report has been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

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.

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### **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**

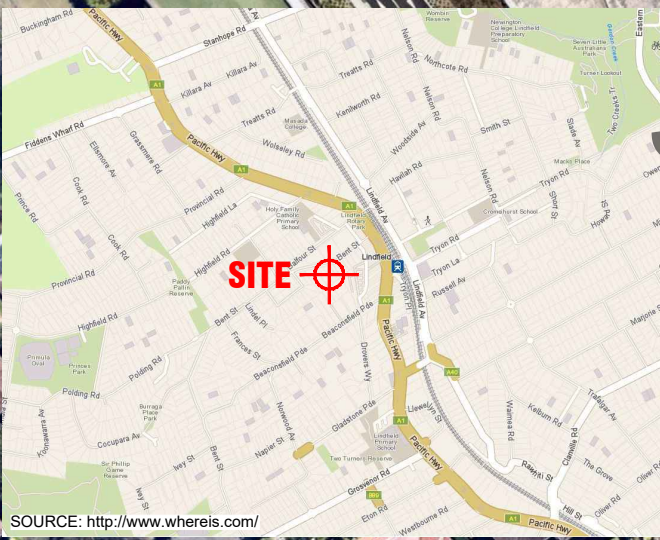
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other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



SOURCE: <http://www.wheris.com/>



**SITE**

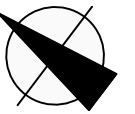
AERIAL IMAGE SOURCE: [MAPS.AU.NEARMAP.COM](https://maps.au.nearmap.com)

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Project No:	E35535BW	Figure No:	1
<b>JKEnvironments</b>			

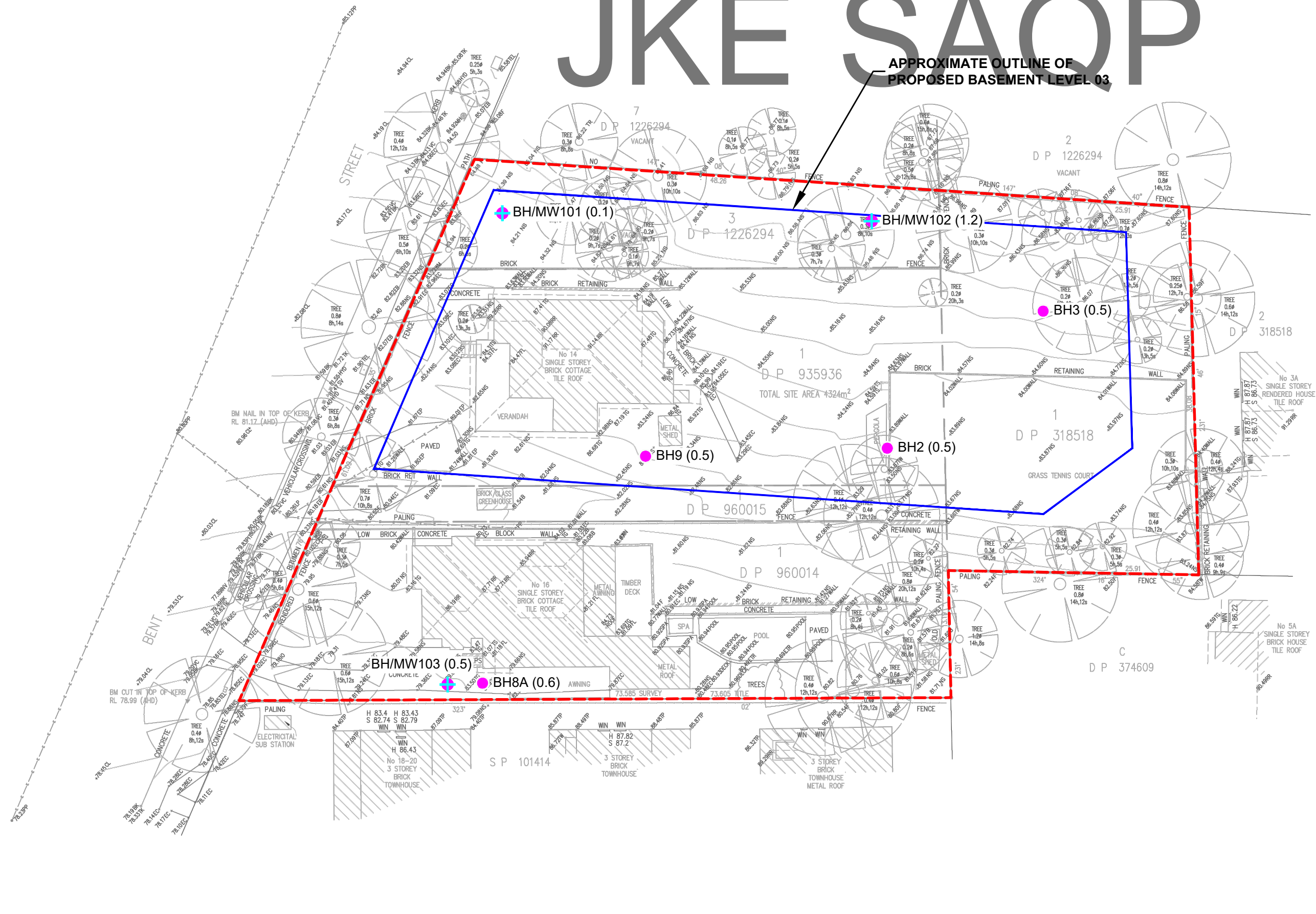


This plan should be read in conjunction with the Environmental report.

# JKE SAQP



APPROXIMATE OUTLINE OF PROPOSED BASEMENT LEVEL 03



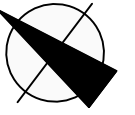
**LEGEND**

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

	<p>Title: <b>SAMPLE LOCATION PLAN</b></p> <p>Location: 12-16 BENT STREET, LINDFIELD, NSW</p> <p>Project No: E35535BW</p> <p style="text-align: right;">Figure No: <b>2</b></p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">JKEnvironments</p>
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This plan should be read in conjunction with the Environmental report.

# JKE SAQP

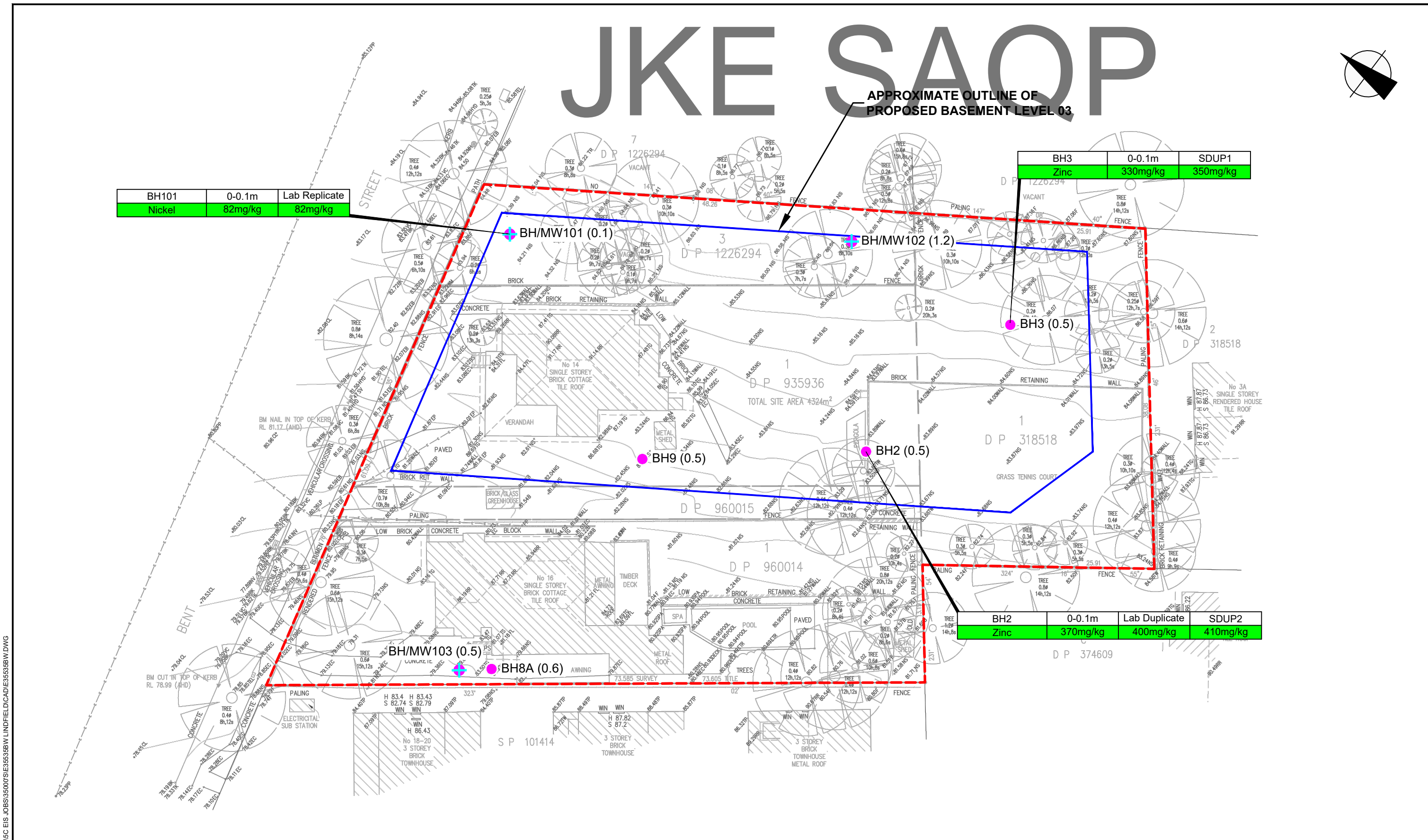


APPROXIMATE OUTLINE OF PROPOSED BASEMENT LEVEL 03

BH101	0-0.1m	Lab Replicate
Nickel	82mg/kg	82mg/kg

BH3	0-0.1m	SDUP1
Zinc	330mg/kg	350mg/kg

BH2	0-0.1m	Lab Duplicate	SDUP2
Zinc	370mg/kg	400mg/kg	410mg/kg



**LEGEND**

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

SAMPLE ID	DEPTH (metres)	SOIL/SURFACE SAMPLE EXCEEDANCE
CHEMICAL	CONCENTRATION	

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK

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

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

Title: **SAC EXCEEDANCE PLAN**

Location: 12-16 BENT STREET, LINDFIELD, NSW

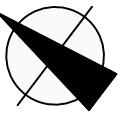
Project No: E35535BW Figure No: 3

**JKEnvironments**

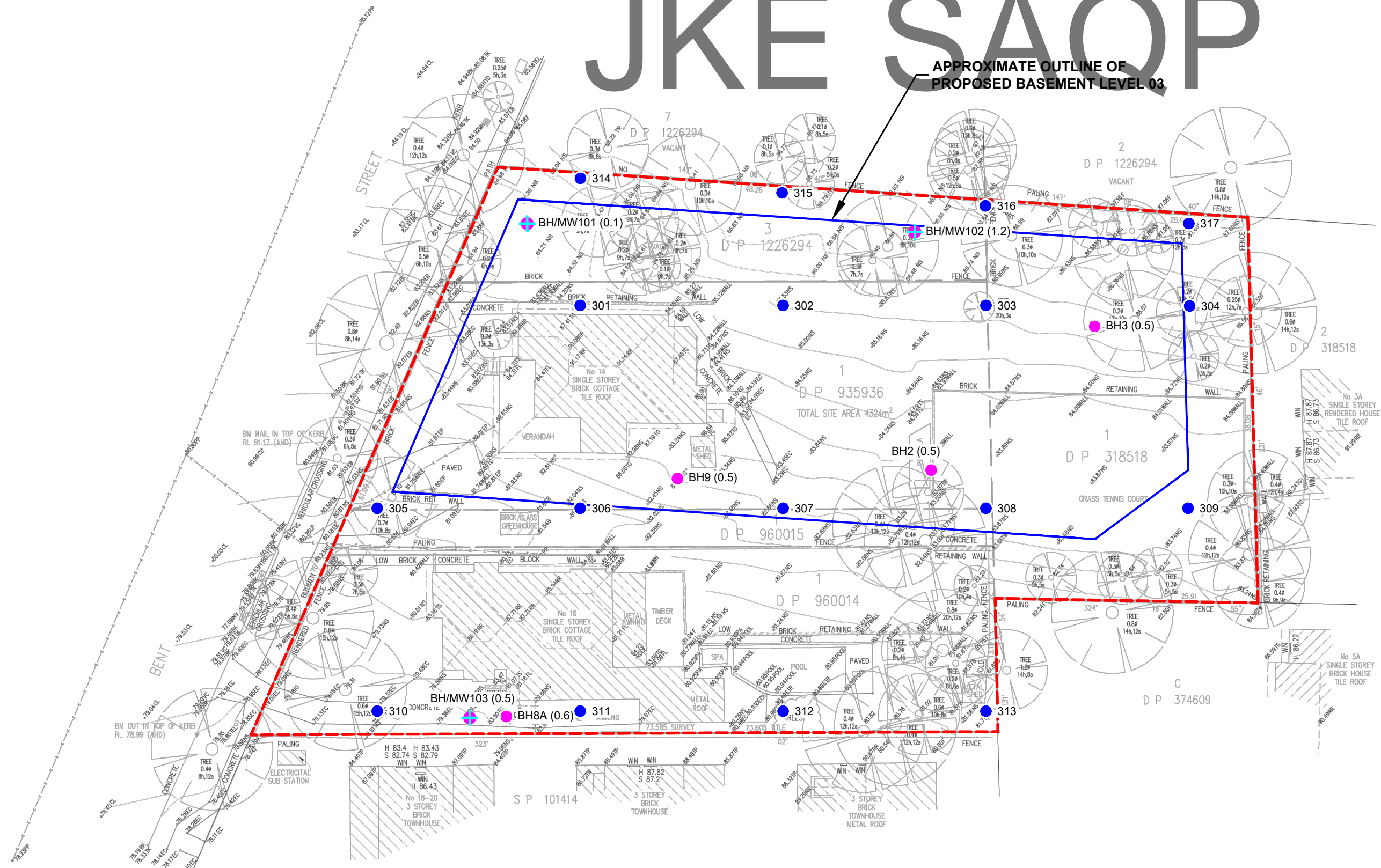


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# JKE SAQP



APPROXIMATE OUTLINE OF PROPOSED BASEMENT LEVEL 03

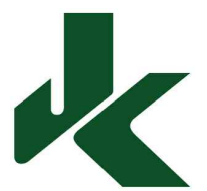


LEGEND	
	APPROXIMATE SITE BOUNDARY
	BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
	BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
	301 PROPOSED DSI SAMPLE LOCATION

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

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

Title: <b>PROPOSED SAMPLE LOCATION PLAN</b>	
Location: 12-16 BENT STREET, LINDFIELD, NSW	
Project No: E35535BW	Figure No: 4
<b>JKEnvironments</b>	



PLOT DATE: 28/03/2025 12:01:08 PM DWG FILE: K:\5C EIS JOBS\35000\SIE3553556W\_LINDFIELD\CAD\E3553556W.DWG

## **Appendix B: Proposed Development Plans**

	PERMISSIBLE	ACHIEVED
FSR	3.25	3.25
HEIGHT	28.6m	29.2m

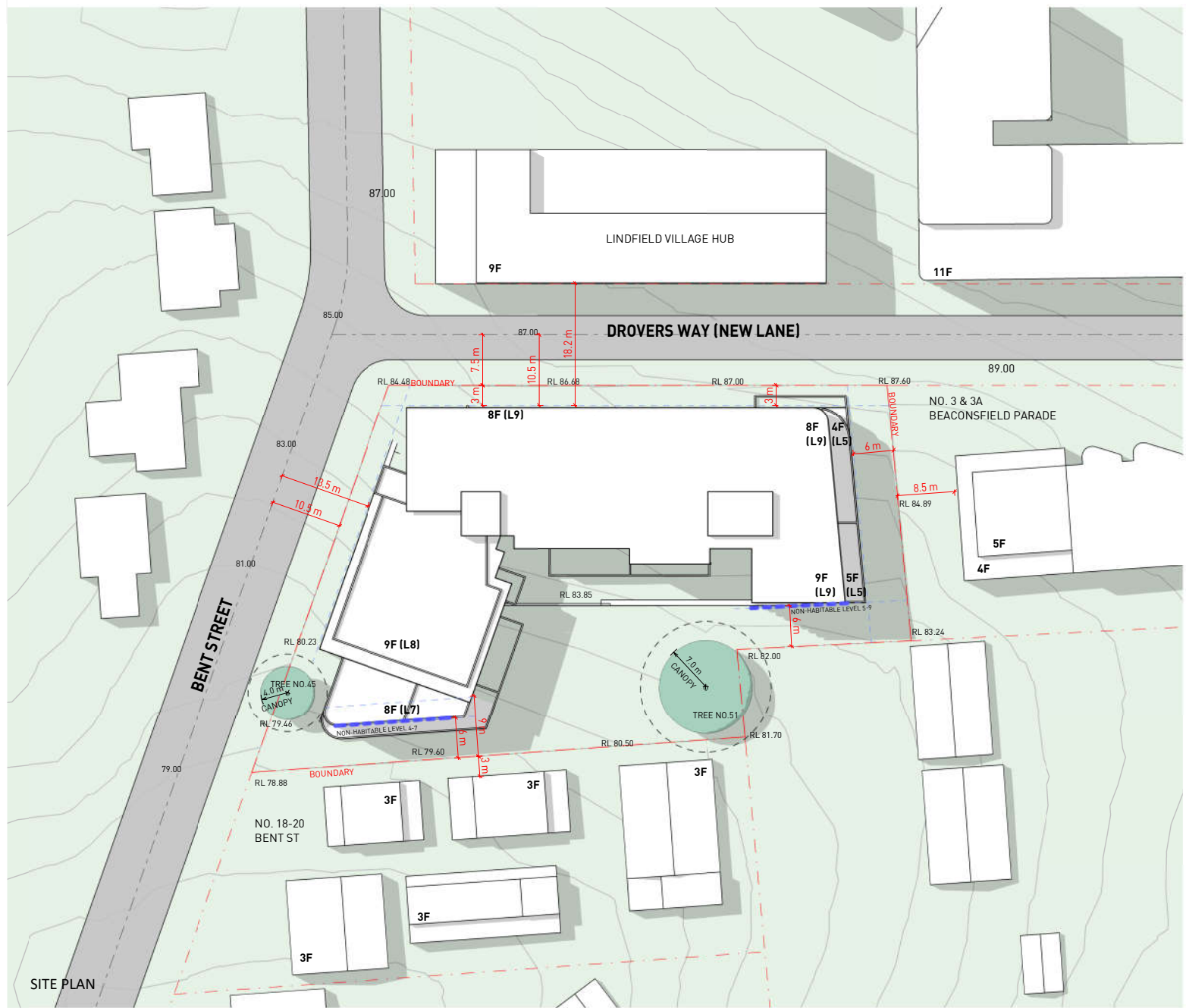
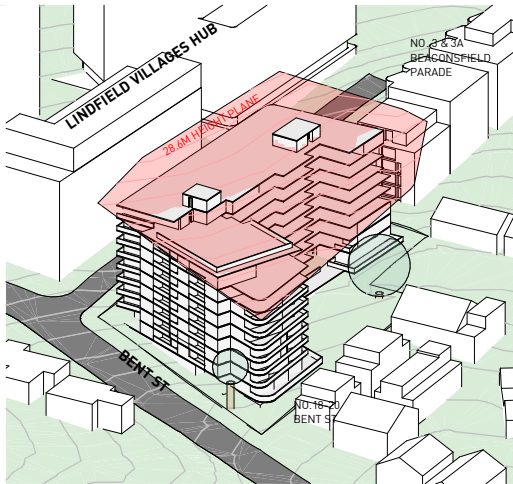
**YIELD AND UNIT MIX**

LEVEL	1B	2B	3B	4B	COUNT
L9	0	2	3	2	7
L8	0	3	6	2	11
L7	1	4	7	1	13
L6	1	4	7	1	13
L5	5	5	5	1	16
L4	5	5	5	1	16
L3	5	7	5	0	17
L2	4	5	6	0	15
L1	1	2	2	4	9
L0	0	0	0	0	0
	22	37	46	12	117

**AFFORDABLE**

LEVEL	AREA	UNIT COUNT
L5	417 m <sup>2</sup>	6
L4	513 m <sup>2</sup>	7
L3	572 m <sup>2</sup>	8
L2	418 m <sup>2</sup>	6
L1	151 m <sup>2</sup>	2
TOTAL	2071 m <sup>2</sup>	29

**AFFORDABLE GFA REQUIRED**  
 4324 X 3.25 X 17%= 2389m<sup>2</sup>  
 (including circulation)



**Key Plan:**

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 5 Jones Architect No.4778  
 N Morigiwa Architect No.11274

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1:300 @ A1

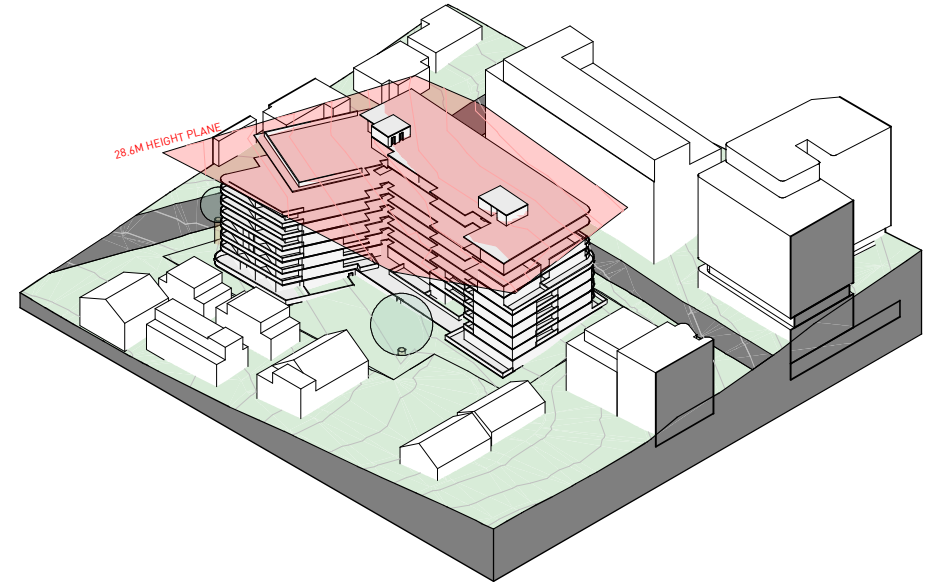
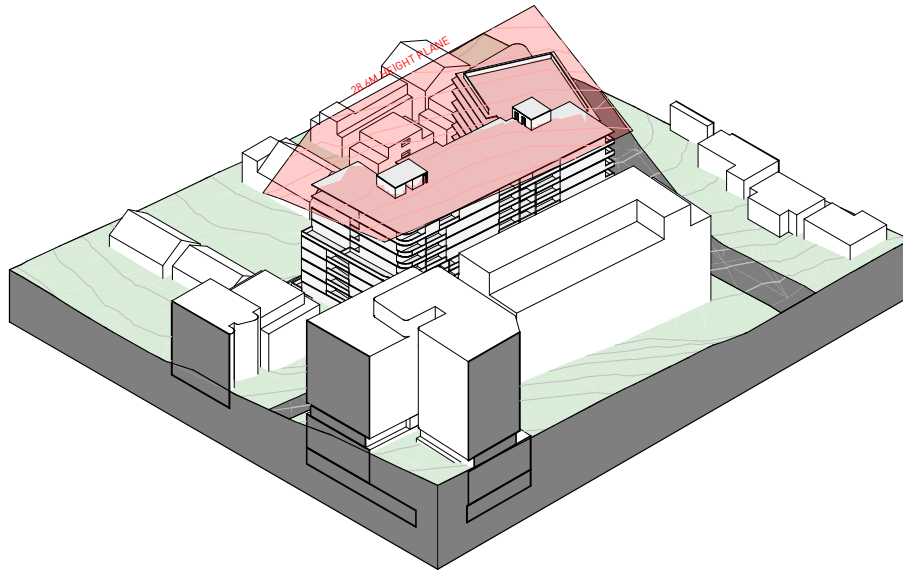
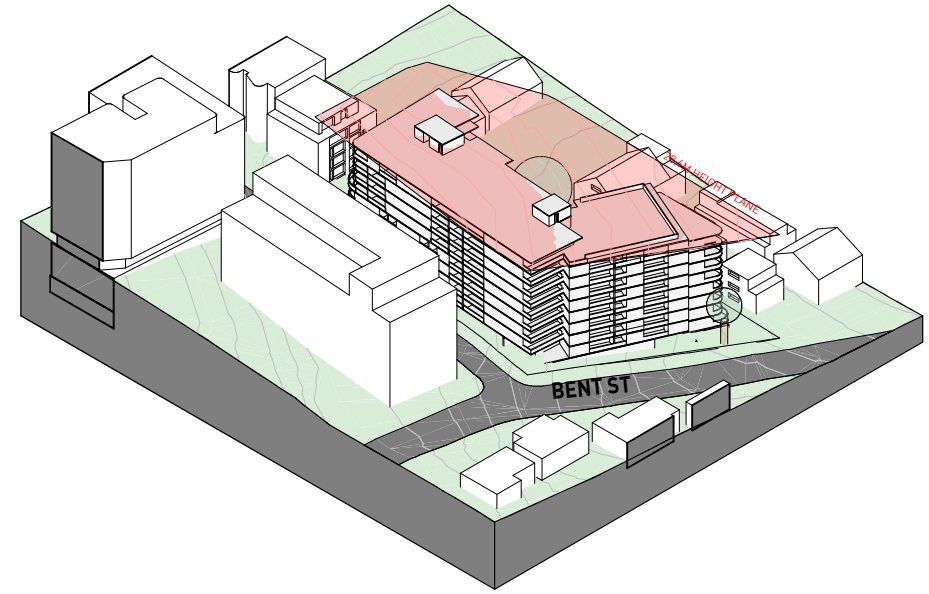
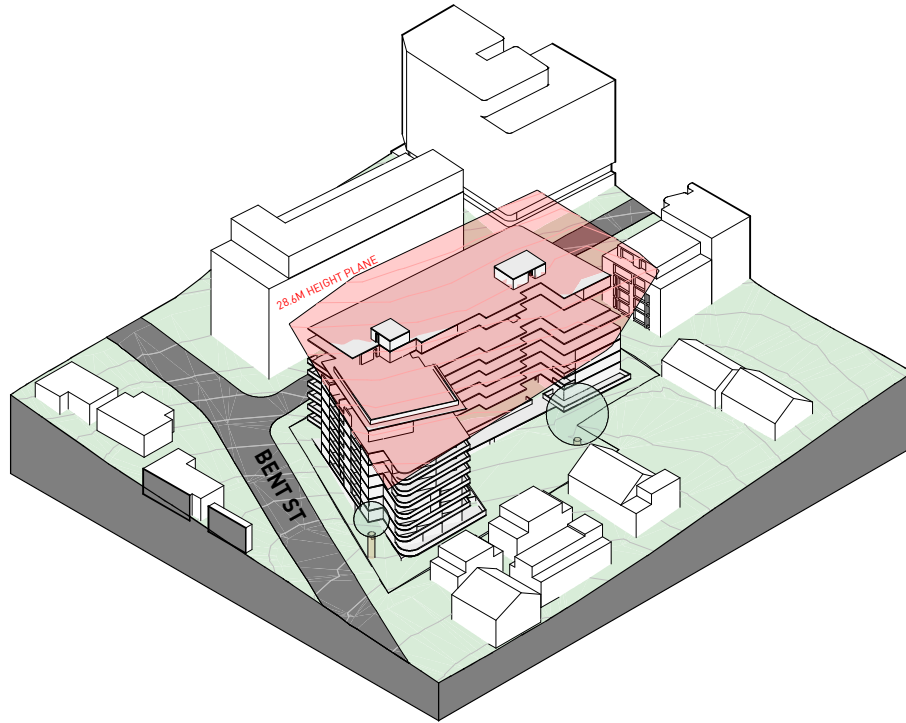
Project PA030530  
 12-16 BENT STREET, LINDFIELD, NSW  
 2070

Status  
 SKETCH

Title  
 A1-GENERAL INFORMATION  
 SITE PLAN

Drawing Number  
 AR-A10010

Revision



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**5 Parsons Architect No.6098**  
10 Jones Architect No.4778  
N Maproper Architect No.11274

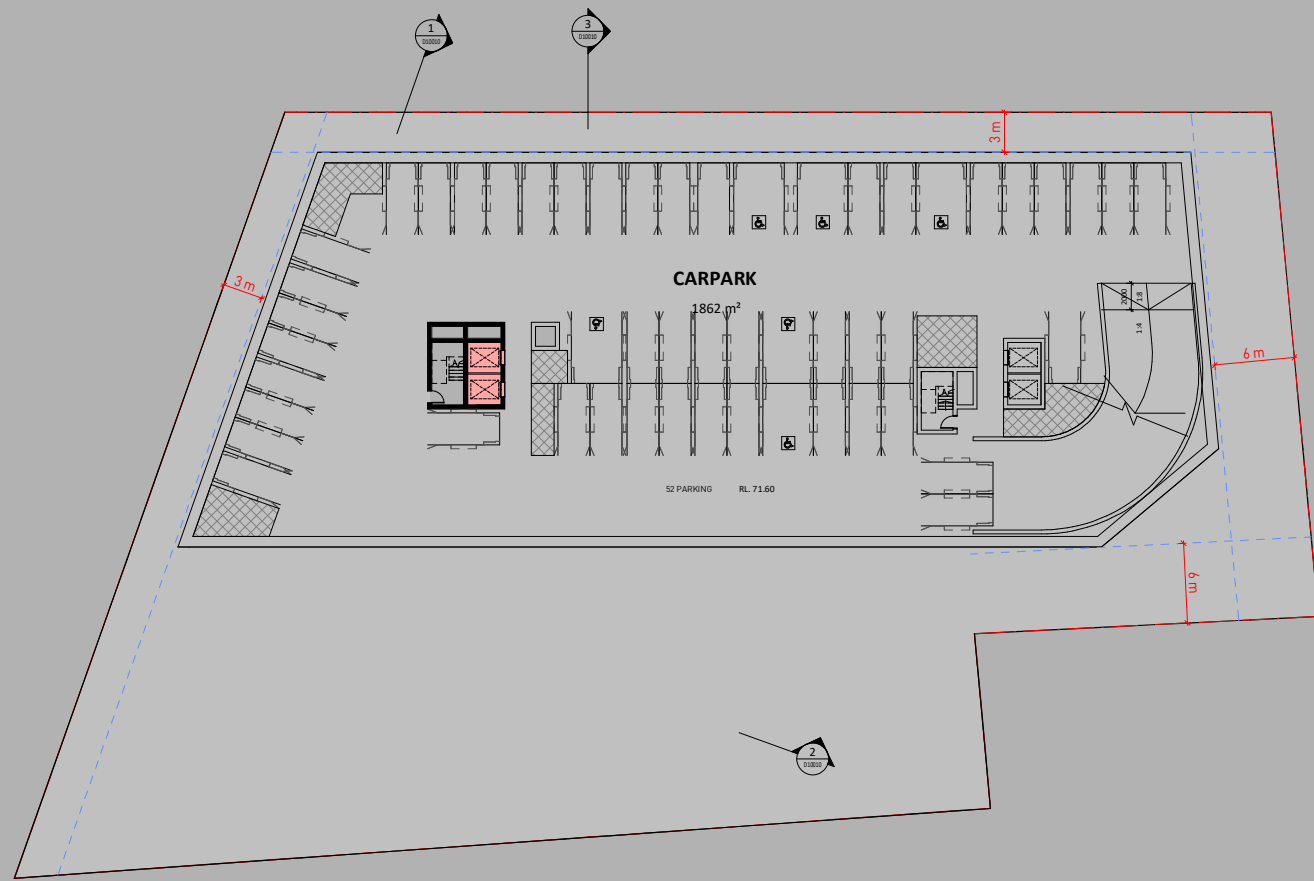
**PTW**

Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070  
Status  
SKETCH

**A1-GENERAL INFORMATION**  
**ISOMETRIC VIEWS**

Drawing Number  
**AR-A10020**

Revision



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N Maproparc Architect No.11274

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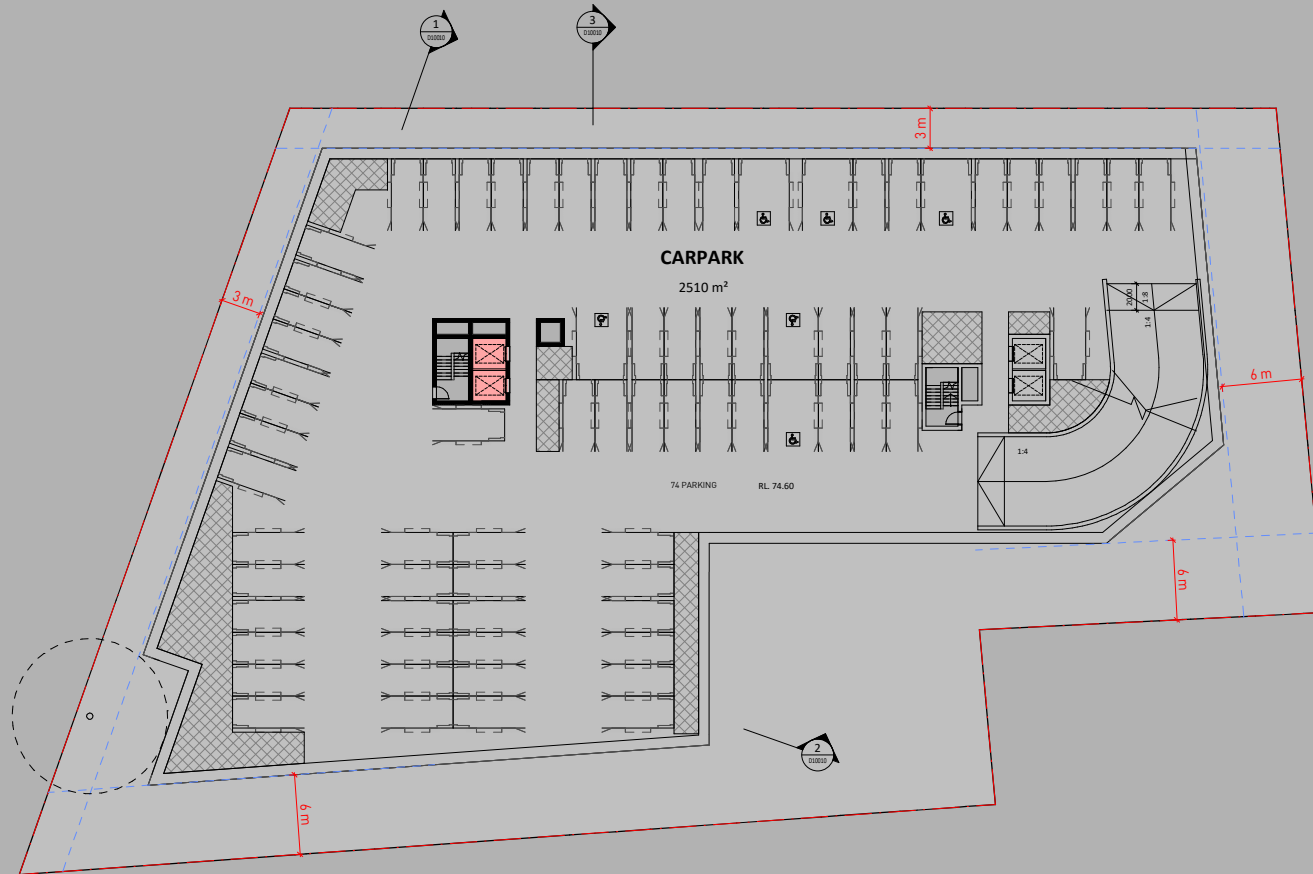
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**Project** PA030530  
**BentStreetLindfield**  
12-16 BENT STREET, LINDFIELD, NSW  
2070

**Status**  
SKETCH

Title		Revision	
B1-PLAN			
BASEMENT LEVEL 3 FLOOR PLAN			
Drawing Number			
AR-B10000			



**Key Plan:**

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Rev	Amendment	By	Chk*	Date

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N Metropolitan Architect No.11274

**PTW**

Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070  
Status  
SKETCH

Title	
B1-PLAN	BASEMENT LEVEL 2 FLOOR PLAN
Drawing Number	
AR-B10010	Revision



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Rev	Amendment	By	Chk*	Date

*Registered Architect	
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**BentStreetLindfield**  
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2070

**PTW**

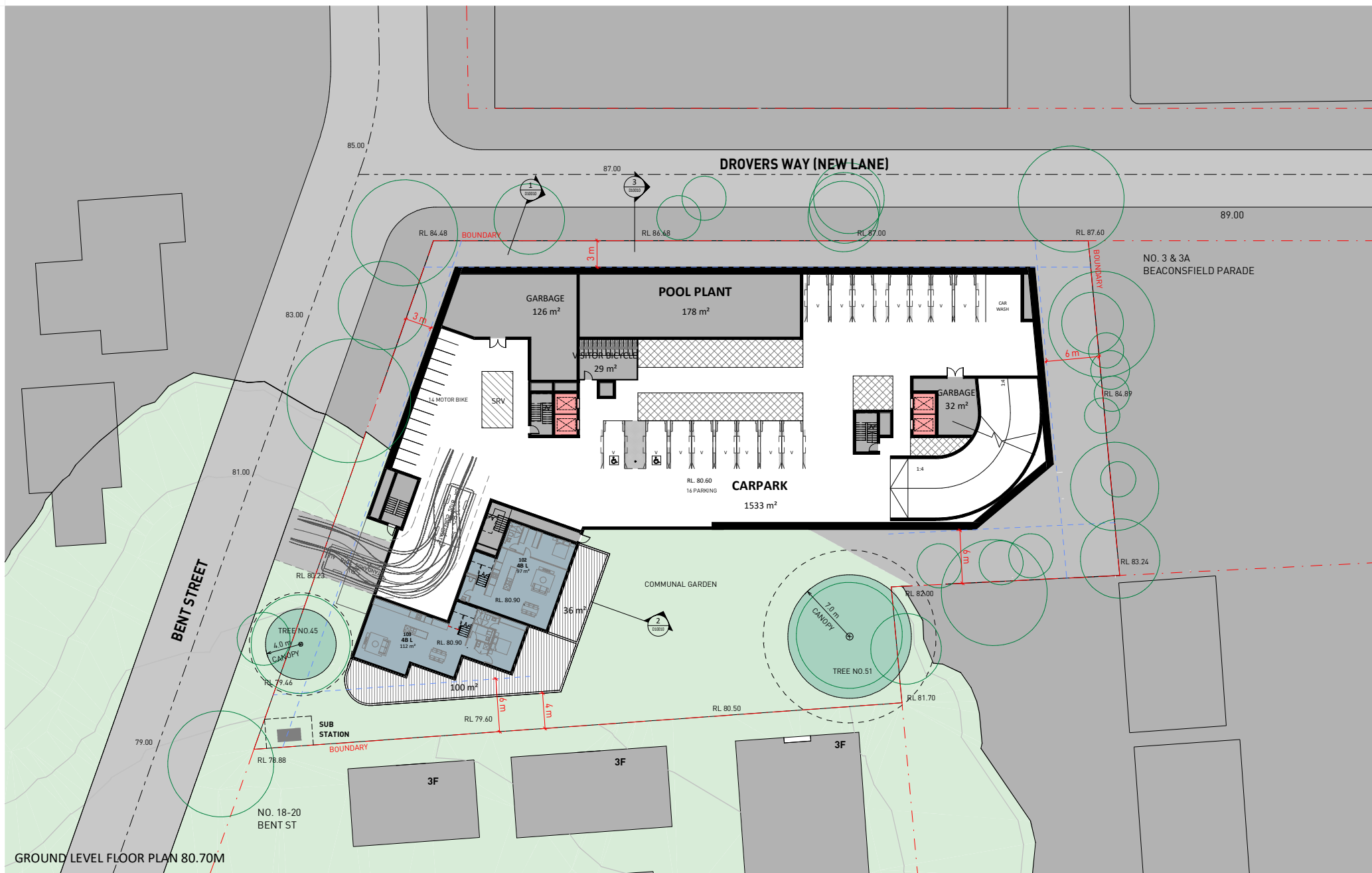
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**Status**  
SKETCH

**Title**  
B1-PLAN  
BASEMENT LEVEL 1 FLOOR PLAN

**Drawing Number**  
AR-B10020

**Revision**



**Key Plan:**

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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	2024/07/24

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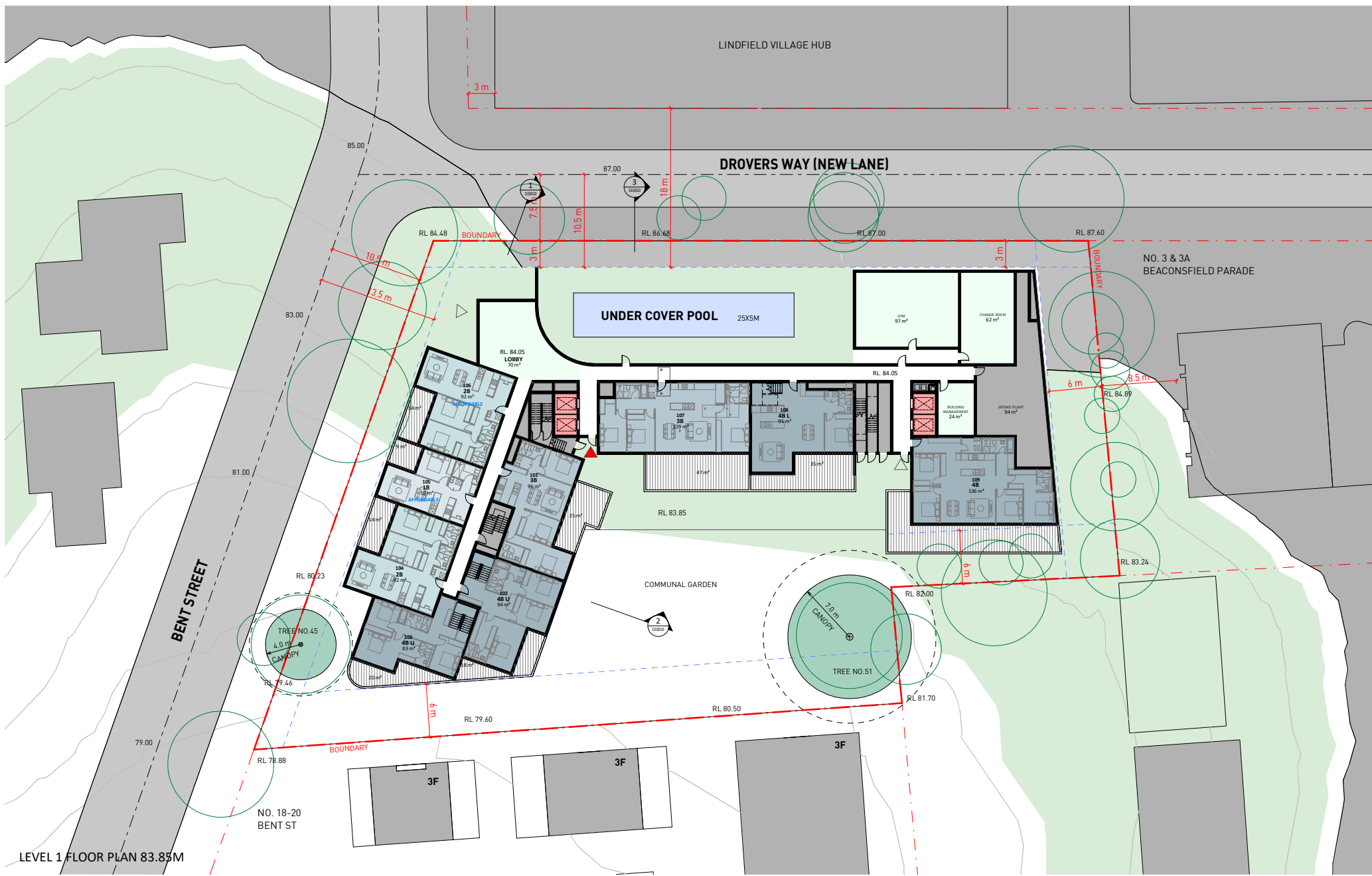
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S Parsons Architect No.6298  
D Jones Architect No.4778  
N Meininger Architect No.11274

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Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title		Revision	
B1-PLAN			
GROUND LEVEL FLOOR PLAN			
Drawing Number		Revision	
AR-B10030		1	



LEVEL 1 FLOOR PLAN 83.85M

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Rev	Amendment	By	Chk*	Date
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12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title		Revision	
B1-PLAN			
LEVEL 1 FLOOR PLAN			
Drawing Number	AR-B10040	Revision	1



LEVEL 2 FLOOR PLAN 87.00M

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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	2024/07/24

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**BentStreetLindfield**  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title	Drawing Number	Revision
B1-PLAN	AR-B10050	1

LEVEL 3 FLOOR PLAN



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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	202/07/24

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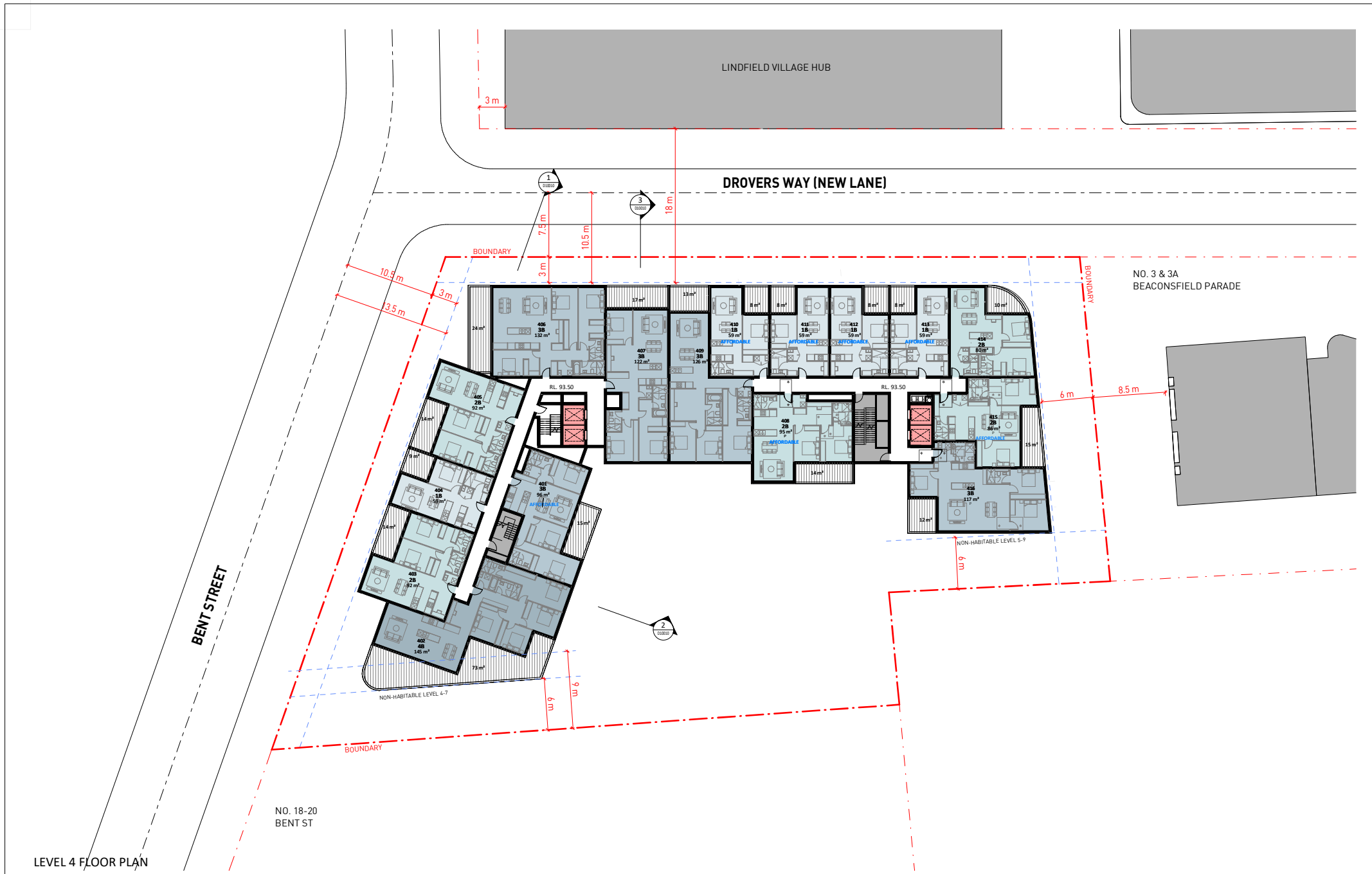
**PTW**

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Project PA030530  
 12-16 BENT STREET, LINDFIELD, NSW  
 2070

Status  
 SKETCH

Title	Drawing Number	Revision
B1-PLAN	AR-B10060	1



LEVEL 4 FLOOR PLAN

**Key Plan:**

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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	2024/07/24

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Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title	Drawing Number	Revision
B1-PLAN	AR-B10070	1

LEVEL 5 FLOOR PLAN

BENT STREET

LINDFIELD VILLAGE HUB

DRIVERS WAY (NEW LANE)

NO. 3 & 3A  
BEACONSFIELD PARADE

NO. 18-20  
BENT ST



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1	BLOCK PLAN	MS	MS	2024/07/24

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N Mairgenic Architect No.11274

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Project PA030530

**BentStreetLindfield**  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Revision	Drawing Number	Title
1	AR-B10080	B1-PLAN LEVEL 5 FLOOR PLAN

LEVEL 6 FLOOR PLAN

BENT STREET

LINDFIELD VILLAGE HUB

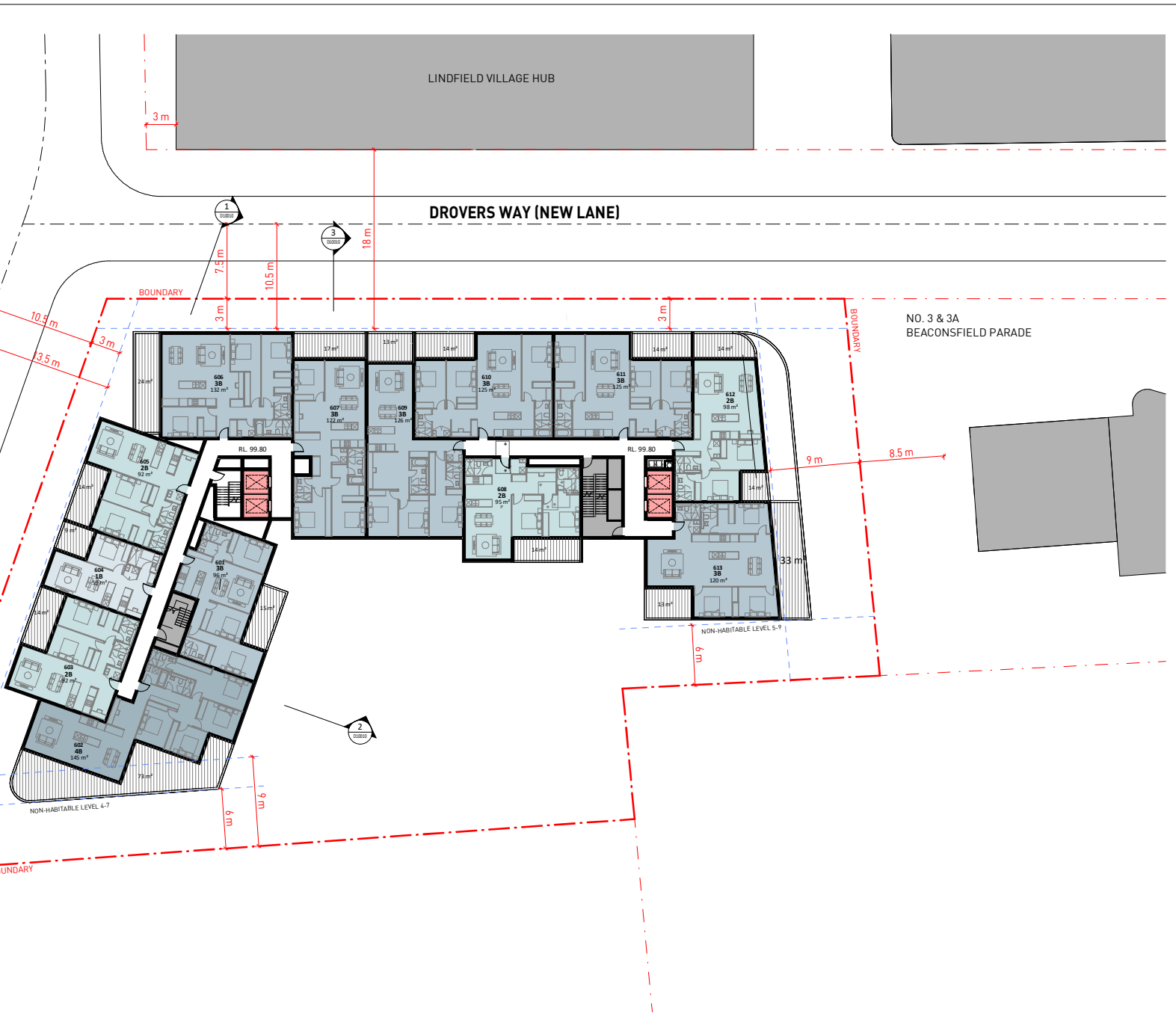
DRIVERS WAY (NEW LANE)

NO. 3 & 3A  
BEACONSFIELD PARADE

NO. 18-20  
BENT ST

NON-HABITABLE LEVEL 4-7

NON-HABITABLE LEVEL 5-9



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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	2024/07/24

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Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title	Drawing Number	Revision
B1-PLAN LEVEL 6 FLOOR PLAN	AR-B10090	1



LEVEL 8 FLOOR PLAN

BENT STREET

LINDFIELD VILLAGE HUB

DRIVERS WAY (NEW LANE)

NO. 3 & 3A  
BEACONSFIELD PARADE

NO. 18-20  
BENT ST

Rev	Amendment	By	Chk*	Date	*Registered Architect
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PTW

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Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070

Status  
SKETCH

Title	Revision
B1-PLAN	1
LEVEL 8 FLOOR PLAN	
Drawing Number	AR-B10110



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LEVEL 9 FLOOR PLAN

BENT STREET

LINDFIELD VILLAGE HUB

DRIVERS WAY (NEW LANE)

NO. 3 & 3A  
BEACONSFIELD PARADE

COMMUNAL SPACE  
445 SQM

NO. 18-20  
BENT ST

NON-HABITABLE LEVEL 5-9



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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	2024/07/24

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N Meininger Architect No.11274

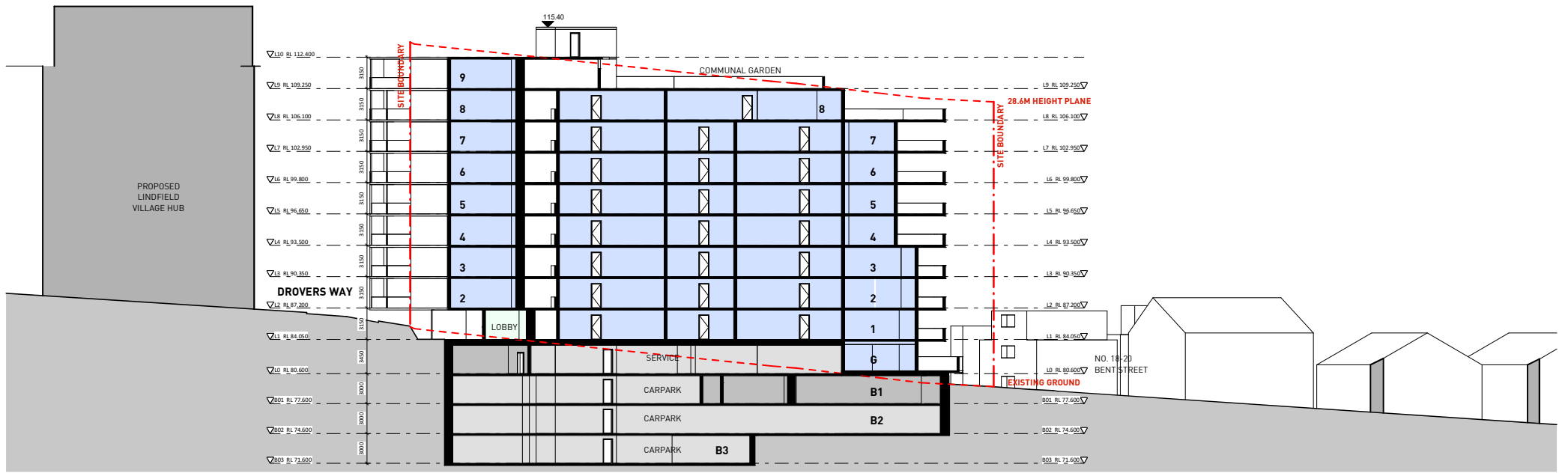


Project PA030530  
BentStreetLindfield  
12-16 BENT STREET, LINDFIELD, NSW  
2070  
Status  
SKETCH

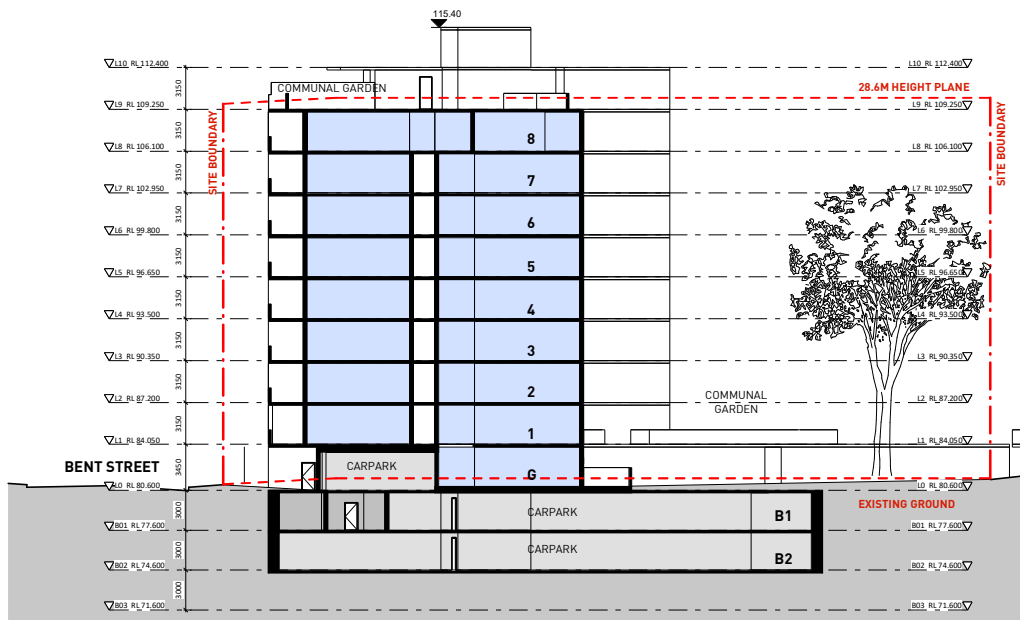
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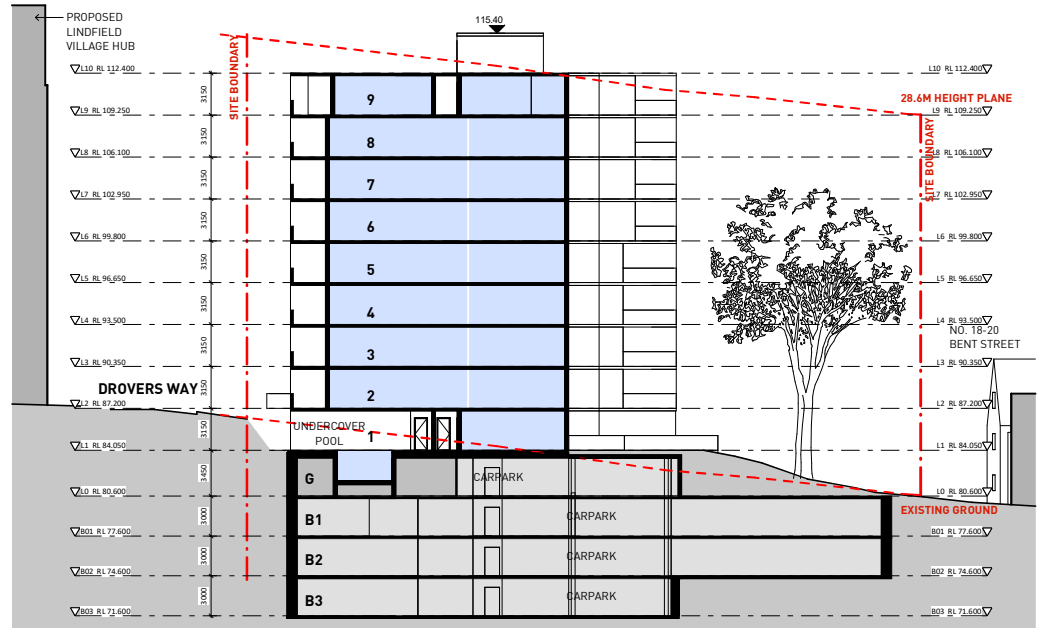




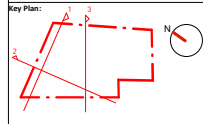
Section 1



Section 2



Section 3



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Rev	Amendment	By	Chk*	Date
1	BLOCK PLAN	MS	MS	20240724

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Scale	Title
As indicated @ A1	D1-SECTIONS SECTIONS

Project	Status
PA030530	SKETCH

Drawing Number	Revision
AR-D10010	1

Project	Status
BentStreetLindfield 12-16 BENT STREET, LINDFIELD, NSW 2070	SKETCH

## Appendix C: Report Explanatory Notes

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)<sup>17</sup> methods and those described in *Environmental Sampling and Analysis, A Practical Guide*, (1991)<sup>18</sup>. 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 handling and analysis protocols and use of proper chain-of-custody and documentation procedures.

**E. Completeness**

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

---

<sup>17</sup> US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. (US EPA SW-846)

<sup>18</sup> Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

## F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

## G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

## H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

## 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 D: Guidelines and Reference Documents**

---

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

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

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

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

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

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

Protection of the Environment Operations Act 1997 (NSW)

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

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality



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## Groundwater Field Sheets







# JK Environments



Client:	Sundale Northland Development Pty Ltd	Job No.:	E35535BW
Project:	Proposed Residential Development	Well No.:	MW/101
Location:	12-16 Bent Street, Lindfield NSW	Depth (m):	17.92

### WELL FINISH DETAILS

Gatic Cover <input checked="" type="checkbox"/>	Standpipe <input type="checkbox"/>	Other (describe) <input type="checkbox"/>
---	------------------------------------	---

### WELL DEVELOPMENT DETAILS

Method:	Frost Valve pump / 4 by hand	SWL - Before (m):	5.94
Date:	14/04/25	Time - Before:	16.45
Undertaken By:	CB / CR	SWL - After (m):	14.62m
Total Vol. Removed:	115L	Time - After:	12.45
PID Reading (ppm):	0.1		

### Comments:

### DEVELOPMENT MEASUREMENTS

Volume Removed (L)	SWL	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.25	/	21.9	4.60	600	4.28	251.6
5	/	19.1	0.28	674	4.54	228.1
10	7.43	19.2	0.21	673	4.55	227.3
15	/	19.2	0.19	644	4.43	242.5
20	8.54	19.3	0.19	643	4.43	246.8
25	/	19.4	0.21	647	4.43	248.0
30	9.77	19.4	0.19	646	4.44	247.8
35	/	19.4	0.21	646	4.44	248.5
40	10.58	19.8	1.43	654	4.22	246.6
45	/	19.4	0.27	650	4.56	230.9
50	11.55	20.0	1.16	670	4.47	254.4
55	/	19.5	1.09	662	4.58	234.5
60	12.85	19.6	1.28	668	4.65	219.1
65	/	19.8	1.33	671	4.67	222.6
70	13.82	19.4	2.00	673	4.72	213.8
75	/	19.6	1.77	673	4.65	219.0
80	15.29	19.7	1.83	672	4.62	224.4
85	<del>15.84</del>	20.5	3.50	675	5.01	168.2
90	15.64	19.6	2.42	682	5.02	165.2
95	16.04	19.8	3.12	703	4.93	180.1
100	/	18.9	5.29	778	4.81	191.6
105	14.79	18.9	4.87	726	4.72	206.2
110	/	18.7	5.21	723	4.80	206.1

Comments: Odours (YES / NO):	(NO)	NAPL/PSH (YES / NO):	(NO)	Sheen (YES / NO):	(NO)	Steady State Achieved (YES / NO):	(NO)
YSI Used: 115	14.62	18.8	5.20	7.24	4.80	203.9	

Tested By:	CB / CR	<b>Remarks:</b> - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	14.04/25	
Checked By:	HW	
Date:	28/04/2025	

-bailer

# JK Environments



<b>Client:</b>	Sundale Northland Development Pty Ltd	<b>Job No.:</b>	E35535BW
<b>Project:</b>	Proposed Residential Development	<b>Well No.:</b>	MW102
<b>Location:</b>	12-16 Bent Street, Lindfield NSW	<b>Depth (m):</b>	21.26

### WELL FINISH DETAILS

<b>Gatic Cover</b> <input checked="" type="checkbox"/>	<b>Standpipe</b> <input type="checkbox"/>	<b>Other (describe)</b> <input type="checkbox"/>
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### WELL DEVELOPMENT DETAILS

<b>Method:</b>	Foot Valve	<b>SWL - Before (m):</b>	6.93m
<b>Date:</b>	11/04/25	<b>Time - Before:</b>	12.45pm
<b>Undertaken By:</b>	CB/LR	<b>SWL - After (m):</b>	8.68m
<b>Total Vol. Removed:</b>	115L	<b>Time - After:</b>	2.15pm
<b>PID Reading (ppm):</b>	0.2		

### Comments:

### DEVELOPMENT MEASUREMENTS

Volume Removed (L)	SWL	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.25	/	19.4	1.59	1876	6.14	105.7
5	/	19.3	0.47	1914	6.16	22.1
10	7.79	19.0	0.20	1910	6.18	15.8
15	/	19.1	0.19	1916	6.18	12.8
20	8.02	19.0	0.19	1907	6.19	7.3
25	/	19.0	0.16	1906	6.19	11.9
30	/	19.0	0.12	1909	6.19	12.0
35	/	19.2	0.1	1910	6.19	9.9
40	8.06	19.4	0.91	1918	6.23	-4.1
45	/	20.1	0.58	1945	6.18	11.8
50	/	19.4	0.13	1925	6.18	10.6
55	/	18.9	0.13	1902	6.18	10.7
60	8.63	18.7	0.15	1895	6.19	10.9
65	/	18.8	0.11	1893	6.19	11.8
70	/	18.7	0.10	1895	6.19	12.1
75	/	18.8	0.09	1897	6.19	11.8
80	9.11	18.8	0.08	1896	6.20	11.7
85	/	19.2	0.78	1911	6.21	11.4
90	/	19.1	0.14	1897	6.19	12.1
95	/	18.9	0.13	1894	6.19	11.2
100	8.77	19.1	0.11	1897	6.18	11.0
105	/	19.2	0.12	1900	6.19	10.9
110	/	19.2	0.11	1901	6.18	10.9

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

<b>YSI Used:</b>	115	8.68	19.0	0.09	1893	6.17	11.2
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<b>Tested By:</b>	CB/LR	<b>Remarks:</b> - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
<b>Date Tested:</b>	14/04/25	
<b>Checked By:</b>	HW	
<b>Date:</b>	28/04/2025	

# JK Environments



Client:	Sundale Northland Development Pty Ltd	Job No.:	E35535BW
Project:	Proposed Residential Development	Well No.:	MW103
Location:	12-16 Bent Street, Lindfield NSW	Depth (m):	26.05

### WELL FINISH DETAILS

Gatic Cover <input checked="" type="checkbox"/>	Standpipe <input type="checkbox"/>	Other (describe) <input type="checkbox"/>
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### WELL DEVELOPMENT DETAILS

Method:	Foot valve pump	SWL - Before (m):	6.95m
Date:	14/10/25	Time - Before:	8 am
Undertaken By:	CB/LR	SWL - After (m):	16.82m
Total Vol. Removed:	180L	Time - After:	10.30 am
PID Reading (ppm):	0		

### Comments:

### DEVELOPMENT MEASUREMENTS

Volume Removed (L)	SWL	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.25	/	18.6	3.77	998	5.60	60.8
10	9.13	18.5	0.45	1489	5.73	28.8
15	9.54	18.6	2.08	1479	5.74	42.4
20	10.27	18.6	0.84	1447	5.73	37.4
25	/	18.5	0.37	1436	5.74	46.6
30	11.52	18.5	0.46	1440	5.74	46.5
35	/	18.6	0.37	1441	5.74	45.2
40	12.72	18.6	0.38	1446	5.74	45.3
45	/	18.6	0.41	1447	5.75	44.0
50	13.45	18.6	0.42	1450	5.75	42.9
55	/	18.6	0.54	1429	5.75	43.2
60	/	18.6	0.47	1432	5.75	42.4
65	/	18.6	0.53	1421	5.75	42.4
70	14.7	18.6	0.80	1438	5.74	44.8
80	/	18.6	1.70	1486	5.77	44.6
90	15.7	18.6	0.66	1576	5.79	34.5
100	15.74	18.5	2.42	1491	5.77	45.0
110	/	18.6	1.77	1499	5.78	43.5
120	15.37	18.6	2.57	1494	5.78	42.5
130	16.57	18.6	2.42	1498	5.78	47.2
140	16.7	18.6	3.30	1506	5.79	41.4
150	16.48	18.6	2.12	1514	5.78	46.4
160	/	18.6	1.95	1513	5.78	46.1

pump stopped for a few minutes

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

YSI Used: 1	170	16.82	18.6	2.88	1503	5.79	40.1
180	16.82	18.6	1.89	1514	5.80	42.7	

Tested By:	CB / LR	<b>Remarks:</b> - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	14/10/25	
Checked By:	HW	
Date:	28/04/2025	



## WATER QUALITY METER CALIBRATION FORM

Client: Sundale Northland Development Pty Ltd			
Project: Proposed Residential Development			
Location: 12-16 Bent Street, Lindfield NSW			
Job Number: E35535BW			
<b>DISSOLVED OXYGEN</b>			
Make: YSI 1		Model: ✓	
Date of calibration: 15/4/25		Name of Calibrator: OB	
Span value: 70% to 130%			
Measured value: 100% / 0			
Measured reading Acceptable (Yes/No): YES			
<b>pH</b>			
Make: YSI 1		Model: ✓	
Date of calibration: 15/4/25		Name of Calibrator: OB	
Buffer 1: Theoretical pH = 7.01 ± 0.01		Expiry date: 9/25	Lot No: DH130924
Buffer 2: Theoretical pH = 4.01 ± 0.01		Expiry date: 10/25	Lot No: CE150824
Measured reading of Buffer 1: 7.04			
Measured reading of Buffer 2: 4.01			
Slope:		Measured reading Acceptable (Yes/No): YES	
<b>EC</b>			
Make: YSI 1		Model: ✓	
Date: 15/4/25	Name of Calibrator: OB		Temperature: 22 °C
Calibration solution: Rowe Scientific		Expiry date: 10/25	Lot No: 1C19548
Theoretical conductivity at temperature (see solution container): 135 <sup>9</sup> μS/cm			
Measured conductivity: 1431 μS/cm		Measured reading Acceptable (Yes/No): YES	
<b>REDOX</b>			
Make: YSI		Model: ✓	
Date of calibration: 15/4/25		Name of Calibrator: OB	
Calibration solution: HANNA		Expiry date: 10/29	Lot No: 0675
Theoretical redox value: 240mV			
Measured redox reading: 233.7 mV		Measured reading Acceptable (Yes/No): YES	



## WATER QUALITY METER CALIBRATION FORM

Client: Sundale Northland Development Pty Ltd			
Project: Proposed Residential Development			
Location: 12-16 Bent Street, Lindfield NSW			
Job Number: E35535BW			
<b>DISSOLVED OXYGEN</b>			
Make: YSI 1		Model: ✓	
Date of calibration: 14/04/25		Name of Calibrator: CB	
Span value: 70% to 130%			
Measured value: 106.9%			
Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/>			
<b>pH</b>			
Make: YSI 1		Model: ✓	
Date of calibration: 14/04/25		Name of Calibrator: CB	
Buffer 1: Theoretical pH = 7.01 ± 0.01	Expiry date: 09/25	Lot No: DH130824	
Buffer 2: Theoretical pH = 4.01 ± 0.01	Expiry date: 10/25	Lot No: CB150824	
Measured reading of Buffer 1: 7.00			
Measured reading of Buffer 2: 4.01			
Slope: ✓		Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/>	
<b>EC</b>			
Make: YSI 1		Model: ✓	
Date: 14/04/25	Name of Calibrator: CB	Temperature: 21.0 °C	
Calibration solution: AR-Conductivity Solution	Expiry date: 04/25	Lot No: CB130824	
Theoretical conductivity at temperature (see solution container): 1305 μS/cm			
Measured conductivity: 1304 μS/cm		Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/>	
<b>REDOX</b>			
Make: YSI 1		Model: ✓	
Date of calibration: 14/04/25		Name of Calibrator: CB	
Calibration solution: itanna instruments	Expiry date: 09/25	Lot No: 0675	
Theoretical redox value: 240mV			
Measured redox reading: 237.5 mV		Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/>	



## PID FIELD CALIBRATION FORM

Client: Sundale Northland Development Pty Ltd			
Project: Proposed Residential Development			
Location: 12-16 Bent Street, Lindfield NSW			
Job Number: E35535BW			
<b>PID</b>			
Make: <i>RAE</i>	Model: <i>MIRRAELITE+</i>	Unit: <i>2</i>	Date of last factory calibration: <i>21/1/15</i>
Date of calibration: <i>15/9/25</i>		Name of Calibrator: <i>OB</i>	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: <i>98.9</i> ppm		Error in measured reading: $\pm$ <i>1.1</i> ppm	
Measured reading Acceptable (Yes/No): <i>YES</i>			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			



## PID FIELD CALIBRATION FORM

Client: Sundale Northland Development Pty Ltd			
Project: Proposed Residential Development			
Location: 12-16 Bent Street, Lindfield NSW			
Job Number: E35535BW			
<b>PID</b>			
Make: MiniRAE Lite	Model: RAE Systems	Unit: 2	Date of last factory calibration: 21/1/25
Date of calibration: 10/04/25	Name of Calibrator: CB		
Calibration gas: Iso-butylene	Calibration Gas Concentration: 100.0 ppm		
Measured reading: 100.0 ppm	Error in measured reading: ± 0 ppm		
Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/> Yes			
<b>PID</b>			
Make: MiniRAE Lite	Model: RAE Systems	Unit: 2	Date of last factory calibration: 21/1/25
Date of calibration: 14/04/25	Name of Calibrator: CB		
Calibration gas: Iso-butylene	Calibration Gas Concentration: 100.0 ppm		
Measured reading: 100.2 ppm	Error in measured reading: ± 0.2 ppm		
Measured reading Acceptable (Yes/No): <input checked="" type="checkbox"/> Yes			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:	Name of Calibrator:		
Calibration gas: Iso-butylene	Calibration Gas Concentration: 100.0 ppm		
Measured reading: ppm	Error in measured reading: ± ppm		
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:	Name of Calibrator:		
Calibration gas: Iso-butylene	Calibration Gas Concentration: 100.0 ppm		
Measured reading: ppm	Error in measured reading: ± ppm		
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:	Name of Calibrator:		
Calibration gas: Iso-butylene	Calibration Gas Concentration: 100.0 ppm		
Measured reading: ppm	Error in measured reading: ± ppm		
Measured reading Acceptable (Yes/No):			



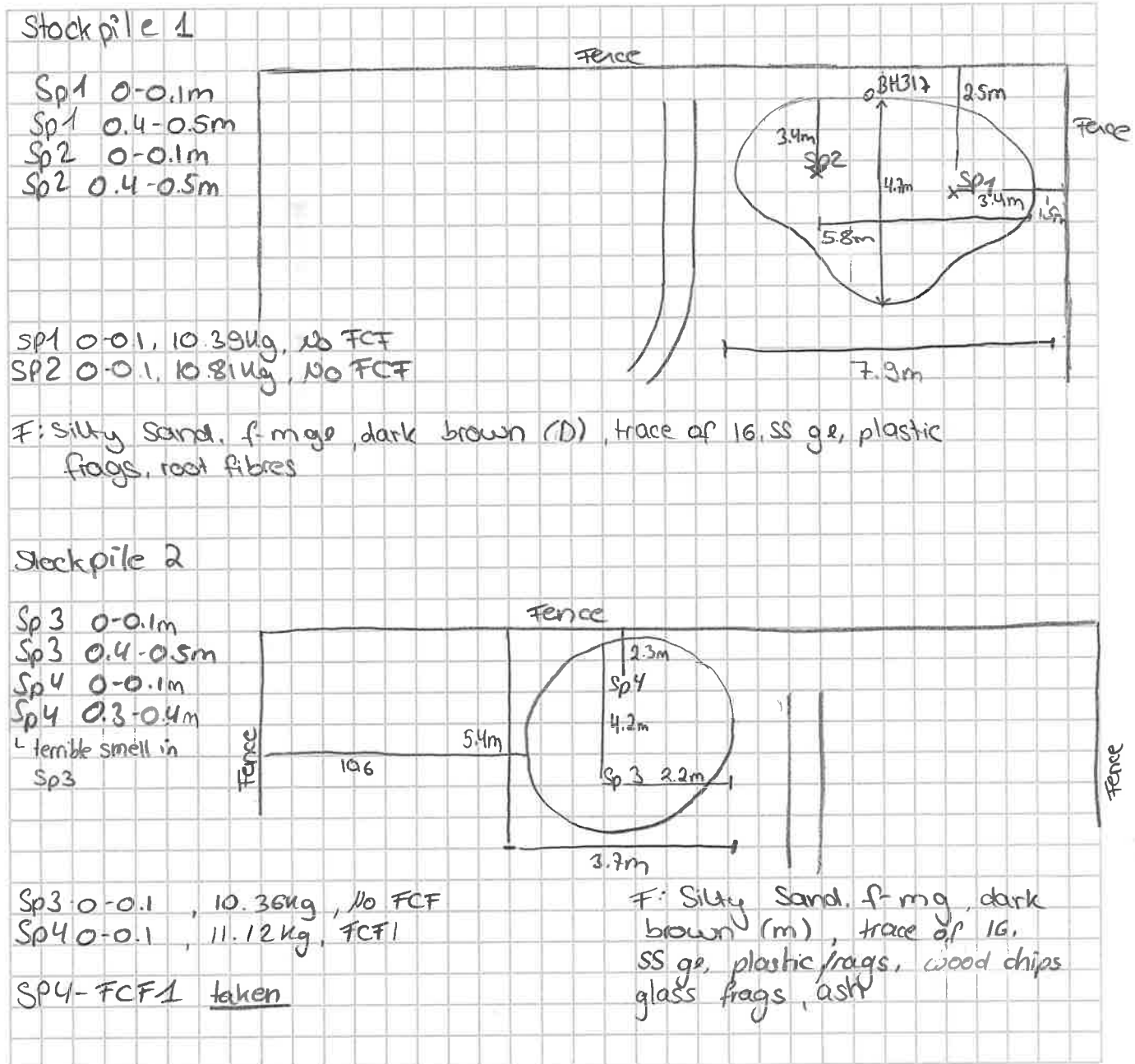
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## Stockpile Field Notes

**PURPOSE:** Stock piles  
**LOCATION:** 14 Bent Str, Lindfield, NSW  
**GIVEN TO:** \_\_\_\_\_  
**OF:** \_\_\_\_\_

**JKE JOB No:** E35535BW  
**DATE:** 9/04/25  
**PAGE:** 1 OF 1  
**INSP BY:** CB

**INSPECTION REPORT No** .....



Given by: ..... Received by: .....

Time Arrive: ..... Time Depart: .....



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## **Appendix H: Guidelines and Reference Documents**



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Australian and New Zealand Governments (ANZG), (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia

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)

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

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

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

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

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

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

Protection of the Environment Operations Act 1997 (NSW)

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

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

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