
**Report on Detailed Site Investigation
(Contamination)**

New Primary School in Worrige

9 Worrige Road, Worrige NSW

Prepared for the Department of Education

Project 234398.02

18 March 2026

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature

Date

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Executive Summary

Douglas Partners Pty Ltd (Douglas) has been engaged by the Department of Education (the Department) to prepare this Detailed Site Investigation (Contamination) (DSI) for a proposed primary school located at 9 Worrigee Road, Worrigee NSW (hereinafter referred to as 'the site').

The objective of the DSI is to assess the suitability of the site for the proposed New Primary School in Worrigee activity and whether further investigation and/or management of contamination is required. The Department has requested the DSI as part of their due diligence planning process and to accompany a Review of Environmental Factors (REF) as part of the planning approval process.

The DSI comprised a review of relevant previous Douglas investigations, collection of soil samples for contaminated land purposes from 15 geotechnical boreholes (Bores 1 to 15), excavation of an additional six test pits (Pits 16 to 21) across the site as well as surface sampling from three locations (SS1 to SS3), laboratory analysis for a range of contaminants of potential concern (CoPC) and provision of this report.

Field observations identified rather consistent subsurface conditions with topsoil, overlying residual clay, extremely weathered siltstone grading to siltstone (bedrock). Fill was encountered in four locations namely, Bore 9, Pits 18 and 19, and SS2 to depths of between 0.1 m and 0.2 m below ground level (bgl). Fill encountered in Bore 9 appeared to be generally consistent with reworked natural material mixed with the adjacent concrete slab blinding layer. Fill encountered in Pit 18 appeared to be generally consistent with reworked natural material. Fill encountered in Pit 19 appeared to be surface gravels associated with an internal vehicle access way. Material encountered in the SS2 sample location appeared to have been impacted with anthropogenic inclusions from the overlying fly-tipped material and not necessarily representative of more widespread land filling practices.

Sixteen selected soil samples were analysed for various combinations of the following CoPC: metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticides (OCP) and organophosphorus pesticides (OPP), speciated phenols, per- and poly-fluoroalkyl substances (PFAS), asbestos (fibrous asbestos (FA), asbestos fines (AF) and asbestos identification (ID)).

Based on the findings of the soil laboratory testing, all contaminants were below the adopted site assessment criteria (SAC) with the exception of arsenic, total chromium and copper in sample SS2/0-0.1 which exceeded a combination of health-based (HIL-A) and ecological investigation levels (EILs), refer to Section 11.1.

Based on the results of the DSI it is considered that the site can be made suitable for the proposed New Primary School in Worrigee activity subject to implementation of the recommendations below:

- It is recommended that a remediation action plan (RAP) is prepared in accordance with NSW EPA (2020) to address the heavy metal contamination (specifically arsenic, chromium and copper) detected within soils underlying the fly-tipped material (assessed as SS2).

- Following demolition of site structures, carry out a supplementary contamination investigation of the resultant building footprint;
- As a matter of due diligence, it is also recommended that an unexpected finds protocol (UFP) be included as part of the site management plan during earthworks detailing the process by which any unexpected finds of potential environmental concern will be managed. This is recommended particularly due to the limited sampling undertaken, not meeting the recommendations of the NSW EPA (2022) sampling guidelines.

Table of Contents

	Page No
1. Introduction.....	1
2. Activity description.....	2
3. Scope of work	4
4. Site identification	5
5. Environmental setting	6
5.1 Topography	6
5.2 Site geology	6
5.3 Acid sulfate soils.....	6
5.4 Surface water and groundwater	6
6. Summary of previous reports.....	7
6.1 The PSI.....	7
6.2 The HAZMAT survey.....	7
7. Preliminary conceptual site model	8
8. Sampling and analysis plan.....	11
8.1 Data quality objectives	11
8.2 Soil sampling and analysis rationale	12
9. Site assessment criteria	12
10. Results	13
10.1 Field work results	13
10.2 Laboratory analytical results.....	14
10.3 Data quality assurance and quality control	14
11. Discussion	15
11.1 Soils.....	15
11.2 Preliminary waste classification comments.....	15
12. Evaluation of environmental impacts	16
13. Conclusions and recommendations	16
14. References	17
15. Limitations.....	17

Appendix A:	Drawing
Appendix B:	About This Report
Appendix C:	Data quality objectives
Appendix D:	Field work methodology
Appendix E:	Site assessment criteria
Appendix F:	Soil laboratory results summary tables (F1 to F3)
Appendix G:	Borehole and test pit logs
Appendix H:	Laboratory certificates of analysis, chain-of-custody documentation and sample receipt advice
Appendix I:	Field and laboratory data quality assurance and quality control (QA/QC)

Report on Detailed Site Investigation (Contamination) New Primary School in Worrigee 9 Worrigee Road, Worrigee NSW

1. Introduction

This detailed site investigation (contamination) (DSI) has been prepared to accompany a Review of Environmental Factors (REF) for the Department of Education (the Department) for the construction and operation of a New Primary School in Worrigee (the activity) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TI SEPP).

This document has been prepared as supporting information with consideration to the *Guidelines for Division 5.1 Assessments* (the "Guidelines") and the *Guidelines for Division 5.1 Assessments – Consideration of Environmental Factors for Health Services Facilities and Schools, Addendum October 2024* (the "Addendum") by the Department of Planning, Housing and Infrastructure. (DPHI)

This report examines and takes into account the relevant environmental factors in the Guidelines and Section 170, Section 171 and Section 171A of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) as outlined in Table 1 in the format requested by the Department.

Table 1: Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation

Environmental factor	Division Factors for school developments	Response	Report Section
j) Any risk to the safety of the environment	contamination	The recommendations of the DSI are considered appropriate to manage risks to the environment due to contamination.	Section 13.
l) Any pollution of the environment	contamination	The recommendations of the DSI are considered appropriate to manage risks of pollution due to contamination.	Section 13.
m) Any environmental problems associated with the disposal of waste	contamination	The recommendations of the DSI are considered appropriate to manage risks of environmental disposal of waste associated with contamination.	Section 13.

The investigation was commissioned via email dated 2 December 2025 from Jensen Loates of the Department as variation to Work Order DDWO07423/25 and was undertaken in accordance with DoE Standing Offer Deed for the provision of services, SINSW02503/21-D.

The objective of the DSI is to assess the suitability of the site for the proposed New Primary School in Worrigee activity and whether further investigation and/or management of contamination is

required. The Department requested the DSI as part of their due diligence planning process and to accompany a Review of Environmental Factors (REF) as part of the planning approval process.

This report must be read in conjunction with all appendices including the notes provided in Appendix B.

The following key guidelines were consulted in the preparation of this report:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013); and
- NSW EPA *Guidelines for Consultants Reporting on Contaminated Land* (NSW EPA, 2020).

The field component of this DSI was carried out concurrently with a geotechnical investigation. The findings of the geotechnical investigation have been reported under a separate cover.

It should be further noted that the field work was carried out for the entirety of Lot 1 Deposited Plan 576975, prior to a revision in the site boundary to exclude the south-eastern corner.

2. Activity description

The activity is for the construction and operation of a New Primary School in Worrigee under Chapter 2 and Chapter 3 of TI SEPP comprising:

- permanent classroom building including a support learning unit;
- hall;
- canteen;
- covered outdoor learning area;
- library;
- administration;
- sports field;
- waste storage facility;
- landscaping;
- car parking;
- public domain works;
- infrastructure upgrades; and
- a capacity of 582 students.

The proposed activity does not include the new public preschool or roundabout. The new public preschool is subject to a separate planning pathway and environmental assessment. The roundabout is to be delivered by Council. **Figure 1** distinguishes the extent of the proposed activity in relation to the new public preschool and roundabout.

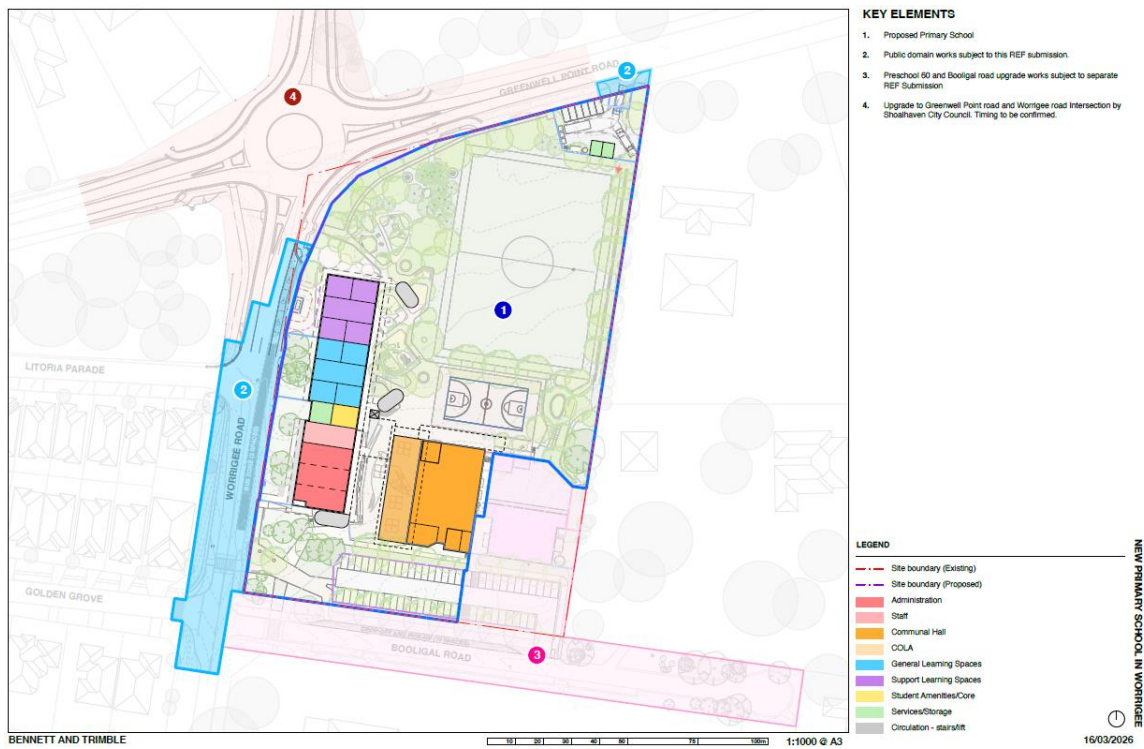


Figure 1: Indicative Site Plan

2.1 Activity site

The site is known as 9 Worrigee Road Worrigee. The site has a frontage of 125.23m to Greenwell Point Road, 149.87m to Worrigee Road and 114.89m to Booligal Road (including the preschool frontage). The site is legally described as Lot 1 in Deposited Plan 576975 and is 2 hectares (by title).

3. Scope of work

The scope of work for the DSI comprised:

- Review of relevant previous investigations carried out by Douglas on the site;
- Conduct buried services scanning;
- Collection of soil samples for contaminated land purposes from 15 geotechnical borehole locations (Bores 1 to 15);
- Excavation of an additional six test pits (Pits 16 to 21) across the site as well as surface sampling from three locations (SS1 to SS3);
- Laboratory analysis of 16 selected soil samples at a NATA accredited laboratory for various combinations of the following contaminants of potential concern (CoPC):
 - o Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
 - o Total recoverable hydrocarbons (TRH);
 - o Benzene, toluene, ethylbenzene and xylene (BTEX);
 - o Polycyclic aromatic hydrocarbons (PAH);
 - o Organochlorine pesticides (OCP) and organophosphorus pesticides (OPP);
 - o Speciated phenols;
 - o Per- and poly-fluoroalkyl substances (PFAS); and
 - o Asbestos (fibrous asbestos (FA), asbestos fines (AF) and asbestos identification (ID)).
- Analysis of three selected soil samples for pH and cation exchange capacity (CEC) for the purposes of determining site-specific ecological investigation levels (EILs);
- Collection and analysis of trip spikes, trip blanks and replicate samples for quality control (QC) purposes; and
- Preparation and provision of this DSI report detailing the methodology and the findings of the investigation, commenting on identified areas of environmental concern and associated potential contaminants, the risk of contamination at the site and provide comment on the compatibility of the site for the proposed New Primary School in Worrigee activity. This report has been internally peer reviewed by a Douglas Certified Environmental Practitioner – Site Contamination Specialist (CEnvP SC).

4. Investigation Site identification

Investigation Site address	Part of 9 Worrigeer Road, Worrigeer NSW
Legal description	Part Lot 1 Deposited Plan 576975
Approximate investigation area	1.82 ha
Zoning	Zone R5 – Large Lot Residential
Local Council Area	Shoalhaven City Council
Current use	Semi-rural residential
Surrounding uses	North – Greenwell Point Road then rural East – Semi-rural residential South – Booligal road then semi-rural residential West – Worrigeer Road, residential and undeveloped land

The investigation site boundary is shown on Figure 2.



Figure 2: Investigation site boundary (red) and layout

5. Environmental setting

5.1 Topography

The site is at approximately 11 m with respect to Australian Height Datum (AHD) and is on a relatively low ridgeline that runs from the south-west to the north-east. Slopes at the site are gentle and grade down to the south-east. Approximately 300 m to the north-west and approximately 300 m to the south-east are low lying plans (at approximately 2 m AHD).

5.2 Site geology

With reference to the NSW Seamless Geology (GSNSW, 2023) online mapping indicates the site is in an area mapped as Berry Siltstone which is described as mid to dark grey siltstone that grades up sequence to very fine-grained sandstone, is highly fossiliferous and has sporadic dropped pebbles.

According to the Kiama 1:100,000 Soil Landscapes Sheet, the site is located in an area mapped as the Shoalhaven soil landscaped which has alluvial soils. The soil landscaped is described as: level to gently undulating present river bed and banks, active floodplain with levees and backwater swamps on alluvium; flat to gently undulating terrace surfaces to the Shoalhaven River, relief <5 m and slopes <3%; and completely cleared.

It should be noted that alluvial soils were not encountered during drilling and test pitting.

5.3 Acid sulfate soils

NSW Acid Sulfate Soil Risk mapping indicates that the site is not located in a mapped area associated with the occurrence of acid sulfate soils (ASS). Areas mapped as having a risk of occurrence of ASS are located in low-lying areas approximately 350 m to the north-west, 420 m to the north-east and approximately 250 m to the south-east of the site.

5.4 Surface water and groundwater

There are no surface water bodies located at the site. Crookhaven Creek is located approximately 700 m to the north of the site. A series of unnamed creeks at low-lying areas to the north-west and east flow into Crookhaven Creek. Brundee Swamp is located approximately 550 m to the south-east of the site and water from the swamp drains into the Crookhaven River located approximately 3,750 m to the south-east of the site. Stormwater at the site is anticipated to infiltrate permeable surfaces, flow into the local stormwater system or runoff onto neighbouring land.

Based on topography, groundwater at the site is anticipated to flow to the south-east and may discharge into Brundee Swamp or the Crookhaven River.

The WaterNSW registered bores database indicated that the following two bores are located within a 500 m radius of the site:

- GW107048, located approximately 15 m to the east of the site, was installed to a depth of 76 m in 2004 for domestic purposes. The bore was drilled through shale according to the driller's logs; and

- GW104352, located approximately 340 m to the west of the site, was installed to a depth of 210 m in 2002 for domestic purposes. The bore was drilled through soil and clay to a depth of 2 m and then siltstone and sandstone according to the driller's logs.

6. Summary of previous reports

Douglas has previously carried out the following contaminated land investigations / assessments at the site:

- Douglas *Report on Preliminary Site Investigation (Contamination), Nowra New Public School, 9 Worrigee Road, Worrigee*, Report 234398.00.R.001.DftA dated 7 May 2025 ('the PSI'); and
- Douglas *Report on Hazardous Building Materials (HAZMAT) Survey, New Primary School, 9 Worrigee Road, Nowra NSW*, 236271.00.R.001.Rev0 dated 11 August 2025 ('the HAZMAT survey').

6.1 The PSI

The PSI broadly comprised a desktop review of readily available information, a site history assessment, a site walkover and reporting.

Based on the findings of the site history assessment, particularly the title deeds and historical aerial photographs, the site had mainly been used for residential and grazing purposes since 1925. The first site structure(s) appeared to have been established sometime between 1969 and 1979, at a similar time to Hardware Traders Pty Ltd owning the land. Significant clearing of standing vegetation occurred at the site after 2001 and small parts of the site appeared to have been used for market gardens after 2006.

During the PSI site walkover, the engineer observed an overgrown stockpile of organic wooded matter with anthropogenic inclusions (ie, timber, furniture and netting).

Based on the findings of the PSI, Douglas identified five potential sources of contamination at the site, namely: fill of unknown origin; hazardous building materials from site structures; storage and use of pesticides for possible market gardens; low level storage and use of fuels; and fly-tipping of waste materials. Overall, the PSI considered the potential for contamination from these sources to be low.

The PSI recommended a DSI be undertaken to characterise the risk of site contamination from the identified potential sources of contamination.

6.2 The HAZMAT survey

The HAZMAT survey was carried out to determine the condition and extent of HAZMAT within site structures comprising the main residence and pool shelter, workshop and the agricultural structures (1 and 2).

For the purposes of the survey, HAZMAT comprised:

- Asbestos containing materials (ACM);

- Lead paint;
- Lead dust in ceiling cavities;
- Bulk synthetic mineral fibre (SMF) insulation;
- Polychlorinated biphenyls (PCB) in fluorescent light / fan fittings; and
- Ozone depleting substances (ODS).

Table 2 below, summarises the presence (or suspected presence) of HAZMAT in buildings across the site.

Table 2: Hazardous building materials (HAZMAT) risk profile

Building	Asbestos	Lead paint	Lead dust	SMF	PCB	ODS
Main Residence and Pool Shelter	✓	✗	✓	✓	✓	✓
Workshop	✗	✗	✓	✗	✓	✗
Agricultural Structure 1	✗	✗	✗	✗	✗	✗
Agricultural Structure 2	✗	✗	✗	✗	✗	✗

✓ = identified or suspected present, ✗ = not identified and / or not suspected present.

Specific recommendations with regards to managing the HAZMAT identified on-site are provided in Section 7 and Appendix B of the HAZMAT survey.

7. Preliminary conceptual site model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Based on the current investigation / previous reports, the following potential sources of contamination and associated contaminants of potential concern (CoPC) have been identified and summarised in Table 3.

Table 3: Summary of potential sources

Potential sources and associated CoPC
On site sources S1: Fill of unknown origin. Various CoPC can be associated with fill such as metals, TRH, BTEX, PAH, OCP, OPP, PCB, phenols, asbestos and PFAS; S2: Hazardous building materials from site structures (particularly the main residence). CoPC: lead (from lead-based paints), PCB, synthetic mineral fibres and asbestos; S3: Storage and use of pesticides for possible market gardens at the site. CoPC: metals, OCP and OPP; S4: Storage and use of fuels. CoPC: metals, TRH, BTEX and PAH; S5: Fly tipping (relevant to SS2). Various CoPC can be associated with fly-tipping such as metals, TRH, BTEX, PAH and asbestos.
Off-site sources No off-site sources of contamination have been identified.

The following potential human and environmental receptors, along with relevant potential pathways, have been identified and summarised in Table 4.

Table 4: Summary of potential receptors and pathways

Potential human receptors
HR1: Current users [residential] HR2: Construction and maintenance workers HR3: End users [students and staff] HR4: Adjacent site users [residential]
Potential environmental receptors
ER1: Surface water [Crookhaven Creek] ER2: Groundwater ER3: Terrestrial ecosystems
Potential pathways to human receptors
HP1: Ingestion and dermal contact HP2: Inhalation of dust, vapours and/or asbestos fibres
Potential pathways to environmental receptors
EP1: Surface water run-off EP2: Leaching of contaminants and vertical migration into groundwater EP3: Lateral migration of groundwater providing base flow to water bodies EP4: Inhalation, ingestion and absorption

Summary of potentially complete exposure pathways

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways (potential complete pathways). The possible pathways between the above sources (S1 to S5) and receptors are provided in below Table 5.

Table 5: Summary of potentially complete exposure pathways

Source and CoPC	Exposure pathway	Receptor
S1: Fill of unknown origin S4: Storage and use of fuels S5: Fly tipping	P1: Ingestion and dermal contact P2: Inhalation of dust or fibres P3: Inhalation of vapours	R1: Current site users R2: Future site users R3: Construction and maintenance workers
	P2: Inhalation of dust or fibres P3: Inhalation of vapours	R4: Adjacent site users
	P4: Surface water run-off P6: Lateral migration of groundwater providing base flow to water bodies	R5: Surface water bodies
	P5: Leaching of contaminants and vertical migration into groundwater	R6: Groundwater
	P7: Inhalation, ingestion and absorption	R7: Terrestrial flora and fauna
	P8: Contact with inground structures	R8: Inground structures
S2: Hazardous building materials from site structures S3: Storage and use of pesticides for possible market gardens	P1: Ingestion and dermal contact P2: Inhalation of dust or fibres	R1: Current site users R2: Future site users R3: Construction and maintenance workers
	P2: Inhalation of dust or fibres	R4: Adjacent site users
	P4: Surface water run-off P6: Lateral migration of groundwater providing base flow to water bodies	R5: Surface water bodies
	P5: Leaching of contaminants and vertical migration into groundwater	R6: Groundwater
	P7: Inhalation, ingestion and absorption	R7: Terrestrial flora and fauna

8. Sampling and analysis plan

8.1 Data quality objectives

The DSI was devised with reference to the seven-step data quality objectives (DQO) process which is provided in Appendix B Schedule B2, NEPC (2013). The data quality objective process is outlined in Appendix C.

8.2 Soil sampling and analysis rationale

According to NSW EPA *Contaminated Sites, Sampling Design Guidelines* (NSW EPA, 2022), a minimum of 30 sample locations in a grid pattern is recommended to characterise a site of 2 ha. Given the low potential for contamination, and in keeping with the engagement under the Works Order, soil sampling for contaminated land purposes from 21 test locations (utilised as part of the concurrent geotechnical investigation) were positioned across the site. Test locations were used for due diligence 'check' sampling and analysis purposes. Borehole / test pit locations are shown on Drawing D.001, in Appendix A.

In addition to providing general site coverage across the proposed building footprints:

- SS1 and SS3 were positioned within garden beds;
- SS2 was positioned to target surface soils underlying fly-tipped material;
- Borehole 9 and Pit 18 were positioned to target a mild fill batter adjacent to the south-western shed;
- Borehole 9 was also positioned to target any potential fuel contaminated runoff from the concrete pad underlying the shed; and
- Pit 21 was positioned to target potentially contaminated run-off / seepage from the septic system soak-away area.

It should be noted that the investigation locations were skewed to mostly provide subsurface information across proposed building footprints. As such, very limited sampling was carried out across the northern portion of the site, which appeared to be broadly on natural grade.

Soil samples were collected from each borehole / test pit at the surface and every 0.5 m thereafter, and changes in lithology or signs of contamination. Surface soil samples were collected from the surface 0.1 m.

The general sampling methods are described in the field work methodology in Appendix D.

Samples were selected for analysis based upon field observations and PID screening results, and to provide lateral and vertical coverage of the site. The selected samples were analysed for the CoPC in the CSM and for physical parameters, cation exchange capacity (CEC) and pH.

Groundwater monitoring wells were installed within Bores 3, 11 and 15 to facilitate long-term monitoring of the water table. Further discussion and groundwater level monitoring results are provided in Section 10.1.

9. Site assessment criteria

The site assessment criteria (SAC) applied in the current investigation are informed by the CSM (Section 7) which identified human and environmental receptors to potential contamination on the site. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising primarily the investigation and screening levels of Schedule B1 of NEPC (2013).

The investigation and screening levels applied in the current investigation comprise levels adopted for a generic residential land use scenario, which is considered suitable for the proposed

New Primary School in Worrigee activity. The derivation of the SAC is in Appendix E, and the adopted SAC are listed on the summary analytical results tables in Appendix F.

10. Results

10.1 Field work results

The borehole and test pit logs for this assessment are provided in Appendix G. The logs recorded the following general sub-surface profile:

TOPSOIL	Typically comprising silt, clayey silt or sandy silt encountered within Bores 1 – 8, 10 – 15 and Pit 16 – 17, 20 – 21, SS1 and SS3 to depths ranging between 0.15 m and 0.3 m. SS1 and SS3 were terminated in topsoil at a depth of 0.1 m.
FILL	Encountered in Bore 9, Pits 18 – 19 and SS2 to depths of between 0.1 m and 0.2 m bgl. SS2 was terminated at 0.1 m. Fill encountered in Bore 9 appeared to be generally consistent with reworked natural material mixed with the adjacent concrete slab blinding layer. Fill encountered in Pit 18 appeared to be generally consistent with reworked natural material. Fill encountered in Pit 19 appeared to be surface gravels associated with internal vehicle access way.
CLAY (RESIDUAL)	Residual clay was encountered in all test locations except Pit 16 and SS1 to SS3. Residual clay was encountered below topsoil or fill to depths of between 0.5 m and 3.1 m. Pit 18, 19 and 21 were terminated at 1.0 m bgl in the residual clay layer.
EXTREMELY WEATHERED SILTSTONE	Typically comprising sandy clay or silty sandy clay was encountered in all test locations except Bore 4, Pit 17 – 19, 21 and SS1 to SS3, to depths ranging from 0.6 m to 3.5 m. Pit 20 was terminated in extremely weathered material at 1.0 m.
SILTSTONE (BEDROCK)	Encountered in all boreholes and Pits 16 and 17 at depths from 0.6 m to 3.5 m and typically comprising grey brown to grey siltstone, with strength generally increasing with depth. All locations encountering were terminated in siltstone at depths ranging from 0.8 m to 8.4 m.

No visual or olfactory evidence (e.g. staining, odours, free phase product) was observed during the investigations to suggest the presence of contamination within the soils or groundwater at the site.

The fly-tipped material was observed to comprise mostly wooded organic matter, timber, engineered wood fibreboard (MDF) panels, and netting.

Material encountered in the SS2 sample location appeared to have been impacted with anthropogenic inclusions from the overlying fly-tipped material and not necessarily representative of more widespread land filling practices.

No free groundwater was observed during excavation of test pits or drilling of boreholes. Water was added to the boreholes upon initiating NMLC coring, which precluded groundwater observation during drilling. It should be noted that groundwater levels are affected by climatic conditions and soil permeability and will therefore vary with time.

Following completion of drilling, groundwater monitoring wells were installed in Bores 3, 11 and 15 to facilitate long-term monitoring of the water table. Groundwater levels were gauged on 5 December 2025 using an electronic oil/water interface meter. The measured water levels prior to sampling are shown in Table 6.

Table 6: Summary of groundwater level measurements on 5 December 2025

Well ID	Ground level * m (AHD)	SWL m (bgl)	SWL m (AHD)
3	10.5	5.76	4.74
11	11.3	4.78	6.52
15	10.2	>2.90 (DRY)	-

Notes:

*Surveyed by dGPS

AHD – Australian Height Datum

SWL – standing water level

bgl – below ground level

Based on the groundwater level measurements, groundwater is interpreted to be flowing in a general northerly direction towards Crookhaven Creek, the likely receiving waterbody.

10.2 Laboratory analytical results

The results of laboratory analysis are summarised in the following tables in Appendix F:

- Table F1: Summary of laboratory results for soil (metals, PAH, TRH, BTEX and phenols)
- Table F2: Summary of laboratory results for soil (OCP, OPP, PCB, PFAS and asbestos)
- Table F3: Summary of laboratory results for preliminary waste classification

Criteria for Table F3 are sourced from NSW EPA, Waste Classification Guidelines, Part 1: Classifying Waste, 2014 (NSW EPA, 2014).

The laboratory certificates of analysis together with the chain of custody and sample receipt information are provided in Appendix H.

10.3 Data quality assurance and quality control

The data quality assurance and quality control (QA/QC) results are provided in Appendix I. Based on the results of the field QA and field and laboratory QC, and evaluation against the data quality indicators (DQI) it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

11. Discussion

11.1 Soils

The analytical results for all contaminants tested in all samples were below the SAC with the exception of:

- Arsenic in sample SS2/0-0.1 at 640 mg/kg which exceeded the HIL-A and EIL of 100 mg/kg, respectively;
- Total chromium in sample SS2/0-0.1 at 310 mg/kg which exceeded the HIL-A of 100 mg/kg; and
- Copper in sample SS2/0-0.1 at 480 mg/kg which exceeded the EIL of 130 mg/kg.

Given that the concentration of arsenic, total chromium and copper in sample SS2/0-0.1 exceeded the relevant SAC by >2.5 times, the impacted soils at this location represents a hotspot. Given the presence of treated timber in the fly-tipped material, it is considered likely that the elevated metal concentrations listed above, are likely due to leaching of timber treatment compounds (such as copper chrome arsenate (CCA)).

It is noted that concentrations of TRH (F1 and F2), BTEX, PAH, OCP/OPP, PCB and phenols in all samples tested were all below the laboratory practical quantitation limit.

The laboratory had minor detections of longer-chain hydrocarbons (TRH F3 and F4) and PFAS, however, the detections were all well below the adopted SAC.

Asbestos was not detected in any of the samples tested.

11.2 Preliminary waste classification comments

11.2.1 Topsoil and fill (excluding SS2)

Concentrations of analysed soil samples from fill or topsoil (excluding SS2) were within the CTI criteria for General Solid Waste (non-putrescible). Potential asbestos containing materials were not observed in the topsoil or fill and asbestos was not detected in the analysed soil samples. Results for fill and topsoil indicate that this material may be classifiable as General Solid Waste (non-putrescible). Further sampling and analysis would need to be undertaken in order to provide (final) waste classification for topsoil or fill that is designated to be disposed off-site.

11.2.2 Soils surrounding SS2

Based on the laboratory data obtained, arsenic concentrations exceeded the CT2 and SCC1 criteria for restricted solid waste, and total chromium exceeded the CTI criteria for general solid waste. As such, in the absence of additional leachability analysis, soils surrounding SS2 are classifiable as hazardous waste. Further investigation would be required to potentially reduce this classification to restricted waste, following positive leachability results.

11.2.3 Natural soil and rock

Analysed natural soil samples (excluding topsoil samples) had concentrations of metals at what are considered to be within background ranges and concentrations of TRH, BTEX, PAH, phenols,

OCP, OPP and PCB generally below practical quantitation levels. Asbestos was not detected in analysed natural soil samples.

On the basis of the findings and results, natural soil and rock at the site may be classifiable as Virgin Excavated Natural Material (VENM) as per the definition in the *Protection of the Environment Operations Act 1997* (POEO Act). Further sampling and analysis would need to be undertaken in order to provide a VENM classification for soil or rock that is designated to be disposed or reused off-site.

12. Evaluation of environmental impacts

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that:

- The extent and nature of potential impacts are low and will not have significant impact on the locality, community and/or the environment; and
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.

13. Conclusions and recommendations

Based on the results of the DSI it is considered that the site can be made suitable for the proposed New Primary School in Worrigee activity subject to implementation of the recommendations below:

- It is recommended that a remediation action plan (RAP) is prepared in accordance with NSW EPA (2020) to address the heavy metal contamination (specifically arsenic, chromium and copper) detected within soils underlying the fly-tipped material (assessed as SS2). The RAP should also include:
 - o Scope of supplementary contamination investigation following building demolition;
 - o Protocols for the validation of site remediation;
 - o Protocols for waste classification of any materials requiring off-site disposal, and protocols for material import, including check-sampling, where appropriate;
 - o Other general requirements for RAPs under NSW EPA (2020); and
- Supplementary contamination investigation of the resultant building footprints following demolition of site structures.
- As a matter of due diligence, it is also recommended that an unexpected finds protocol (UFP) be included as part of the site management plan during earthworks detailing the process by which any unexpected finds of potential environmental concern will be managed. This is recommended particularly due to the limited sampling undertaken, not meeting the recommendations of the NSW EPA (2022) sampling guidelines.

The above recommendations generally align with the Department's standard mitigation measures LC1, LC2, LC3 and LC4.

Douglas notes that the wording of LC1 should be amended for clarity to include requiring the preparation of a RAP prior to carrying out the requirements of the RAP. It is understood that the Department intends to have the RAP prepared, in which case LC1 would be appropriate. It is noted that Douglas does not recommend either the inclusion or exclusion of a NSW EPA accredited Site Auditor, which is of relevance to the standard wording of LC1 and LC4.

The Department's planning team has indicated that the remediation works expected at the site would be Category 2 Remediation under Clause 4.13 of *SEPP (Resilience and Hazards) 2021*.

14. References

CRC CARE. (2017). *Risk-based Management and Remediation Guidance for Benzo(a)pyrene*. Technical Report no. 39: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment.

Douglas. (2025). *Report on Preliminary Site Investigation (Contamination), Nowra New Public School, 9 Worrigeer Road, Worrigeer, Report 234398.00.R.001.DftA*.

GSNSW. (2023). *NSW Seamless Geology*. Geological Survey NSW Web Map Service.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. NSW Environment Protection Authority.

NSW EPA. (2020). *Guidelines for Consultants Reporting on Contaminated Land*. Contaminated Land Guidelines: NSW Environment Protection Authority.

NSW EPA. (2022). *Contaminated Sites, Sampling Design Guidelines*. NSW Environment Protection Authority.

15. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report (or services) for this project at 9 Worrigeer Road, Worrigeer NSW in line with Douglas' proposal dated 31 October 2025 as variation to Work Order DDWO0743425 and was undertaken in accordance with SINNSW Standing Offer Deed for the provision of services, SINNSW02503/21-D and acceptance received from dated 30 July 2025 from Sabina Naser. This report is provided for the exclusive use of Department of Education for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after Douglas' field testing has been completed.

Douglas' advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by Douglas in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the environmental components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. Douglas cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by Douglas. This is because this report has been written as advice and opinion rather than instructions for construction.

Appendix A

Drawing

Appendix B

About this Report

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole 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. They may not be the same at

the time of construction as are indicated in the report; and

- 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 first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or 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 a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

continued next page

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style **XW**. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

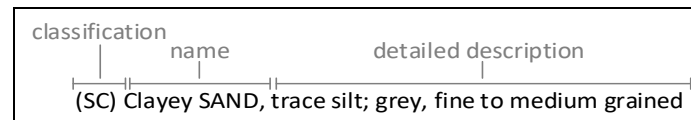
Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Introduction

All materials which are not considered to be “in-situ rock” are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The “classification” comprises a two character “group symbol” providing a general summary of dominant soil characteristics. The “name” summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either “fine grained” (also known as “cohesive” behaviour) or “coarse grained” (“non cohesive” behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as “oversize”	
Cobble	63 - 200		
Gravel ¹	2.36 - 63	Coarse	>65%
Sand ¹	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

¹ – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer “component proportions” below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a “Sandy CLAY”, this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a “primary”, “secondary”, or “minor” component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition ¹	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor ²	Present in the soil, but not significant to its engineering properties	All other components	All other components

¹ As defined in AS1726-2017 6.1.4.4

² In the detailed material description, minor components are split into two further sub-categories. Refer “identification of minor components” below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, “INTERBEDDED Silty CLAY AND SAND”.

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component ¹	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

¹ – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type	Particle size (mm)	
	Coarse	Fine
Gravel	19 - 63	6.7 - 19
	Medium	2.36 - 6.7
	Fine	0.6 - 2.36
Sand	0.21 - 0.6	0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code **NDF**, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example **(VS)**.

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as “extremely weathered material” in reports and by the abbreviation code **XWM** on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than ‘very low’ as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be “oversize” may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with “MIXTURE OF”.

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Rock Strength

Rock strength is defined by the unconfined compressive strength, and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $I_{s(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Unconfined Compressive Strength (MPa)	Point Load Index ¹ $I_{s(50)}$ MPa	Abbreviation Code
Very low	0.6 - 2	0.03 - 0.1	VL
Low	2 - 6	0.1 - 0.3	L
Medium	6 - 20	0.3 - 1.0	M
High	20 - 60	1 - 3	H
Very high	60 - 200	3 - 10	VH
Extremely high	>200	>10	EH

¹ Rock strength classification is based on UCS. The UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site. The point load Index ranges shown above are as suggested in AS1726 and should not be relied upon without supporting evidence.

The following abbreviation codes are used for soil layers or seams of material “within rock” but for which the equivalent UCS strength is less than 0.6 MPa.

Scenario	Abbreviation Code
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The properties of the material encountered over this interval are described in the “Description of Strata” and soil properties columns.	SOIL
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The prominence of the material is such that it can be considered to be a seam (as defined in Table 22 of AS1726-2017) and the properties of the material are described in the defect column.	SEAM

Degree of Weathering

The degree of weathering of rock is classified as follows:

Weathering Term	Description	Abbreviation Code
Residual Soil ¹	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.	RS
Extremely weathered ¹	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	XW
Highly weathered	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.	HW
Moderately weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MW
Slightly weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.	SW
Fresh	No signs of decomposition or staining.	FR
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	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 weathered products in pores.	DW

¹ The parent rock type, of which the residual/extremely weathered material is a derivative, will be stated in the description (where discernible).

Degree of Alteration

The degree of alteration of the rock material (physical or chemical changes caused by hot gasses or liquids at depth) is classified as follows:

Term	Description	Abbreviation Code
Extremely altered	Material is altered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.	XA
Highly altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is changed by alteration. Some primary minerals are altered to clay minerals. Porosity may be increased by leaching or may be decreased due to precipitation of secondary materials in pores.	HA
Moderately altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MA
Slightly altered	Rock is slightly discoloured but shows little or no change of strength from fresh rock	SA
Note: If HA and MA cannot be differentiated use DA (see below)		
Distinctly altered	Rock strength usually changed by alteration. The rock may be highly discoloured, usually by staining or bleaching. Porosity may be increased by leaching or may be decreased due to precipitation of secondary minerals in pores.	DA

Degree of Fracturing

The following descriptive classification apply to the spacing of natural occurring fractures in the rock mass. It includes bedding plane partings, joints and other defects, but excludes drilling breaks. These terms are generally not required on investigation logs where fracture spacing is presented as a histogram, and where used are presented in an unabbreviated format.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$RQD \% = \frac{\text{cumulative length of 'sound' core sections} > 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e., drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

These terms may be used to describe the spacing of bedding partings in sedimentary rocks. Where used, these terms are generally presented in an unabbreviated format

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Rock Descriptions

Terminology
Symbols
Abbreviations

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Cleavage	CL
Crushed seam	CS
Crushed zone	CZ
Drilling break	DB
Decomposed seam	DS
Drill lift	DL
Extremely Weathered seam	EW
Fault	F
Fracture	FC
Fragmented	FG
Handling break	HB
Infilled seam	IS
Joint	JT
Lamination	LAM
Shear seam	SS
Shear zone	SZ
Vein	VN
Mechanical break	MB
Parting	P
Sheared Surface	S

Rock Defect Orientation

Term	Abbreviation Code
Horizontal	H
Vertical	V
Sub-horizontal	SH
Sub-vertical	SV

Rock Defect Coating

Term	Abbreviation Code
Clean	CN
Coating	CT
Healed	HE
Infilled	INF
Stained	SN
Tight	TI
Veneer	VNR

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLAY
Iron oxide	FE
Manganese	MN
Pyrite	Py
Secondary material	MS
Silt	M
Quartz	Qz
Unidentified material	MU

Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Discontinuous	DIS
Irregular	IR
Planar	PR
Stepped	ST
Undulating	UN

Rock Defect Roughness

Term	Abbreviation Code
Polished	PO
Rough	RF
Smooth	SM
Slickensided	SL
Very rough	VR

Defect Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

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Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:

SAMPLE			DEPTH (m)	TESTING	
SAMPLE REMARKS	TYPE	INTERVAL		TEST TYPE	RESULTS AND REMARKS
	SPT		1.0 1.45	SPT	4,9,11 N=20

Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U ¹
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

¹ – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y = x blows for y mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(L)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD ¹
Air Track	AT
Diatube	DT ¹
Hand auger	HA ¹
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA ¹
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT ¹
Ripping tyne/ripper	R
Rock roller	RR ¹
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON ¹
Mud/blade bucket	MB ¹
Toothed bucket	TB ¹
Vibrocure	VC ¹
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB ¹

¹ – numeric suffixes indicate tool diameter/width in mm

Introduction

The Cone Penetration Test (CPT) is a sophisticated soil profiling test carried out in-situ. A special cone shaped probe is used which is connected to a digital data acquisition system. The cone and adjoining sleeve section contain a series of strain gauges and other transducers which continuously monitor and record various soil parameters as the cone penetrates the soils.

The soil parameters measured depend on the type of cone being used, however they always include the following basic measurements

- Cone tip resistance q_c
- Sleeve friction f_s
- Inclination (from vertical) i
- Depth below ground z

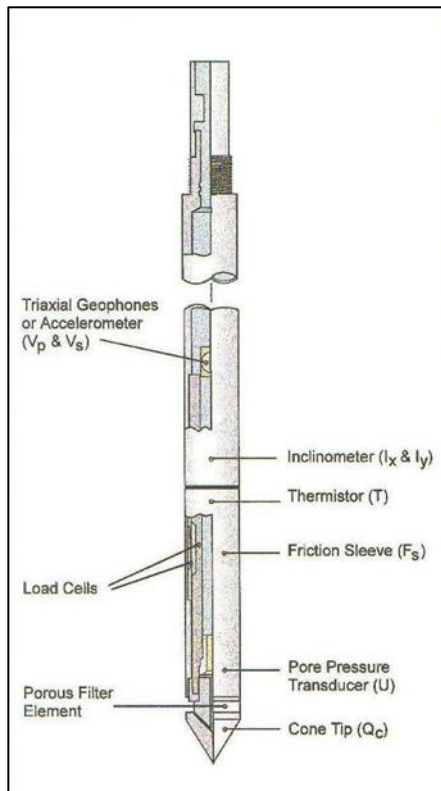


Figure 1: Cone Diagram

The inclinometer in the cone enables the verticality of the test to be confirmed and, if required, the vertical depth can be corrected.

The cone is thrust into the ground at a steady rate of about 20 mm/sec, usually using the hydraulic rams of a purpose built CPT rig, or a drilling rig. The testing is carried out in accordance with the Australian Standard AS1289 Test 6.5.1.



Figure 2: Purpose built CPT rig

The CPT can penetrate most soil types and is particularly suited to alluvial soils, being able to detect fine layering and strength variations. With sufficient thrust the cone can often penetrate a short distance into weathered rock. The cone will usually reach refusal in coarse filling, medium to coarse gravel and on very low strength or better rock. Tests have been successfully completed to more than 60 m.

Types of CPTs

Douglas Partners (and its subsidiary GroundTest) owns and operates the following types of CPT cones:

Type	Measures
Standard	Basic parameters (q_c , f_s , i & z)
Piezocone	Dynamic pore pressure (u) plus basic parameters. Dissipation tests estimate consolidation parameters
Conductivity	Bulk soil electrical conductivity ($\square$) plus basic parameters
Seismic	Shear wave velocity (V_s), compression wave velocity (V_p), plus basic parameters

Strata Interpretation

The CPT parameters can be used to infer the Soil Behaviour Type (SBT), based on normalised values of cone resistance (Q_t) and friction ratio (Fr). These are used in conjunction with soil classification charts, such as the one below (after Robertson 1990)

Cone Penetration testing

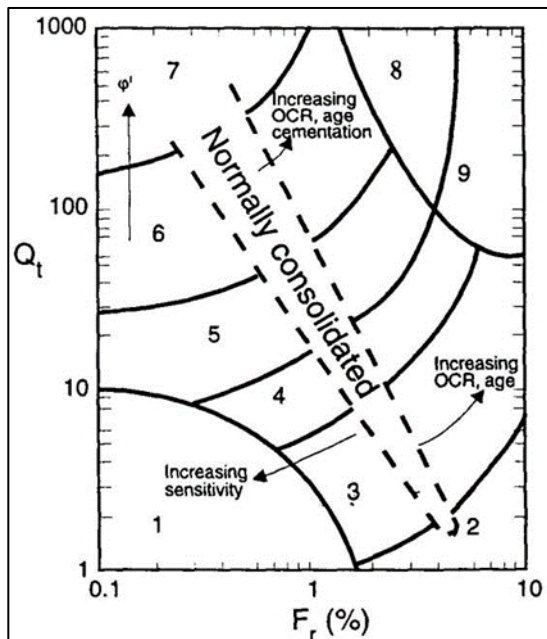


Figure 3: Soil Classification Chart

DP's in-house CPT software provides computer aided interpretation of soil strata, generating soil descriptions and strengths for each layer. The software can also produce plots of estimated soil parameters, including modulus, friction angle, relative density, shear strength and over consolidation ratio.

DP's CPT software helps our engineers quickly evaluate the critical soil layers and then focus on developing practical solutions for the client's project.

Engineering Applications

There are many uses for CPT data. The main applications are briefly introduced below:

Settlement

CPT provides a continuous profile of soil type and strength, providing an excellent basis for settlement analysis. Soil compressibility can be estimated from cone derived moduli, or known consolidation parameters for the critical layers (eg. from laboratory testing). Further, if pore pressure dissipation tests are undertaken using a piezocone, in-situ consolidation coefficients can be estimated to aid analysis.

Pile Capacity

The cone is, in effect, a small scale pile and, therefore, ideal for direct estimation of pile capacity. DP's in-house program ConePile can analyse most pile types and produces pile capacity versus depth plots. The analysis methods are based on proven static theory and empirical studies, taking account of scale effects, pile materials and method of installation.

The results are expressed in limit state format, consistent with the Piling Code AS2159.

Dynamic or Earthquake Analysis

CPT and, in particular, Seismic CPT are suitable for dynamic foundation studies and earthquake response analyses, by profiling the low strain shear modulus G_0 . Techniques have also been developed relating CPT results to the risk of soil liquefaction.

Other Applications

Other applications of CPT include ground improvement monitoring (testing before and after works), salinity and contaminant plume mapping (conductivity cone), preloading studies and verification of strength gain.

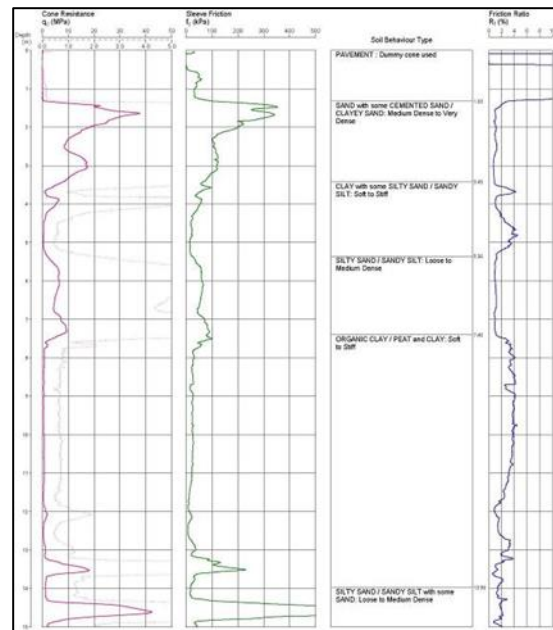


Figure 4: Sample Cone Plot

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Appendix C

Data quality objectives

1. Data quality objectives

The DSI has been devised broadly in accordance with the seven-step data quality objectives (DQO) process which is provided in Appendix B, Schedule B2 of NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)* [NEPM] (NEPC, 2013).

Table 1: Data quality objectives

Step	Summary
1: State the problem	The objective of the investigation is to assess the contamination status of the site with respect to the proposed land use. The investigation is being undertaken as the site is to have a change in land use from semi-rural residential to a public school facility. The requirements of the regulator, Shoalhaven City Council, will also be considered by consulting their Development Control Plan (DCP), Local Environment Plan (LEP) and any other requirements based on our recent experience with Council on similar sites. A preliminary conceptual site model (CSM) has been prepared (Section 7) for the proposed development. The project team consist of experienced environmental engineers and scientists working in the roles of Project Principal, Project Reviewer, Project Manager and field staff.
2: Identify the decisions / goal of the study	The site history has identified possible contaminating previous uses which are identified in the CSM (Section 7). The CSM identifies the associated contaminants of potential concern (CoPC) and the likely impacted media. The site assessment criteria (SAC) for each of the CoPC are detailed in Appendix E. The decision is to establish whether or not the results fall below the SAC or whether or not the 95% upper confidence limit of the arithmetic mean of the sample population falls below the SAC. On this basis, an assessment of the site's suitability from a contamination perspective will be derived and a decision made on whether (or not) further assessment and / or remediation will be required.
3: Identify the information inputs	Inputs will be the analytical results for the CoPC and media (identified in the CSM, Section 7) from NATA accredited laboratories and methods, where possible. The SAC for each of the CoPC are detailed in Appendix E and in Table F1 and F2, Appendix F.
4: Define the study boundaries	The lateral boundaries of the investigation area are shown on Drawing D.001, Appendix A. The vertical boundaries are to the extent of contamination impact as determined from the site history assessment and site observations. The assessment is limited to the timeframe over which the field works were undertaken. Constraints to the assessment are identified and discussed in the conclusions of the report, Section 12.

Step	Summary
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the SAC (Appendix E, based on NEPC (2013)). Where guideline values are absent, other sources of guideline values accepted by NEPC (2013) shall be adopted where available and warranted. Where a sample result exceeds the adopted criterion, a further qualitative site-specific assessment will be made as to the risk posed by the presence of that contaminant(s). Initial comparisons will be with individual results then, where appropriate, summary statistics (including mean, standard deviation and 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL)) to further assess potential risks posed by the site contamination. Quality control results are to be assessed according to their relative percent difference (RPD) values. For field duplicates, triplicates and laboratory results, RPD values should generally be below 30%; for field blanks, results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment is included in Appendix I.
6: Specify the performance or acceptance criteria	Baseline condition: Contaminants at the site and/or statistical analysis of data (in line with NEPC (2013)) exceed the human health and environmental SAC and pose a potentially unacceptable risk to receptors (null hypothesis). Alternative condition: Contaminants at the site and statistical analysis of data (in line with NEPC (2013)) comply with the human health and environmental SAC and therefore, do not pose a potentially unacceptable risk to receptors (alternative hypothesis). Unless conclusive information from the collected data is sufficient to reject the null hypothesis, it will be assumed that the baseline condition is true. Uncertainty that may exist due to the above potential decision errors shall be mitigated as follows: Interpreting results with reference to the CSM, field observations and known data gaps.
7: Optimise the design for obtaining data	As the purpose of the investigation is to assess the contamination status of the site, the sampling program is reliant on professional judgement to identify and sample the potentially affected areas. Further details regarding the sampling plan are in Section 8.

2. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

Appendix D

Field work methodology

1. Guidelines

The following key guidelines were consulted for the field work methodology:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).
- HEPA *PFAS National Environmental Management Plan (NEMP)* (HEPA, 2020).

2. Soil sampling

Soil sampling is carried out in accordance with Douglas' standard operating procedures. The general sampling and sample management procedures comprise:

- Collect soil samples directly from standard penetration test (SPT) sample tube / solid flight auger or excavator bucket at the nominated sample depth (as appropriate);
- Collect near surface samples using hand tools (relevant to SS3);
- Place samples into laboratory-prepared glass jars with Teflon lined lids, capping immediately and minimising headspace within the sample jar;
- Place samples into laboratory-prepared containers (specific for PFAS), capping immediately and minimising headspace within the sample jar;
- Collect ~500 ml samples in zip-lock bags for fibrous asbestos and asbestos fines (FA and AF) analysis;
- Wear a new disposable nitrile glove for each sample point thereby minimising potential for cross-contamination;
- Collect 10% replicate samples for quality control (QC) purposes;
- Label sample containers with individual and unique identification details, including project number, sample location and sample depth (where applicable);
- Place samples into a cooled, insulated and sealed container for transport to the laboratory; and
- Use chain of custody documentation.

Reference was made to HEPA (2020) for requirements specific to PFAS.

3. References

HEPA. (2020). *PFAS National Environmental Management Plan (NEMP)*. Version 2.0: Heads of EPAs Australia and New Zealand and Australian Government Department of the Environment.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

Appendix E

Site assessment criteria

1. Introduction

1.1 Guidelines

The following key guidelines were consulted for deriving the site assessment criteria (SAC):

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).
- HEPA *PFAS National Environmental Management Plan (NEMP)* (HEPA, 2025).

1.2 General

The SAC applied in the current investigation are informed by the CSM which identified human and environmental receptors to potential contamination at the site. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising primarily the investigation and screening levels of Schedule B1 of NEPC (2013).

The following inputs are relevant to the selection and/or derivation of the SAC:

- Land use: residential (relevant to primary school as below).
 - Corresponding to land use category 'A', residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry)), also includes children's day care centres, preschools and primary schools.
- Soil type: sand / silt / clay.

2. Soils

2.1 Health investigation and screening levels

The generic health investigation levels (HIL) and health screening levels (HSL) are considered to be appropriate for the assessment of human health risk via all relevant pathways of exposure associated with contamination at the site. The adopted soil HIL and HSL for the contaminants of concern are in Table 1 and Table 2.

Table 1: Health investigation levels (mg/kg)

Contaminant	HIL-A
Metals	
Arsenic	100
Cadmium	20
Chromium (VI)	100
Copper	6000
Lead	300
Mercury (inorganic)	40

Contaminant	HIL-A
Nickel	400
Zinc	7400
PAH	
B(a)P TEQ	3
Total PAH	300
Phenols	
Phenol	3000
Pentachlorophenol	100
OCP	
DDT+DDE+DDD	240
Aldrin and dieldrin	6
Chlordane	50
Endosulfan	270
Endrin	10
Heptachlor	6
HCB	10
Methoxychlor	300
OPP	
Chlorpyrifos	160
PCB	
PCB	1

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-A&B	HSL-A&B
SAND	0 m to <1 m	1 m to <2 m
Benzene	0.5	0.5
Toluene	160	220
Ethylbenzene	55	NL
Xylenes	40	60
Naphthalene	3	NL
TRH F1	45	70
TRH F2	110	240
SILT	0 m to <1 m	1 m to <2 m

Contaminant	HSL-A&B	HSL-A&B
Benzene	0.6	0.7
Toluene	390	NL
Ethylbenzene	NL	NL
Xylenes	95	210
Naphthalene	4	NL
TRH F1	40	65
TRH F2	230	NL
CLAY	0 m to <1 m	1 m to <2 m
Benzene	0.7	1
Toluene	480	NL
Ethylbenzene	NL	NL
Xylenes	110	310
Naphthalene	5	NL
TRH F1	50	90
TRH F2	280	NL

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX

TRH F2 is TRH >C₁₀-C₁₆ minus naphthalene

The soil saturation concentration (C_{sat}) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds C_{sat}, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'

The HSL for direct contact derived from CRC CARE (2011) are in Table 3.

Table 3: Health screening levels for direct contact (mg/kg)

Contaminant	DC HSL-A	DC HSL-IMW
Benzene	100	1100
Toluene	14 000	120 000
Ethylbenzene	4500	85 000
Xylenes	12 000	130 000
Naphthalene	1400	29 000
TRH F1	4400	82 000
TRH F2	3300	62 000
TRH F3	4500	85 000
TRH F4	6300	120 000

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX

TRH F2 is TRH >C₁₀-C₁₆ minus naphthalene

IMW intrusive maintenance worker

2.2 Health investigation levels for per- and poly-fluoroalkyl substances in soil

The laboratory analytical results for per- and poly-fluoroalkyl substances (PFAS) in soil have been assessed against HIL published in HEPA (2025). The HIL represent a nationally-agreed suite that should be used to inform site investigations. The HIL are intentionally conservative, and an exceedance of these criteria may not constitute a risk if other exposure pathways are controlled. An exceedance of the HIL should trigger further investigations, such as a site-specific risk assessment. At the time of this investigation, screening values were available only for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS).

The HIL derived from Table 5 of HEPA (2025) are in Table 4.

Table 4: Health investigation levels (mg/kg)

Contaminant	HIL-A
PFOS and PFHxS *	0.003
PFOA	0.06

Notes: * Includes PFOS only, PFHxS only and the sum of the two.

2.3 Asbestos in soil

The HSL for asbestos in soil are based on likely exposure levels for different scenarios published in NEPC (2013) for the following forms of asbestos:

- Bonded asbestos containing material (ACM); and
- Fibrous asbestos and asbestos fines (FA and AF).

The HSL are in Table 5.

Table 5: Health screening levels for asbestos

Form of asbestos	HSL-A
ACM	0.01%
FA and AF	0.001%
FA and AF and ACM	No visible asbestos for surface soil *

Notes: Surface soils defined as top 10 cm.

* Based on site observations at the sampling points and the analytical results of surface samples.

Where insufficient sample recovery is possible for FA and AF analysis the presence or absence of asbestos at a limit of reporting of 0.1 g/kg (AS:4964) will be adopted for the assessment as an initial screen.

2.4 Ecological investigation levels

Ecological investigation levels (EIL) and added contaminant limits (ACL), where appropriate, have been derived in NEPC (2013) for arsenic, copper, chromium (III), nickel, lead, zinc, DDT and naphthalene. The adopted EIL, derived using the interactive (excel) calculation spreadsheet on the NEPM toolbox website are shown in Table 7, with inputs into their derivation shown in Table 6.

Table 6: Inputs to the derivation of the ecological investigation levels

Variable	Input	Rationale
Age of contaminants	"Aged" (>2 years)	Historic contamination sources
pH	5.30	Average of results
CEC	6.93 cmol _c /kg	Average of results
Clay content	10%	Assumed, conservative
Traffic volumes	Low	Low traffic environment
State / Territory	NSW	Location of site

Table 7: Ecological investigation levels (mg/kg)

Contaminant	EIL-A-B-C
Metals	
Arsenic	100
Copper	130
Nickel	75
Chromium III	410
Lead	1100
Zinc	280
PAH	
Naphthalene	170
OCP	
DDT	180

Notes: EIL-A-B-C urban residential and public open space

2.5 Ecological screening levels

Ecological screening levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. The adopted ESL are shown in Table 8.

Table 8: Ecological screening levels (mg/kg)

Contaminant	Soil type	ESL-A-B-C
Benzene	Coarse	50
Toluene	Coarse	85
Ethylbenzene	Coarse	70
Xylenes	Coarse	105
TRH F1	Coarse/ Fine	180*
TRH F2	Coarse/ Fine	120*
TRH F3	Coarse	300
TRH F4	Coarse	2800
B(a)P	Coarse	0.7
Benzene	Fine	65
Toluene	Fine	105
Ethylbenzene	Fine	125
Xylenes	Fine	45
TRH F1	Coarse/ Fine	180*
TRH F2	Coarse/ Fine	120*
TRH F3	Fine	1300
TRH F4	Fine	5600
B(a)P	Fine	0.7

Notes: ESL are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability
 TRH F1 is TRH C₆-C₁₀ minus BTEX
 TRH F2 is TRH >C₁₀-C₁₆ including naphthalene
 ESL-A-B-C urban residential and public open space

2.6 Ecological soil guideline values

The interim ecological soil guideline values (EGV) derived from Table 6 of HEPA (2025) are in Table 9.

Table 9: Ecological soil guideline values (mg/kg) – all land uses

Contaminant	Direct exposure	Indirect exposure
PFOS	1	0.003
PFOA	10 / 0.005	0.003
PFHxS	NC	NC

Notes: NC no criterion

*For intensely developed sites with no secondary consumers and minimal potential for indirect ecological exposure, a higher criterion of up to 0.14 mg/kg PFOS may be appropriate.

2.7 Management limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards;
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits are in Table 10.

Table 10: Management limits (mg/kg)

Contaminant	Soil type	ML-A-B-C
TRH F1	Coarse	700
TRH F2	Coarse	1000
TRH F3	Coarse	2500
TRH F4	Coarse	10 000
TRH F1	Fine	800
TRH F2	Fine	1000
TRH F3	Fine	3500
TRH F4	Fine	10 000

Notes: TRH F1 is TRH C₆-C₁₀ including BTEX

TRH F2 is TRH >C₁₀-C₁₆ including naphthalene

ML-A-B-C residential, parkland and public open space

3. References

HEPA. (2025). *PFAS National Environmental Management Plan (NEMP)*. Version 3.0: Heads of EPAs Australia and New Zealand.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

Appendix F

Soil laboratory results summary tables (F1 to F3)



Table F1: Summary of Laboratory Results – Priority metals, Priority PAH, Priority TRH, BTEX and Priority phenols

			Priority metals								Priority PAH				Priority TRH						BTEX				Priority phenols
			Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene ^b	Benzo(a)pyrene (BaP)	Benzo(e)pyrene TEQ (BaP TEQ)	Total PAH	TRH C6 - C10	TRH >C10-C16	F1 [(C6-C10)-BTEX]	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34- C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Phenolics
		PQL	4	0.4	1	1	1	0.1	1	1	1	0.05	0.5	0.05	25	50	25	50	100	100	0.2	0.5	1	1	5
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	0 - 0.1 m	27/11/25	12	<0.4	16	7	17	<0.1	3	10	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NL 125	95 45	100 NC
3	0 - 0.1 m	26/11/25	4	<0.4	9	19	14	<0.1	7	32	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	130	100	<0.2	<0.5	<1	<1	<5
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NL 125	95 45	100 NC
4	0.5 - 0.6 m	27/11/25	7	<0.4	17	10	13	<0.1	2	12	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	5 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	50 180	280 NC	NC 1,300	NC 5,600	0.7 65	480 105	NL 125	110 45	100 NC
5	0 - 0.1 m	28/11/25	5	<0.4	11	10	14	<0.1	3	11	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
6	0 - 0.1 m	28/11/25	4	<0.4	8	9	11	<0.1	3	10	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	120	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
7	0 - 0.1 m	05/12/25	4	<0.4	9	6	13	<0.1	2	10	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
BD3	0 - 0.1 m	05/12/25	6	<0.4	8	6	12	<0.1	2	7	<1	NT	NT	NT	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
9	0 - 0.1 m	27/11/25	11	<0.4	14	20	10	<0.1	15	36	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	3 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	45 180	110 NC	NC 300	NC 2,800	0.5 50	160 85	55 70	40 105	100 NC
BD2	0 - 0.1 m	05/12/25	6	<0.4	7	9	7	<0.1	5	23	<1	NT	NT	NT	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	3 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	45 180	110 NC	NC 300	NC 2,800	0.5 50	160 85	55 70	40 105	100 NC
9 - [TRIPLICATE]	0 - 0.1 m	27/11/25	5	<0.4	9	11	8	<0.1	11	30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
16	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
17	0 - 0.1 m	05/12/25	8	<0.4	12	15	21	<0.1	4	29	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
18	0 - 0.1 m	05/12/25	4	<0.4	7	7	12	<0.1	3	25	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
19	0 - 0.1 m	05/12/25	<4	<0.4	44	42	6	<0.1	22	37	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	3 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	45 180	110 NC	NC 300	NC 2,800	0.5 50	160 85	55 70	40 105	100 NC
BD4	0 - 0.1 m	05/12/25	<5	<1	91	39	<5	<0.1	26	32	<1	NT	NT	NT	<10	<50	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	3 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	45 180	110 NC	NC 300	NC 2,800	0.5 50	160 85	55 70	40 105	100 NC
20	0.5 - 0.6 m	05/12/25	12	<0.4	24	6	13	<0.1	1	5	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
21	0 - 0.1 m	05/12/25	7	<0.4	10	18	14	<0.1	5	37	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	200	120	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
SS1	0 - 0.1 m	05/12/25	9	<0.4	15	40	20	<0.1	10	130	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	230	170	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
SS2	0 - 0.1 m	05/12/25	640	<0.4	310	480	22	<0.1	5	130	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	190	150	<0.2	<0.5	<1	<1	<5
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC
SS3	0 - 0.1 m	05/12/25	7	<0.4	12	27	15	<0.1	9	88	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	140	<100	<0.2	<0.5	<1	<1	NT
			100 100	20 NC	100 410	6,000 130	300 1,100	40 NC	400 75	7,400 280	4 170	NC 0.7	3 NC	300 NC	NC NC	NC 120	40 180	230 NC	NC 1,300	NC 5,600	0.6 65	390 105	NC 125	95 45	100 NC

Lab result	
HIL/HSL value	EIL/ESL/EGV value

■ HIL/HSL exceedance ■ EIL/ESL exceedance ■ HIL/HSL and EIL/ESL exceedance ■ ML exceedance ■ ML and HIL/HSL or EIL/ESL exceedance
■ Indicates that asbestos has been detected by the lab, refer to the lab report ■ Blue = DC exceedance ■ Red = EGV-indirect exceedance ■ HSL 0-<1 Exceedance
Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

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Table F2: Summary of Laboratory Results – Priority OCP, Priority OPP, PCB, Priority PFAS, Asbestos

			Priority OCP									Priority OPP	PCB	Priority PFAS					Asbestos	
			DDT+DDE+DDD	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyrifos	Total PCB	Total Positive PFAS	PFOA	PFOS + PFHxS	PFOS	PFHxS	Asbestos ID in soils >0.1g/kg	FA and AF Estimation
		PQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0001	0.0001	0.0001	0.0001	0.0001	-	0.001
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	%w/w
1	0 - 0.1 m	27/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
3	0 - 0.1 m	26/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0056	0.0003	0.0053	0.0053	<0.0001	NAD	<0.001
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
4	0.5 - 0.6 m	27/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
5	0 - 0.1 m	28/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
6	0 - 0.1 m	28/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
7	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	<0.001
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
BD3	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
9	0 - 0.1 m	27/11/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0012	<0.0001	0.0012	0.0012	<0.0001	NAD	<0.001
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
BD2	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
9 - [TRIPLICATE]	0 - 0.1 m	27/11/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
16	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.0001	<0.0001	0.0001	0.0001	<0.0001	NT	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
17	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
18	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
19	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0009	<0.0001	0.0009	0.0009	<0.0001	NAD	<0.001
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
BD4	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
20	0.5 - 0.6 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
21	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
SS1	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
SS2	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0021	0.0004	0.0017	0.0017	<0.0001	NAD	<0.001
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	
SS3	0 - 0.1 m	05/12/25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NAD	NT
			240 180 6 NC 50 NC 270 NC 10 NC 6 NC 10 NC 300 NC 10 NC 160 NC 1 NC NC NC NC 0.1 10 0.01 NC 0.01 1 0.01 NC																	

Lab result

HIL/HSL value

EIL/ESL/EGV value

HIL/HSL exceedance

EIL/ESL exceedance

HIL/HSL and EIL/ESL exceedance

ML exceedance

ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report

Blue = DC exceedance

Red = EGV-indirect exceedance

HSL 0-<1 Exceedance

Bold = Lab detections

= Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable

NL = Not limiting

NAD = No Asbestos detected

HIL = Health investigation level

HSL = Health screening level (excluding DC)

EIL = Ecological investigation level

ESL = Ecological screening level

EGV = Environmental Guideline Value

ML = Management Limit

DC = Direct Contact HSL

- Notes:
- a QA/QC replicate of sample listed directly below the primary sample
 - b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL
 - c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential A with garden/accessible soil

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-A (NEPC, 2013 or HEPA, 2020 (PFAS only))	EGV	EGV, all land uses, direct exposure (HEPA, 2020)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)	ESL	Urban Residential and Public Open Space (NEPC, 2013)
DC	Direct contact HSL A Residential (Low density) (CRC CARE, 2011)	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
		EGV-Indir	EGV, all land uses, Indirect exposure (HEPA, 2020)



Table F3: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, Phenols, OCP, OPP, PCB, PFAS, Asbestos

			Metals						TRH		BTEX				PAH		Phenols	OCP				OPP	PCB	PFAS		Asbestos	
			Total Arsenic	Cadmium	Total Chromium	Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (B(a)P)	Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed Opp	Total PCB	PFOA	PFOS + PFHXS	Asbestos ID in soils >0.1g/kg	FA and AF Estimation
		PQL	4	0.4	1	1	0.1	1	25	50	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.0001	0.0001		0.001
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	%w/w
1	0 - 0.1 m	27/11/25	12	<0.4	16	17	<0.1	3	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
3	0 - 0.1 m	26/11/25	4	<0.4	9	14	<0.1	7	<25	110	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0003	0.0053	NAD	<0.001
4	0.5 - 0.6 m	27/11/25	7	<0.4	17	13	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
5	0 - 0.1 m	28/11/25	5	<0.4	11	14	<0.1	3	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
6	0 - 0.1 m	28/11/25	4	<0.4	8	11	<0.1	3	<25	100	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
7	0 - 0.1 m	05/12/25	4	<0.4	9	13	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	<0.001
BD3	0 - 0.1 m	05/12/25	6	<0.4	8	12	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
9	0 - 0.1 m	27/11/25	11	<0.4	14	10	<0.1	15	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0001	0.0012	NAD	<0.001
BD2	0 - 0.1 m	05/12/25	6	<0.4	7	7	<0.1	5	<25	<50	<0.2	<0.5	<1	<1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
9 - (TRIPLICATE)	0 - 0.1 m	27/11/25	5	<0.4	9	8	<0.1	11	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
16	0 - 0.1 m	05/12/25	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.0001	0.0001	NT	NT
17	0 - 0.1 m	05/12/25	8	<0.4	12	21	<0.1	4	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
18	0 - 0.1 m	05/12/25	4	<0.4	7	12	<0.1	3	<25	110	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
19	0 - 0.1 m	05/12/25	<4	<0.4	44	6	<0.1	22	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0001	0.0009	NAD	<0.001
BD4	0 - 0.1 m	05/12/25	<5	<1	91	<5	<0.1	26	<10	<50	<0.2	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
20	0.5 - 0.6 m	05/12/25	12	<0.4	24	13	<0.1	1	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
21	0 - 0.1 m	05/12/25	7	<0.4	10	14	<0.1	5	<25	190	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
SS1	0 - 0.1 m	05/12/25	9	<0.4	15	20	<0.1	10	<25	310	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
SS2	0 - 0.1 m	05/12/25	640	<0.4	310	22	<0.1	5	<25	160	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0004	0.0017	NAD	<0.001
SS3	0 - 0.1 m	05/12/25	7	<0.4	12	15	<0.1	9	<25	120	<0.2	<0.5	<1	<1	<0.05	<0.05	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NT
Waste Classification Criteria ^f																											
CT1			100	20	100	100	4	40	-	10,000	10	288	600	1000	0.8	200	288	<50	60	-	-	4	<50	-	-	-	-
SCC1			500	100	1,900	1,500	50	1,050	-	10,000	18	518	1,080	1,800	10	200	518	<50	108	-	-	7.5	<50	18	1.8	-	-
TCLP1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT2			400	80	400	400	16	160	-	40,000	40	1,152	2,400	4,000	3.2	800	1,152	<50	240	-	-	16	<50	-	-	-	-
SCC2			2,000	400	7,600	6,000	200	4,200	-	40,000	72	2,073	4,320	7,200	23	800	2,073	<50	432	-	-	30	<50	72	7.2	-	-
TCLP2			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

□ CT1 exceedance □ TCLP1 and/or SCC1 exceedance □ CT2 exceedance ■ TCLP2 and/or SCC2 exceedance ■ Asbestos detection
- = Not tested, no criteria or not applicable NAD = no asbestos detected

Notes:

- a QA/QC replicate of sample listed directly below the primary sample
- b Total chromium used as initial screen for chromium(VI).
- c Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
- d Criteria for scheduled chemicals used as an initial screen
- e Criteria for Chlorpyrifos used as initial screen
- f NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste
- PQL Practical quantitation limit
- CT1 Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
- SCC1 Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
- TCLP1 Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
- CT2 Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
- SCC2 Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste
- TCLP2 Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste

Appendix G

Borehole and test pit logs

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.4 AHD
COORDINATE: E:283925.1, N:6136533.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 01
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE		TESTING				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN (#)	CONSISTENCY (C) DENSITY (g/cm³)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS						
27/11/25 No free groundwater observed		0.20	TOPSOIL / SILT (ML) with sand trace gravel: brown; low plasticity; fine to medium sand; fine, sub-angular to angular gravel; trace rootlets.		TOP	NA	w<PL									ES	0.10			
		0.80	Silty CLAY (CI) trace sand: grey mottled brown; medium plasticity; fine sand.		RS	VSt	w<PL									D/ES	0.50 0.60	PP	340kPa	
		1.00	Silty Sandy CLAY (CI): dark grey brown; medium plasticity; fine sand; with bands of low strength siltstone.													SPT	1.00 1.15	SPT	13/150mm (HB)	
		1.90	SILTSTONE: dark grey brown, bedded. Berry Siltstone.		XWM	H	w<PL									D	2.00			
		2.50	SILTSTONE: brown grey, laminated; with occasional interbeds of fine grained sandstone and clay seams. Berry siltstone.					HW		VL										
		3.00						MW		M				2.60-2.69m: B x3, 5°, IR, CT Clay, SM 2.72m: B, 10°, IR, CT Clay, SM 2.80m: JT, 75°, PR, CT Clay, SM 2.92m: JT, 45°, IR, CT Clay, SM 2.97m: JT, 40°, IR, CT Clay, SM 3.02m: CZ, 5°, IR, INF Clay 5mm, SM			3	PLT	PL(A)=0.90MPa	
		3.30						MW		M				3.12m: JT, 15°, IR, CT Clay, SM 3.23m: B, 20°, PR, SN Fe, SM						
		3.35						MW		M				3.34m: DS, 5°, IR, INF Clay 30mm, SM				PLT	PL(A)=0.84MPa	
		3.68	SILTSTONE: dark grey, laminated; with occasional interbeds of fine grained sandstone. Berry siltstone.					MW		M				3.39m: B, 10°, IR, SN Fe, SM 3.43m: JT, 85°, IR, SN Fe, SM 3.49m: DS, 15°, IR, INF Clay 30mm, SM 3.55m: B, 15°, PR, SN Fe, SM 3.65m: B, 10°, IR, SN Fe, SM 3.76m: B, 5°, IR, SN Fe, SM 3.94m: JT, 40°, IR, SN Fe, SM 4.14-4.16m: B x2, 10°, PR, SN Fe, SM 4.24m: B, 15°, PR, SN Fe, SM						
		4.00						SW		H VH	100	51		4.49-5.24m: B x3, 5°, IR, SN Fe, SM				PLT	PL(A)=3.5MPa	
NOTES: [#] Soil origin is "probable" unless otherwise stated. ¹ Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																				

NOTES: "Soil origin is "probable" unless otherwise stated. "Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.5m, NMLC to 8.4m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK/WC
CASING: HWT to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.4 AHD
COORDINATE: E:283925.1, N:6136533.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 01
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED														SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK						SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD						
			[CONT] SILTSTONE: dark grey, laminated; with occasional interbeds of fine grained sandstone. Berry siltstone.																
	6																		
		6																	
	5																		
		7																	
	4																		
		8																	
		9	Borehole discontinued at 8.40m depth. Limit of investigation.																

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(%) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.5m, NMLC to 8.4m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK/WC
CASING: HWT to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

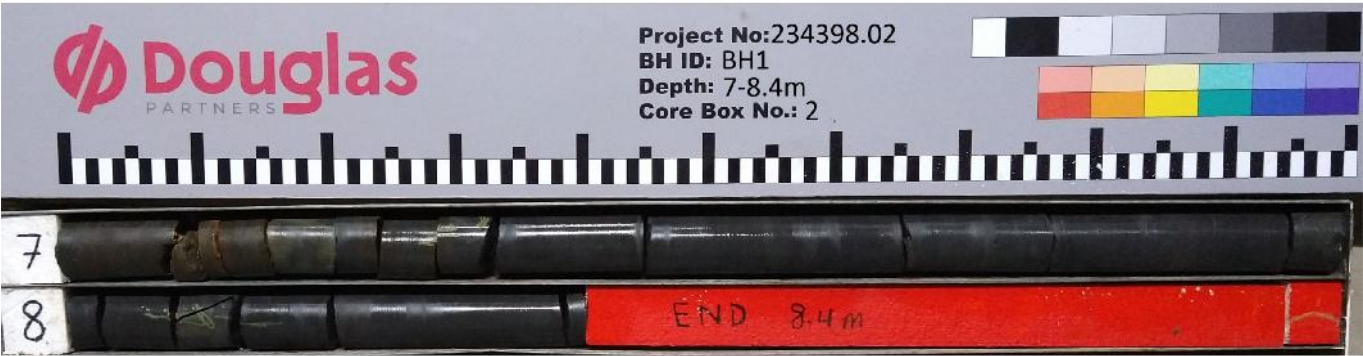
CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.4 AHD
COORDINATE: E:283925.1, N:6136533.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 01
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 1



2.50-7.00 m depth



7.00-8.40 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.9 AHD
COORDINATE: E:283904.3, N:6136504.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 02
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN(%)	CONSISTENCY(%)	DENSITY(%)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)						
26/11/25 No free groundwater observed		0.30	TOPSOIL / SILT (ML) trace sand trace gravel: brown; low plasticity; fine sand; fine gravel; trace rootltes.	TS	TOP	NA	w>PL									ES	0.10			
		0.70	Silty CLAY (CL-CI) trace sand; low to medium plasticity; fine sand.	RS		H	w>PL									D/ES	0.50 0.60	PP	450kPa	
		1	Gravelly CLAY (CL-CI) with silt trace sand; low to medium plasticity; fine to medium, sub-angular to sub-rounded gravel; fine to medium sand; with bands of low strength siltstone.													D	1.00	SPT	11,10/80mm (HB)	
																SPT	1.23			
		2			XWM	H	w>PL													
		2.30																		
			SILTSTONE: grey with occasional brown stained zones adjacent to sub-horizontal defects; laminated . Berry Siltstone.						HW	VL										
									MW	M										
									XW	SEAM										
		3							HW to MW	L to M								3	PLT	PL(A)=0.67MPa
		4							MW									4	PLT	PL(A)=2.5MPa
NOTES: [#] Soil origin is "probable" unless otherwise stated. ¹ Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																				

NOTES: "H" Soil origin is "probable" unless otherwise stated. "C" Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.4m, NMLC to 8.36m
REMARKS: Field replicate collected at 0-0.1m

OPERATOR: Drill Wise

LOGGED: ZAK/JH
CASING: HWT to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.9 AHD
COORDINATE: E:283904.3, N:6136504.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 02
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED														SAMPLE			TESTING		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN ^(#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)						
	RL (m)																		
	6	[CONT] SILTSTONE: grey with occasional brown stained zones adjacent to sub-horizontal defects; laminated . Berry Siltstone.					MW												
	6.30	SILTSTONE: grey, laminated.					SW												
	7																		
	8																		
	9	Borehole discontinued at 8.36m depth. Limit of investigation.																	

NOTES: [#]Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D	OPERATOR: Drill Wise	LOGGED: ZAK/JH
METHOD: AD/T to 2.4m, NMLC to 8.36m		CASING: HWT to 2.5m
REMARKS: Field replicate collected at 0-0.1m		

CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.9 AHD
COORDINATE: E:283904.3, N:6136504.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 02
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 1



box 1/2: 2.45-7.00 m depth



box 2/2: 7.00-8.36 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:283920.4, N:6136486.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 03
PROJECT No: 234398.02
DATE: 26/11/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE		TESTING						
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK						SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE	
					ORIGIN ^(#)	CONSIS. ^(*) DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)									DEFECTS & REMARKS
26/11/25 No free groundwater observed		0.20	TOPSOIL / Sandy SILT (ML): brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w<PL								ES		0.10					
		0.60	Silty CLAY (CI) with sand: grey mottled orange; medium plasticity; fine sand.		RS	VSt	w<PL								D/ES		0.50	PP	350kPa			
		1	Clayey SILT (ML) with sand trace gravel: grey mottled orange; low plasticity; fine sand; fine to medium, sub-angular to angular gravel.												U		0.60					
		1.50			XWM	H	w<PL								D/SPT		1.00					
		2															1.10	SPT	10/100m (HB)			
		3																				
		4																				
		4.50																				
		5																				
		6																				
		0.20	SILTSTONE: brown grey, laminated. Berry Siltstone.														2.00					
		0.60															2.10					
		1																				
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NOTES: "Soil origin is 'probable' unless otherwise stated." Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.44m, NMLC to 8.4m
REMARKS: Monitoring well installed

OPERATOR: Drill Wise

LOGGED: ZAK/JH
CASING: HWT to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:283920.4, N:6136486.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 03
PROJECT No: 234398.02
DATE: 26/11/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED													SAMPLE		TESTING						
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK						SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
					ORIGIN ^(#)	CONSIS. ^(*) DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)								

PLANT: Hanjin 8D	OPERATOR: Drill Wise	LOGGED: ZAK/JH
METHOD: AD/T to 2.44m, NMLC to 8.4m		CASING: HWT to 2.5m
REMARKS: Monitoring well installed		



CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:283920.4, N:6136486.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 03
PROJECT No: 234398.02
DATE: 26/11/25
SHEET: 1 of 1



box 1/2: 2.44-7.00 m depth



box 2/2: 7.00-8.40 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:283899.0, N:6136457.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 04
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE		TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN ^(#)	CONSIS ^(*) DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS						
27/11/25 No free groundwater observed	0.30	TOPSOIL / SILT (ML) with sand trace gravel: brown; low plasticity; fine sand; fine, sub-angular to angular gravel; trace rootlets.		TOP	NA	w<PL									ES	0.10			
	0.80	Silty CLAY (CI) trace sand: brown mottled grey; medium plasticity; fine to medium sand.		RS	H	w<PL									D/ES	0.50 0.60	PP	>600kPa	
	1.10	SILTSTONE: grey brown. Berry Siltstone.					HW	VL							D	1.00			
	1.30	SILTSTONE: Orange grey laminated siltstone with occasional fine grained sandstone beds.					HW	L											
	1.44						MW	M											
	1.73						MW	M											
	1.96						MW	M											
	2.23						MW	M											
	2.73	SILTSTONE: dark grey laminated siltstone with occasional fine grained sandstone beds.																	
	2.83																		
3.24																			
3.42																			
3.54																			
3.63																			
3.71																			
3.79																			
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13.63																			
13.71											</								

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 1.1m, NMLC to 5.49m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK/WC
CASING: HWT to 1.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:283899.0, N:6136457.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 04
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 2 of 2

GROUNDWATER		CONDITIONS ENCOUNTERED											SAMPLE			TESTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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				ORIGIN(1)	CONSIS.(1) DENSITY.(1)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		[CONT] SILTSTONE: dark grey laminated siltstone with occasional fine grained sandstone beds.						SW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

PLANT: Hanjin 8D
METHOD: AD/T to 1.1m, NMLC to 5.49m
REMARKS:

OPERATOR: Drill Wise
LOGGED: ZAK/WC
CASING: HWT to 1.5m



Refer to explanatory notes for symbol and abbreviation definitions

CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:283899.0, N:6136457.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 04
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 1



1.10-5.00 m depth



5.00-5.49 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.9 AHD
COORDINATE: E:284002.9, N:6136592.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 05
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN(#)	CONSIS. ^(*)	DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)						
28/1/25 No free groundwater observed	0.20	TOPSOIL / SILT (ML) with sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA		w<PL					ES	0.10		
	0.50	Silty CLAY (CI) trace sand: brown mottled grey; medium plasticity; fine to medium sand.		RS	H		w<PL								
	1.50	Silty Sandy CLAY (CI) with gravel: grey brown mottled orange; medium plasticity; fine to medium sand; fine to medium, sub-angular to angular gravel; with bands of low strength siltstone.		XWM	H		w<PL					D/ES	0.50 0.60	PP	520kPa
	2.00	SILTSTONE: dark grey brown. Berry Siltstone.							HW	150	L				
	2.00	Borehole discontinued at 2.00m depth. Auger refusal on low to medium strength siltstone.													

PLANT: Hanjin 8D
METHOD: AD/T to 2m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

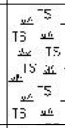
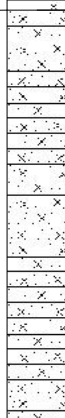
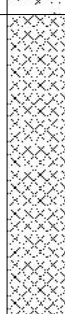


BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.5 AHD
COORDINATE: E:283940.0, N:6136561.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 06
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN ^(#)	CONSIS. ⁽¹⁾	DENSITY ⁽¹⁾	MOISTURE	WEATH.	DEPTH (m)						
28/11/25 No free groundwater observed	h ₁	0.20	TOPSOIL / SILT (ML) with sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA		w<PL					ES	0.10		
			Silty CLAY (CI) with sand: brown mottled orange brown; medium plasticity; fine sand.		RS	H		w<PL								
		0.50	Silty Sandy CLAY (CI) with gravel: grey mottled brown; medium plasticity; fine to medium sand; fine to medium, sub-angular to angular gravel; with bands of low strength siltstone.		XWM	H		w<PL					D/ES U	0.50 0.60 0.65	PP	480kPa
		1.00										D	1.00			
		1.20	SILTSTONE: dark grey brown. Berry Siltstone.							1.20		SPT	1.00 1.23	SPT	11,10/80mm (HB)	
									HW		L					
		2	Borehole discontinued at 1.70m depth. Auger refusal on low to medium strength siltstone.									D	1.50			

NOTES: [#]Soil origin is "probable" unless otherwise stated. ⁽¹⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 1.7m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.4 AHD
COORDINATE: E:283940.6, N:6136467.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 07
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN ^(#)	CONSIS. ⁽¹⁾	DENSITY ⁽¹⁾	MOISTURE	WEATH.	DEPTH (m)						
05/12/25 No free groundwater observed	0.20	TOPSOIL / Clayey SILT (ML): brown; low plasticity; trace rootlets .		TOP	NA	w<PL						ES	0.10		
		Silty CLAY (CH): brown mottled grey; high plasticity.		RS	St	w=PL									
	0.60	Silty CLAY (CI) trace sand: grey brown mottled orange; medium plasticity; fine to medium sand.		RS	VSt	w<PL						D/ES	0.50 0.60	PP	100kPa
	1.20	Sandy CLAY (CI) trace gravel: orange grey brown; medium plasticity; fine to medium sand; fine to medium gravel; with bands of low strength siltstone.		XWM	H	w<PL						D	1.50		
	2.10	SILTSTONE: grey brown. Berry Siltstone.						210	L			D	2.00		

PLANT: Kubota U35-4
METHOD: AD/T to 2.6m
REMARKS: BD3=0-0.1m

OPERATOR: Coast Excavation

LOGGED: ZAK
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 9.9 AHD
COORDINATE: E:283938.0, N:6136442.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 08
PROJECT No: 234398.02
DATE: 27/11/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN ^(#)	CONSIS. ⁽¹⁾ DENSITY ⁽¹⁾	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH						
27/1/25 No free groundwater observed	0.30	TOPSOIL / SILT (ML) trace sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w<PL					ES		0.10		
		Silty CLAY (CI) trace sand trace gravel: brown mottled grey; medium plasticity; fine sand; medium, sub-angular to angular gravel.									D/ES		0.50 0.60	PP	230kPa
	1	0.70m: becoming grey		RS	VSt	w<PL					D		1.00	PP	260kPa
											SPT		1.45	SPT	4,6,10 N=16
	2	1.40	Silty CLAY (CL-CI) with sand trace gravel: grey mottled orange brown; low to medium plasticity; fine sand; medium, sub-angular to angular gravel; with bands of extremely weathered siltstone.		RS	VSt	w<PL					SPT		2.00 2.45	SPT
3	3.10	Silty Sandy CLAY (CI): dark grey brown; medium plasticity; fine to medium sand; with bands of low strength siltstone.		XWM	H	w<PL					SPT		3.00 3.10	SPT	10/100mm (HB)
	3.50	SILTSTONE: grey brown. Berry Siltstone.						350	L						
4		Borehole discontinued at 3.90m depth. Auger refusal on low to medium strength siltstone.						HW							
5															

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ⁽¹⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 3.9m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540
 Monitoring well installed

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:283922.7, N:6136515.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 11
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE		TESTING		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK					SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN(%)	CONSIS. (%)	DENSITY. (%)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)						
0/12/25 No free groundwater observed	11	0.20	TOPSOIL / SILT (ML) with sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w>PL								ES	0.10		
		RS	VSt		w>PL									D/ES	0.50	PP	390kPa	
	0.70	CLAY (CI) with sand trace gravel: grey brown mottled orange; medium plasticity; fine to medium sand; fine, angular to sub-angular gravel; with bands of low strength siltstone.	XWM	H	w>PL								D	1.00				
	1												SPT	1.38	SPT	5,15,15/80mm (HB)		
	1.40	SILTSTONE: dark grey brown, laminated. Berry Siltstone.																
	2																	
	9																	
	3.00																	
	3.20	SILTSTONE: grey; laminated with occasional interbeds of fine grained sandstone.																
	8																	
	4																	
	7																	

NOTES: [#]Soil origin is "probable" unless otherwise stated. ¹Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: "H" Soil origin is "probable" unless otherwise stated. "C" Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D

OPERATOR: Drill Wise

LOGGED: JH

METHOD: AD/T to 1.5m, NMLC to 6.6m

CASING: HWT to 1.5m

REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540
 Monitoring well installed

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:283922.7, N:6136515.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 11
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED														SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN(¹)	CONSIS.(¹) DENSITY.(¹)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS						
	6		[CONT] SILSTONEE: grey; laminated with occasional interbeds of fine grained sandstone.																	
		6						SW		5.49	H	100	-		4.88m: B, 0°, PR, SN Fe, RF 4.94m: B, 10°, PR, SN Fe, RF 5.00-5.49m: B x7, 0-10°, PR, SN Fe, RF					
		5								5.96	M	100	-		5.57-5.60m: B x3, 0°, PR, SN Fe, RF 5.73-5.80m: B x5, 0-10°, PR, SN Fe, RF 5.84m: JT, 10°, UN, SN Fe, RF 5.87m: B, 0°, PR, SN Fe, RF 5.94-5.98m: B x2, 10°, PR, SN Fe, RF 6.09-6.17m: B x2, 0°, PR, SN Fe, RF 6.26m: B, 0°, PR, SN Fe, RF 6.42-6.44m: JT x2, 20°, CU, SN Fe, RF 6.50-6.55m: B, 0°, PR, SN Fe, RF		6	PLT	PL(A)=0.40MPa	
		7	Borehole discontinued at 6.60m depth. Limit of investigation.																PLT	PL(A)=0.50MPa
		8																		
		9																		

NOTES: ¹Soil origin is "probable" unless otherwise stated. ¹Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 1.5m, NMLC to 6.6m
REMARKS:

OPERATOR: Drill Wise

LOGGED: JH
CASING: HWT to 1.5m

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigeer
LOCATION: 9 Worrigeer Road, Worrigeer, NSW 2540
Monitoring well installed

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:283922.7, N:6136515.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 11
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 1 of 1



1.50-6.00 m depth



6.00-6.60 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283920.7, N:6136495.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 12
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE		TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN(1)	CONSIST(1) DENSITY(1)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS						
01/12/25 No free groundwater observed	0.20	TOPSOIL / Sandy SILT (ML) trace gravel: brown; low plasticity; fine to medium sand; fine to medium, sub-angular to angular gravel; trace rootlets.		TOP	NA	w<PL									ES		0.10		
		Silty CLAY (CI): brown mottled grey; medium plasticity.													D/ES		0.50	PP	330kPa
																	0.60		
	1			RS	VSt to H	w<PL									D		1.00	PP	450kPa
															SPT			SPT	3,6,10 N=16
																	1.45		
	1.60																		
	2	Silty CLAY (CI) with sand: orange brown and grey; medium plasticity; fine to medium sand; with bands of low strength siltstone.		XWM	H	w<PL									D		2.00	SPT	4/50mm (HB)
															SPT		2.05		
	2.35	Gravelly CLAY (GC): brown grey.		XWM										2.35-2.50m: DS					
2.50	SILTSTONE: grey-brown.												2.56-2.97m: B x11, 0°, PR, SN Fe, RF						
													3.09-3.19m: B x3, 10°, PR, SN Fe, RF					PLT	PL(A)=2.3MPa
													3.31m: JT, 50°, PR, SN Fe, RF					PLT	PL(A)=2.8MPa
													3.32m: B, 10°, PR, SN Fe, RF					PLT	PL(A)=1.5MPa
													3.38-3.55m: B x3, 0°, PR, SN Fe, RF					PLT	PL(A)=0.00MPa
													3.58m: JT, 70°, PR, SN Fe, RF						
													3.62-3.65m: JT x3, 0°, PR, SN Fe, RF						
													3.70-3.71m: JT, 90°, PR, SN Fe, RF						
													3.71-3.84m: B x3, 0°, PR, SN Fe, RF						
													3.87m: CS x3, 0°, PR, SN Fe, RF						
													3.92-3.98m: B x3, 0°, PR, SN Fe, RF					PLT	PL(A)=1.4MPa
													4.00m: B, 10°, PR, SN Fe, RF						
													4.12-4.59m: B x10, PR, SN Fe, RF						
													4.60-4.61m: DS, 0°, PR, INF Clay 10mm, RF						
													4.66-4.67m: DS, 0°, PR, INF Clay 10mm, RF						
													4.79-4.98m: B x3, 10°, PR, SN Fe, RF						
NOTES: (1) Soil origin is "probable" unless otherwise stated. (2) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																			

NOTES: "Soil origin is "probable" unless otherwise stated. "Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.35m, NMLC to 7.13m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK/JH
CASING: HWT to 2.35m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283920.7, N:6136495.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 12
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 2 of 2

[illegible]

PLANT: Hanjin 8D	OPERATOR: Drill Wise	LOGGED: ZAK/JH
METHOD: AD/T to 2.35m, NMLC to 7.13m		CASING: HWT to 2.35m
REMARKS:		

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283920.7, N:6136495.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 12
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 1 of 1



2.55-7.00 m depth



7.00-7.13 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283903.9, N:6136482.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 13
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 1 of 2

CONDITIONS ENCOUNTERED														SAMPLE				TESTING		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN ^(#)	CONSIS. ^(*) DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY	RQD	FRACTURE SPACING (mm)	DEFECTS & REMARKS						
01/12/25 No free groundwater observed	11	0.20	TOPSOIL / SILT (ML) with clay with sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w<PL									ES	0.10			
		0.60	Silty CLAY (CI) trace sand: brown mottled grey; medium plasticity; fine to medium sand.		RS	St to VSt	w<PL									D/ES	0.50 0.60	PP	200kPa	
		1	Silty Sandy CLAY (CI) trace gravel: grey mottled orange brown; medium plasticity; fine to medium sand; fine, sub-angular to angular gravel; with bands of low strength siltstone.		XWM	VSt	w<PL									D	1.00			
		1.50														SPT	1.45	SPT	7,212 N=14	
		2	SILTSTONE: dark grey brown. Berry Siltstone.													D	2.00			
		2.50	SILTSTONE: grey brown.																	
		3																		
		4.00	SILTSTONE: dark grey brown.																	
NOTES: [#] Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																				

PLANT: Hanjin 8D
METHOD: AD/T to 2.45m, NMLC to 7m
REMARKS:

OPERATOR: Drill Wise
LOGGED: ZAK/JH
CASING: HWT to 2.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283903.9, N:6136482.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 13
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 2 of 2

CONDITIONS ENCOUNTERED														SAMPLE			TESTING		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
				ORIGIN ^(#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	WEATH.	DEPTH (m)	ESTIMATED STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (mm)						
	5	[CONT] SILTSTONE: dark grey brown.					SW	5.10	H	96	78	20	5.04-5.05m: B x2, 0°, PR, SN Fe, RF						
	6							5.95	VH	100	93	40	5.20-5.49m: B x5, 0°, PR, SN Fe, RF						
	7	Borehole discontinued at 7.00m depth. Limit of investigation.											5.06-5.11m: JT x2, 30°, PR, SN Fe, RF						
	8																	5.57m: B, 10°, PR, SN Fe, RF	
													5.62m: JT, 30°, PR, SN Fe, RF						
													5.66m: B, 0°, PR, SN Fe, RF						
													5.76-5.80m: B x2, 10°, PR, SN Fe, RF						
													5.90m: B, 20°, PR, SN Fe, RF						
													5.93-6.12m: B, 10°, PR, SN Fe, RF						
													6.27m: B, 10°, PR, SN Fe, RF						
													6.37-6.47m: B, 0°, PR, SN Fe, RF						
													6.53m: B, 10°, PR, SN Fe, RF						
													6.60-6.62m: B x2, 10°, PR, SN Fe, RF						
													6.71m: B, 0°, PR, SN Fe, RF						
													6.78-6.89m: B x2, 10°, PR, SN Fe, RF						
													6.95m: JT, 30°, PR, SN Fe, RF						
NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																			

PLANT: Hanjin 8D	OPERATOR: Drill Wise	LOGGED: ZAK/JH
METHOD: AD/T to 2.45m, NMLC to 7m		CASING: HWT to 2.5m
REMARKS:		



CORE PHOTO LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:283903.9, N:6136482.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 13
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 1 of 1



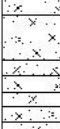
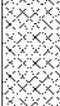
2.45-7.00 m depth

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:283937.6, N:6136536.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 14
PROJECT No: 234398.02
DATE: 28/11/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN ^(#)	CONSIS. ^(*)	DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)						
0/12/25 No free groundwater observed	11	0.20	TOPSOIL / SILT (ML) with sand: brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w<PL					ES	0.10			
		0.60	CLAY (CI) trace sand: brown mottled grey; medium plasticity; fine to medium sand.		RS	H	w<PL					D/ES	0.50	PP	590kPa	
		1	Silty Sandy CLAY (CI) trace gravel: grey brown; medium plasticity; fine to medium sand; fine, angular to sub-angular gravel; with bands of low strength low strength siltstone.		XWM	VSt	w<PL					D	1.00			
		1.40	SILTSTONE: grey brown. Berry Siltstone.							1.40		SPT	1.45	SPT	13,8,9 N=17	
	9	2							HW			D	2.00			
		3	Borehole discontinued at 2.40m depth. Auger refusal on low to medium strength siltstone.													
		8														
		4														
	7															

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(%)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hanjin 8D
METHOD: AD/T to 2.4m
REMARKS:

OPERATOR: Drill Wise

LOGGED: ZAK
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.2 AHD
COORDINATE: E:283963.4, N:6136471.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 15
PROJECT No: 234398.02
DATE: 01/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY ⁽²⁾	MOISTURE	WEATH.	DEPTH (m)						
01/12/25 No free groundwater observed	10.20	0.20	TOPSOIL / Sandy SILT (ML): brown; low plasticity; fine to medium sand; trace rootlets.		TOP	NA	w<PL					ES		0.10		
			Silty CLAY (CI) trace sand: red brown mottled grey; medium plasticity; fine to medium sand.		RS	H	w<PL					D/ES		0.50	PP	400kPa
		0.60	Silty CLAY (CI) trace sand trace gravel: grey brown mottled orange; medium plasticity; fine sand; fine to medium, sub-angular to angular gravel.											0.60		
		1			RS	St	w>PL					D		1.00	PP	160kPa
	1.70		Silty Sandy CLAY (CI) trace gravel: grey brown mottled orange; medium plasticity; fine to medium sand; fine to medium, sub-angular to angular gravel; with bands of low strength siltstone.		XWM	H	w<PL									
	2															
	2.10		SILTSTONE: grey brown. Berry Siltstone.									SPT		2.00	SPT	9,14,15/50mm (HB)

TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:283978.2, N:6136546.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 16
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

[illegible]

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Kubota U35-4
METHOD: 300mm TB to 0.8m
REMARKS:

OPERATOR: Coast Excavation

LOGGED: ZAK

Refer to explanatory notes for symbol and abbreviation definitions

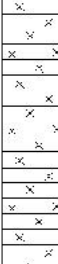
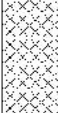


TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.8 AHD
COORDINATE: E:283971.4, N:6136509.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 17
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK			SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
					ORIGIN(%)	CONSIS. (1)	DENSITY (1)	MOISTURE	WEATH.	DEPTH (m)						
05/12/25 No free groundwater observed	10	0.15	TOPSOIL / Clayey SILT (ML) with gravel: brown; low plasticity; fine to medium gravel; trace rootlets.		TOP	NA	w<PL					ES		0.10	PP	>600kPa
			Silty CLAY (CI): orange brown mottled grey; medium plasticity; with fine to medium sand and sub-angular to angular gravel.		RS	H	w<PL									
		0.60	SILTSTONE: grey brown. Berry Siltstone.						HW	0.60		D/ES		0.50 0.60 0.70 0.80		
			Test Pit discontinued at 0.80m depth. Limit of investigation.													
		1														
		9														
		2														

NOTES: (1) Soil origin is "probable" unless otherwise stated. (2) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:283926.1, N:6136460.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 19
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽¹⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
05/12/25 No free groundwater observed	0.20	FILL / Sandy GRAVEL (GW) with silt: grey brown; fine to medium, sub-angular to angular; fine to coarse sand; well graded.		FILL	NA		D		ES		0.10	PP	220kPa
	0.70	Silty CLAY (CI-CH): grey brown mottled orange; medium to high plasticity; trace sand and fine, sub-angular to angular gravel.		RS	VSt		w<PL to w=PL		D/ES		0.50 0.60		
1		Silty CLAY (CI) trace gravel: grey mottled orange; medium plasticity; fine, sub-angular to angular gravel.		RS	VSt		w=PL	D		0.90 1.00			
Test Pit discontinued at 1.00m depth. Limit of investigation.													

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Kubota U35-4
METHOD: 300mm TB to 1m
REMARKS: BD4=0-0.1m

OPERATOR: Coast Excavation

LOGGED: ZAK

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL: 9.9 AHD
COORDINATE: E:283915.2, N:6136429.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 20
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
05/12/25 No free groundwater observed		0.30	TOPSOIL / Clayey SILT (ML): brown; low plasticity; trace fine to coarse sand and fine, sub-angular to angular gravel; trace rootlets.		TOP	NA		w<PL		ES		0.10	PP	>600kPa			
			Silty CLAY (CI): grey mottled orange; medium plasticity; trace fine to medium sand and sub-angular to angular gravel.		RS	H	w<PL	D/ES			0.50						
								B			0.60						
											0.70						
			0.90	Silty CLAY (CI): grey mottled orange; medium plasticity; trace fine, sub-angular to angular gravel, with fine sand.		XWM	H	w<PL		D		0.90					
1								1.00	PP	510kPa							
Test Pit discontinued at 1.00m depth. Limit of investigation.																	

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Kubota U35-4
METHOD: 300mm TB to 1m
REMARKS:

OPERATOR: Coast Excavation

LOGGED: ZAK

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL:
COORDINATE: E:283979.0, N:6136495.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: SS1
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

[illegible]

PLANT: Kubota U35-4	OPERATOR: Coast Excavation	LOGGED: ZAK
METHOD: Hand tool		
REMARKS:		

TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL:
COORDINATE: E:283969.0, N:6136481.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: SS2
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE			TESTING AND REMARKS		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)		DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
05/12/25 No free ground water observed			FILL / TOPSOIL / Clayey SILT (ML): dark brown; low plasticity; trace rootlets, timber, concrete and brick fragments, with fine to medium sand.		FILL FILL	NA		w<PL			ES		0.10						
			Test Pit discontinued at 0.10m depth. Limit of investigation.																
		1																	
		2																	

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Kubota U35-4
METHOD: Hand tool
REMARKS:

OPERATOR: Coast Excavation

LOGGED: ZAK

TEST PIT LOG

CLIENT: The Department of Education
PROJECT: New Primary School in Worrigee
LOCATION: 9 Worrigee Road, Worrigee, NSW 2540

SURFACE LEVEL:
COORDINATE: E:283946.0, N:6136452.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: SS3
PROJECT No: 234398.02
DATE: 05/12/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)		DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
05/12/25 No free groundwater observed			TOPSOIL / Clayey SILT (ML): brown; low plasticity; trace fine to medium gravel, with fine sand; trace rootlets.		TOP	NA		w<PL			ES		0.10					
			Test Pit discontinued at 0.10m depth. Limit of investigation.															
NOTES: ^(*) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																		

PLANT: hand tools
METHOD: Hand tool
REMARKS:

OPERATOR: ZAK
LOGGED: ZAK



Refer to explanatory notes for symbol and abbreviation definitions

Appendix H

Laboratory certificates of analysis, chain-of-custody documentation and sample receipt advice

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Unanderra
Attention	Kenton Horsley

Sample Login Details

Your reference	234398.02, Worrigea
Envirolab Reference	397585
Date Sample Received	09/12/2025
Date Instructions Received	09/12/2025
Date Results Expected to be Reported	16/12/2025

Sample Condition

Samples received in appropriate condition for analysis	Incorrect Container
No. of Samples Provided	18 Soil, 2 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

No PFAS jars received - sample from glass jars will be used.

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	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	Misc Soil - Inorg	Acid Extractable metals in soil	Misc Inorg - Soil	CEC	Asbestos ID - Soils (NEPM)	Asbestos ID - Soils	PFAS in Soils Short	VTRH(C6-C10)/BTEXN in Water
1-0-0.1	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓		
3-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
4-0.5-0.6	✓	✓	✓	✓	✓	✓		✓				✓		
5-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
6-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
7-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓			
9-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
16-0-0.1													✓	
17-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
18-0-0.1	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓		
19-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
20-0.5-0.6	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓		
21-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
SS1-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
SS2-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
SS3-0-0.1	✓	✓	✓	✓	✓	✓		✓				✓		
BD2	✓	✓						✓						
BD3	✓	✓						✓						
TS														✓
TB														✓

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.

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CERTIFICATE OF ANALYSIS 397585

Client Details

Client	Douglas Partners Unanderra
Attention	Kenton Horsley
Address	Unit 1, 1 Luso Drive, Unanderra, NSW, 2526

Sample Details

Your Reference	<u>234398.02, Worrige</u>
Number of Samples	18 Soil, 2 Water
Date samples received	09/12/2025
Date completed instructions received	09/12/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client unless as indicated below in the method summaries. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	16/12/2025
Date of Issue	16/12/2025

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Asbestos Approved By

Analysed by Asbestos Approved Analyst: Nyovan Moonean

Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

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Giovanni Agosti, Group Technical Manager

Jack Wallis, Senior Chemist

Lucy Zhu, Asbestos Supervisor

Nancy Zhang, Laboratory Manager, Sydney

Nick Sarlamis, Assistant Operation Manager

Sean McAlary, Senior Chemist

Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference	UNITS	1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	93	90	78	83	95

vTRH(C6-C10)/BTEXN in Soil

Our Reference		397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference	UNITS	7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	78	85	91	89	90

vTRH(C6-C10)/BTEXN in Soil

Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	81	97	71	94	95

vTRH(C6-C10)/BTEXN in Soil

Our Reference		397585-17	397585-18
Your Reference	UNITS	BD2	BD3
Depth		-	-
Date Sampled		05/12/2025	05/12/2025
Type of sample		Soil	Soil
Date extracted	-	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025
TRH C ₆ - C ₉	mg/kg	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	79

svTRH (C10-C40) in Soil						
Our Reference	UNITS	397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference		1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	110	<100	<100	100
Total +ve TRH (C10-C36)	mg/kg	<50	110	<50	<50	100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	130	<100	<100	120
TRH >C ₃₄ -C ₄₀	mg/kg	<100	100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	240	<50	<50	120
Surrogate o-Terphenyl	%	73	76	75	74	75

svTRH (C10-C40) in Soil						
Our Reference	UNITS	397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference		7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	10/12/2025	10/12/2025	10/12/2025	11/12/2025	11/12/2025
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	110	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	110	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	110	110	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	110	110	<50
Surrogate o-Terphenyl	%	74	75	77	75	75

svTRH (C10-C40) in Soil

Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	110	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	190	200	160	120
Total +ve TRH (C10-C36)	mg/kg	<50	190	310	160	120
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	200	230	190	140
TRH >C ₃₄ -C ₄₀	mg/kg	<100	120	170	150	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	320	400	340	140
Surrogate o-Terphenyl	%	73	83	78	78	76

svTRH (C10-C40) in Soil

Our Reference		397585-17	397585-18
Your Reference	UNITS	BD2	BD3
Depth		-	-
Date Sampled		05/12/2025	05/12/2025
Type of sample		Soil	Soil
Date extracted	-	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	110
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	110
Surrogate o-Terphenyl	%	76	74

PAHs in Soil						
Our Reference		397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference	UNITS	1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	13/12/2025	13/12/2025	13/12/2025	16/12/2025	16/12/2025
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	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	91	90	94	97	98

PAHs in Soil						
Our Reference		397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference	UNITS	7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	89	94	99	100

PAHs in Soil						
Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	96	98	94	93

Organochlorine Pesticides in soil						
Our Reference		397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference	UNITS	1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	13/12/2025	13/12/2025	13/12/2025	16/12/2025	16/12/2025
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	%	89	99	101	102	100

Organochlorine Pesticides in soil

Our Reference		397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference	UNITS	7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	%	100	92	98	101	100

Organochlorine Pesticides in soil						
Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	%	99	101	96	100	97

Organophosphorus Pesticides in Soil						
Our Reference		397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference	UNITS	1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	13/12/2025	13/12/2025	13/12/2025	16/12/2025	16/12/2025
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	%	89	99	101	102	100

Organophosphorus Pesticides in Soil

Our Reference		397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference	UNITS	7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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
Chlorpyrifos	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	%	100	92	98	101	100

Organophosphorus Pesticides in Soil						
Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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
Chlorpyrifos	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	%	99	101	96	100	97

PCBs in Soil						
Our Reference	UNITS	397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference		1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	13/12/2025	13/12/2025	13/12/2025	16/12/2025	16/12/2025
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	%	91	95	91	96	97

PCBs in Soil						
Our Reference	UNITS	397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference		7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	%	93	88	97	97	96

PCBs in Soil						
Our Reference	UNITS	397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference		20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
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	%	92	94	93	97	94

Misc Soil - Inorg						
Our Reference		397585-2	397585-6	397585-7	397585-11	397585-15
Your Reference	UNITS	3	7	9	19	SS2
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		26/11/2025	05/12/2025	27/11/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Acid Extractable metals in soil

Our Reference		397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference	UNITS	1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Arsenic	mg/kg	12	4	7	5	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	9	17	11	8
Copper	mg/kg	7	19	10	10	9
Lead	mg/kg	17	14	13	14	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	7	2	3	3
Zinc	mg/kg	10	32	12	11	10

Acid Extractable metals in soil

Our Reference		397585-6	397585-7	397585-9	397585-10	397585-11
Your Reference	UNITS	7	9	17	18	19
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Arsenic	mg/kg	4	11	8	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	14	12	7	44
Copper	mg/kg	6	20	15	7	42
Lead	mg/kg	13	10	21	12	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	15	4	3	22
Zinc	mg/kg	10	36	29	25	37

Acid Extractable metals in soil

Our Reference		397585-12	397585-13	397585-14	397585-15	397585-16
Your Reference	UNITS	20	21	SS1	SS2	SS3
Depth		0.5-0.6	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Arsenic	mg/kg	12	7	9	640	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	24	10	15	310	12
Copper	mg/kg	6	18	40	480	27
Lead	mg/kg	13	14	20	22	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	5	10	5	9
Zinc	mg/kg	5	37	130	130	88

Acid Extractable metals in soil

Our Reference		397585-17	397585-18	397585-21
Your Reference	UNITS	BD2	BD3	9 - [TRIPLICATE]
Depth		-	-	0-0.1
Date Sampled		05/12/2025	05/12/2025	27/11/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025
Arsenic	mg/kg	6	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	7	8	9
Copper	mg/kg	9	6	11
Lead	mg/kg	7	12	8
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	5	2	11
Zinc	mg/kg	23	7	30

Moisture						
Our Reference	UNITS	397585-1	397585-2	397585-3	397585-4	397585-5
Your Reference		1	3	4	5	6
Depth		0-0.1	0-0.1	0.5-0.6	0-0.1	0-0.1
Date Sampled		27/11/2025	26/11/2025	27/11/2025	28/11/2025	28/11/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Moisture	%	8.8	15	17	7.2	9.1

Moisture						
Our Reference	UNITS	397585-6	397585-7	397585-8	397585-9	397585-10
Your Reference		7	9	16	17	18
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Moisture	%	15	20	5.4	10	10

Moisture						
Our Reference	UNITS	397585-11	397585-12	397585-13	397585-14	397585-15
Your Reference		19	20	21	SS1	SS2
Depth		0-0.1	0.5-0.6	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Moisture	%	1.8	14	9.0	20	21

Moisture				
Our Reference	UNITS	397585-16	397585-17	397585-18
Your Reference		SS3	BD2	BD3
Depth		0-0.1	-	-
Date Sampled		05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	10/12/2025	10/12/2025	10/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025
Moisture	%	8.2	20	12

Misc Inorg - Soil				
Our Reference		397585-1	397585-10	397585-12
Your Reference	UNITS	1	18	20
Depth		0-0.1	0-0.1	0.5-0.6
Date Sampled		27/11/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	11/12/2025	11/12/2025	11/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025
pH 1:5 soil:water	pH Units	5.3	5.4	5.2

CEC				
Our Reference		397585-1	397585-10	397585-12
Your Reference	UNITS	1	18	20
Depth		0-0.1	0-0.1	0.5-0.6
Date Sampled		27/11/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	12/12/2025	12/12/2025	12/12/2025
Date analysed	-	12/12/2025	12/12/2025	12/12/2025
Exchangeable Ca	meq/100g	0.2	6.0	<0.1
Exchangeable K	meq/100g	0.2	0.2	0.1
Exchangeable Mg	meq/100g	2.7	3.5	5.0
Exchangeable Na	meq/100g	0.7	<0.1	2.1
Cation Exchange Capacity	meq/100g	3.8	9.7	7.3

Asbestos ID - Soils (NEPM)						
Our Reference	UNITS	397585-2	397585-6	397585-7	397585-11	397585-15
Your Reference		3	7	9	19	SS2
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		26/11/2025	05/12/2025	27/11/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Sample Mass Tested	g	412.11	469.83	416.01	747.89	361.06
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in Soil	-	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w
		Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*
		No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*
Total Asbestos	%w/w	<0.01	<0.01	<0.01	<0.01	<0.01
Residual Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
ACM >7mm Estimation (Mass)*	g	—	—	—	—	—
ACM >7mm Estimation*	%w/w	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation (Mass)*	g	—	—	—	—	—
FA and AF Estimation*	%w/w	<0.001	<0.001	<0.001	<0.001	<0.001
Additional Comments - Refer to Last Page	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - Soils						
Our Reference	UNITS	397585-1	397585-3	397585-4	397585-5	397585-9
Your Reference		1	4	5	6	17
Depth		0-0.1	0.5-0.6	0-0.1	0-0.1	0-0.1
Date Sampled		27/11/2025	27/11/2025	28/11/2025	28/11/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Sample Mass Tested	g	Approx. 60g	Approx. 70g	Approx. 60g	Approx. 55g	Approx. 65g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in Soil	-	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w
		Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*
		No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*
Residual Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Additional Comments - Refer to Last Page	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - Soils						
Our Reference	UNITS	397585-10	397585-12	397585-13	397585-14	397585-16
Your Reference		18	20	21	SS1	SS3
Depth		0-0.1	0.5-0.6	0-0.1	0-0.1	0-0.1
Date Sampled		05/12/2025	05/12/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Sample Mass Tested	g	Approx. 70g	Approx. 75g	Approx. 55g	Approx. 45g	Approx. 40g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in Soil	-	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w	No asbestos detected at reporting limit 0.01%w/w
		Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*	Organic fibres detected*
		No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*	No visible asbestos detected <0.01%w/w*
Residual Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Additional Comments - Refer to Last Page	-	Nil	Nil	Nil	Nil	Nil

PFAS in Soils Short						
Our Reference		397585-2	397585-7	397585-8	397585-11	397585-15
Your Reference	UNITS	3	9	16	19	SS2
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		26/11/2025	27/11/2025	05/12/2025	05/12/2025	05/12/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Date analysed	-	11/12/2025	11/12/2025	11/12/2025	11/12/2025	11/12/2025
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	5.3	1.2	0.1	0.9	1.7
Perfluorooctanoic acid PFOA	µg/kg	0.3	<0.1	<0.1	<0.1	0.4
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate ¹³ C ₈ PFOS	%	98	95	98	101	100
Surrogate ¹³ C ₂ PFOA	%	106	105	105	104	106
Extracted ISTD ¹³ C ₃ PFBS	%	101	99	108	105	95
Extracted ISTD ¹⁸ O ₂ PFHxS	%	108	107	116	115	108
Extracted ISTD ¹³ C ₄ PFOS	%	102	102	106	105	101
Extracted ISTD ¹³ C ₄ PFOA	%	113	109	121	121	113
Extracted ISTD ¹³ C ₂ 6:2FTS	%	141	113	148	133	135
Extracted ISTD ¹³ C ₂ 8:2FTS	%	143	109	129	119	131
Total Positive PFHxS & PFOS	µg/kg	5.3	1.2	0.1	0.9	1.7
Total Positive PFOS & PFOA	µg/kg	5.6	1.2	0.1	0.9	2.1
Total Positive PFAS	µg/kg	5.6	1.2	0.1	0.9	2.1

vTRH(C6-C10)/BTEXN in Water			
Our Reference		397585-19	397585-20
Your Reference	UNITS	TS	TB
Depth		-	-
Date Sampled		05/12/2025	05/12/2025
Type of sample		Water	Water
Date extracted	-	11/12/2025	11/12/2025
Date analysed	-	11/12/2025	11/12/2025
TRH C ₆ - C ₉	µg/L	[NA]	<10
TRH C ₆ - C ₁₀	µg/L	[NA]	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	[NA]	<10
Benzene	µg/L	120%	<1
Toluene	µg/L	118%	<1
Ethylbenzene	µg/L	120%	<1
m+p-xylene	µg/L	119%	<2
o-xylene	µg/L	114%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	99	98
Surrogate Toluene-d8	%	99	98
Surrogate 4-Bromofluorobenzene	%	98	99

Method ID	Methodology Summary
ASB-003	Asbestos ID –Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques as per Australian Standard 5370. When Inconclusive mineral fibres are detected by polarised light microscopy including dispersion staining, these fibres may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required. When asbestos presence is reported below the reporting limit of 0.01%w/w, the result is not covered by AS5370 and is supplied for information purposes only as required by some state jurisdictions.
ASB-003	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 0.01% w/w as per Australian Standard AS5370. Results reported denoted with * are outside our scope of NATA accreditation. NOTE^{#1} Total Asbestos %w/w was analysed and reported as per Australian Standard AS5370 (This is the sum of ACM >7mm, <7mm and FA/AF relative to the sample mass tested) NOTE^{#2} The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques. Visible asbestos is defined as asbestos detected below the reporting limit of 0.01% w/w as per AS5370. NOTE #3 When asbestos presence is reported below the reporting limit of 0.01%w/w, the result is not covered by AS5370 and is supplied for information purposes only as required by some state jurisdictions.
Inorg-001	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.

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals/elements by ICP-AES. Total Phosphate determined stoichiometrically from Phosphorus (assumed to be present as Phosphate). 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. Submission of low masses of sample e.g. for dust samples, may result in raised PQLs. Where molecular anion forms are calculated from an element (e.g. SO ₄ from S or PO ₄ from P stoichiometrically), the assumption is that the element is only present in that molecular anion form.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	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.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	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.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	7	<25	<25	0	117	107
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	7	<25	<25	0	117	107
Benzene	mg/kg	0.2	Org-023	<0.2	7	<0.2	<0.2	0	115	105
Toluene	mg/kg	0.5	Org-023	<0.5	7	<0.5	<0.5	0	112	103
Ethylbenzene	mg/kg	1	Org-023	<1	7	<1	<1	0	122	111
m+p-xylene	mg/kg	2	Org-023	<2	7	<2	<2	0	117	108
o-Xylene	mg/kg	1	Org-023	<1	7	<1	<1	0	117	107
Naphthalene	mg/kg	1	Org-023	<1	7	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	94	7	85	79	7	104	93

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]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	11/12/2025	11/12/2025		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	16	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	16	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	16	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	16	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	16	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	16	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	16	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	16	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	16	95	79	18	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	11/12/2025
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	7	<50	<50	0	88	91
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	7	<100	<100	0	80	93
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	7	<100	<100	0	86	120
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	7	<50	<50	0	88	91
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	7	<100	<100	0	80	93
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	7	<100	<100	0	86	120
Surrogate o-Terphenyl	%		Org-020	76	7	75	73	3	72	75

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	11/12/2025	11/12/2025		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	16	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	16	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	16	120	110	9	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	16	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	16	140	130	7	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	16	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	16	76	90	17	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			13/12/2025	7	16/12/2025	16/12/2025		13/12/2025	16/12/2025
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	96	96
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	102	106
Fluorene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	98	100
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	98	107
Anthracene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	96	102
Pyrene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	94	102
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	94	92
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	7	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	7	<0.05	<0.05	0	94	96
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	7	89	98	10	99	98

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	16/12/2025	16/12/2025		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	16	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	16	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	16	93	94	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			13/12/2025	7	16/12/2025	16/12/2025		13/12/2025	16/12/2025
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	98	96
HCB	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	92	102
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	92	72
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	102	94
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	104	102
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	98	96
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	104	96
Endrin	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	76	78
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	80	102
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	86	92
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	103	7	92	102	10	102	102

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	16/12/2025	16/12/2025		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	16	97	99	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			13/12/2025	7	16/12/2025	16/12/2025		13/12/2025	16/12/2025
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	97	118
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	87	96
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	82	102
Malathion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	90	116
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	95	112
Fenthion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	75	96
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	90	114
Phosalone	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	103	7	92	102	10	102	102

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	16/12/2025	16/12/2025		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	16	97	99	2	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date extracted	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			13/12/2025	7	16/12/2025	16/12/2025		13/12/2025	16/12/2025
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	125	100
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	101	7	88	98	11	92	99

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	16/12/2025	16/12/2025		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	16	94	96	2	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	397585-11
Date prepared	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
Date analysed	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	7	<5	<5	0	105	98

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	397585-11
Date prepared	-			10/12/2025	7	10/12/2025	10/12/2025		10/12/2025	10/12/2025
Date analysed	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
Arsenic	mg/kg	4	Metals-020	<4	7	11	8	32	100	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	7	<0.4	<0.4	0	97	73
Chromium	mg/kg	1	Metals-020	<1	7	14	10	33	95	#
Copper	mg/kg	1	Metals-020	<1	7	20	12	50	103	#
Lead	mg/kg	1	Metals-020	<1	7	10	11	10	97	81
Mercury	mg/kg	0.1	Metals-021	<0.1	7	<0.1	<0.1	0	119	110
Nickel	mg/kg	1	Metals-020	<1	7	15	8	61	96	70
Zinc	mg/kg	1	Metals-020	<1	7	36	31	15	92	71

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	16	10/12/2025	10/12/2025		[NT]	[NT]
Date analysed	-			[NT]	16	11/12/2025	11/12/2025		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	16	7	8	13	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	16	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	16	12	15	22	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	16	27	24	12	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	16	15	15	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	16	9	8	12	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	16	88	80	10	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/12/2025	[NT]	[NT]	[NT]	[NT]	11/12/2025	[NT]
Date analysed	-			11/12/2025	[NT]	[NT]	[NT]	[NT]	11/12/2025	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			12/12/2025	[NT]	[NT]	[NT]	[NT]	12/12/2025	[NT]
Date analysed	-			12/12/2025	[NT]	[NT]	[NT]	[NT]	12/12/2025	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: PFAS in Soils Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	397585-11
Date prepared	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
Date analysed	-			11/12/2025	7	11/12/2025	11/12/2025		11/12/2025	11/12/2025
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	7	<0.1	<0.1	0	100	103
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	7	<0.1	<0.1	0	95	89
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	7	1.2	2.1	55	104	87
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	7	<0.1	0.2	67	92	95
6:2 FTS	µg/kg	0.1	Org-029	<0.1	7	<0.1	<0.1	0	92	97
8:2 FTS	µg/kg	0.2	Org-029	<0.2	7	<0.2	<0.2	0	91	84
Surrogate ¹³ C ₈ PFOS	%		Org-029	96	7	95	98	3	100	95
Surrogate ¹³ C ₂ PFOA	%		Org-029	104	7	105	105	0	106	106
Extracted ISTD ¹³ C ₃ PFBS	%		Org-029	110	7	99	93	6	103	104
Extracted ISTD ¹⁸ O ₂ PFHxS	%		Org-029	111	7	107	102	5	114	113
Extracted ISTD ¹³ C ₄ PFOS	%		Org-029	112	7	102	100	2	105	110
Extracted ISTD ¹³ C ₄ PFOA	%		Org-029	112	7	109	107	2	107	116
Extracted ISTD ¹³ C ₂ 6:2FTS	%		Org-029	117	7	113	118	4	120	148
Extracted ISTD ¹³ C ₂ 8:2FTS	%		Org-029	121	7	109	97	12	125	96

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			11/12/2025	[NT]	[NT]	[NT]	[NT]	11/12/2025	[NT]
Date analysed	-			11/12/2025	[NT]	[NT]	[NT]	[NT]	11/12/2025	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	83	[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	103	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

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

Quality Control Definitions

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

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.

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.

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 can be downloaded from the [Envirolab Resources website](#) or obtained directly by contacting the laboratory.

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.

For Dust Deposit Gauge (DDG) analysis the sampling, sampling period and funnel exposure area do not fall under Envirolab's NATA accreditation (unless the Newcastle laboratory where responsible for the sampling), hence the annotation on the DDG units of reporting.

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

Report Comments

Acid Extractable Metals in Soil:

- The laboratory RPD acceptance criteria has been exceeded for 397585-7 for Cu and Ni. Therefore a triplicate result has been issued as laboratory sample number 397585-21.

- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-003 asbestos subsampling procedure. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab/MPL recommends supplying 40-60g or 500ml of sample in its own container.

Note: Samples 397585-1, 3, 4, 5, 9, 10, 12, 13, 14, 16 were sub-sampled from bags provided by the client.

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.

Project No: 234398.02	Suburb: Worrigea	To: Envirolab Services
Project Manager: Kenton Horsley	Order Number:	Sampler: ZAK
Email: kenton.horsley@douglaspartners.com.au zachariah.kraich@douglaspartners.com.au		Attn: Sample Receipt
Turnaround time: ☒ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day		(02) 9910 6200 samplereceipt@envirolab.com

Prior Storage: ☒ Fridge ☐ Freezer ☐ Esky ☒ Shelf **Do samples contain 'potential' HBM?** ☒ No ☐ Yes (If YES, then handle, transport and store in accordance with FPM HAZID)

Lab ID	Sample ID			Date Sampled	Sample Type	Container Type	Analytes										Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Combo 8aN	Combo 6a	PFAS (Short suite)	pH / CEC	Combo 1m	TS / TB					
1	1	0	0.1	27/11/25	S	G / P		x		x							
2	3	0	0.1	26/11/25	S	G / P	x		x								
3	4	0.5	0.6	27/11/25	S	G / P		x									
4	5	0	0.1	28/11/25	S	G / P		x									
5	6	0	0.1	28/11/25	S	G / P		x									
6	7	0	0.1	5/12/25	S	G / P	x										
7	9	0	0.1	27/11/25	S	G / P	x		x								
8	16	0	0.1	5/12/25	S	G / P			x								
9	17	0	0.1	5/12/25	S	G / P		x									
10	18	0	0.1	5/12/25	S	G / P		x		x							
11	19	0	0.1	5/12/25	S	G / P	x		x								
12	20	0.5	0.6	5/12/25	S	G / P		x		x							
13	21	0	0.1	5/12/25	S	G / P		x									
14	SS1	0	0.1	5/12/25	S	G / P		x									

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

Job No: 397585

Date Received: 9/12/25
Time Received: 1055
Received By: [Signature]
Temp: Cool/Ambient
Cooling: Ice/Cepack
Security: Intact/Broken/None

Metals to analyse: As, Cd, Cr, Cu, Pb, Hg, Ni, Zn	LAB RECEIPT
Number of samples in container:	Lab Ref. No: 397585
Send results to: Douglas Partners Pty Ltd	Received by: [Signature]
Address: 1/1 Luso Drive, Unanderra NSW 2526	Date & Time: 9/12/25 1055
Relinquished by:	Signed: [Signature]
Phone: (02) 4271 1836	
Date:	

[illegible]



QUALITY CONTROL REPORT

Work Order : **ES2539237**

Page : 1 of 5

Client : **DOUGLAS PARTNERS PTY LTD**
Contact : **MR KENTON HORSLEY**
Address : **PO BOX 486**
UNANDERRA NSW, AUSTRALIA 2526
Telephone : **+61 02 4271 1836**
Project : **2343983.02**
Order number : **----**
C-O-C number : **----**
Sampler : **ZAK**
Site : **Worrigee**
Quote number : **EN/222**
No. of samples received : **1**
No. of samples analysed : **1**

Laboratory : **Environmental Division Sydney**
Contact : **Customer Services ES**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**
Telephone : **+61 2 8784 8555**
Date Samples Received : **09-Dec-2025**
Date Analysis Commenced : **13-Dec-2025**
Issue Date : **18-Dec-2025**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 7080516)									
ES2538942-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	17	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	16.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	35	8.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	37	32	16.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	111	97	13.4	0% - 20%
ES2539419-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	18	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	8	25.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	8	24.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	10	41.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	14	22.9	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 7080522)									
ES2538942-002	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	10.9	8.0	30.5	0% - 50%
ES2539263-006	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	2.3	3.0	23.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 7080517)									
ES2538942-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2539419-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 7070001)									
ES2539042-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 7078550)									
ES2539423-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2539448-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 7070001)									
ES2539042-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 7078550)									
ES2539423-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2539448-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 7078550)									
ES2539423-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2539448-004	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 7080516)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	106	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	86.8	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	108	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	94.8	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	99.4	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	95.7	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	92.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 7080517)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	86.0	70.0	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 7070001)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	286 mg/kg	96.7	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1724 mg/kg	105	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1208 mg/kg	106	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 7078550)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	108	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 7070001)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	464 mg/kg	105	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	2448 mg/kg	111	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	538 mg/kg	90.5	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 7078550)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	93.4	72.4	133
EP080: BTEXN (QCLot: 7078550)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.4	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	99.9	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	106	77.4	121
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	114	78.2	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	109	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	98.1	78.8	122



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 7080516)							
ES2538942-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.1	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	103	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	88.5	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	87.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	91.3	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 7080517)							
ES2538942-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	85.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 7070001)							
ES2539042-001	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	84.8	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	77.9	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	82.4	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 7078550)							
ES2539423-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	129	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 7070001)							
ES2539042-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	76.1	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	81.1	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	73.4	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 7078550)							
ES2539423-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	114	61.1	142
EP080: BTEXN (QCLot: 7078550)							
ES2539423-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	99.5	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	106	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	103	67.4	123
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	111	66.4	121
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	108	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.4	61.1	115



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2539237	Page	: 1 of 4
Client	: DOUGLAS PARTNERS PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR KENTON HORSLEY	Telephone	: +61 2 8784 8555
Project	: 2343983.02	Date Samples Received	: 09-Dec-2025
Site	: Worrigee	Issue Date	: 18-Dec-2025
Sampler	: ZAK	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055) BD4	05-Dec-2025	----	----	----	15-Dec-2025	19-Dec-2025	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BD4	05-Dec-2025	16-Dec-2025	03-Jun-2026	✓	16-Dec-2025	03-Jun-2026	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) BD4	05-Dec-2025	16-Dec-2025	02-Jan-2026	✓	17-Dec-2025	02-Jan-2026	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) BD4	05-Dec-2025	13-Dec-2025	19-Dec-2025	✓	17-Dec-2025	22-Jan-2026	✓
Soil Glass Jar - Unpreserved (EP080) BD4	05-Dec-2025	15-Dec-2025	19-Dec-2025	✓	17-Dec-2025	19-Dec-2025	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071) BD4	05-Dec-2025	13-Dec-2025	19-Dec-2025	✓	17-Dec-2025	22-Jan-2026	✓
Soil Glass Jar - Unpreserved (EP080) BD4	05-Dec-2025	15-Dec-2025	19-Dec-2025	✓	17-Dec-2025	19-Dec-2025	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BD4	05-Dec-2025	15-Dec-2025	19-Dec-2025	✓	17-Dec-2025	19-Dec-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2539237**

Client	: DOUGLAS PARTNERS PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR KENTON HORSLEY	Contact	: Customer Services ES
Address	: PO BOX 486 UNANDERRA NSW, AUSTRALIA 2526	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: kenton.horsley@douglaspartners.co m.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: +61 02 4271 1836	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 4271 1897	Facsimile	: +61-2-8784 8500
Project	: 2343983.02	Page	: 1 of 3
Order number	: ----	Quote number	: EM2017DOUPAR0002 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Worrige		
Sampler	: ZAK		

Dates

Date Samples Received	: 09-Dec-2025 17:45	Issue Date	: 10-Dec-2025
Client Requested Due Date	: 17-Dec-2025	Scheduled Reporting Date	: 17-Dec-2025

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 14.8'C, 12.5'C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - S-05 TRH/BTEXN/8 Metals
ES2539237-001	[05-Dec-2025]	BD4	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ACCOUNTS PAYABLE INVOICES

- A4 - AU Tax Invoice (INV)	Email	accounts.payable.invoices@douglaspartners.com.au
-----------------------------	-------	--

DATANEST EDD UPLOADER

- EDI Format - DATANEST (DATANEST)	Email	laboratory+68ff061edd8b9@datanest.earth
------------------------------------	-------	---

ESDAT ESDAT

- EDI Format - ESDAT (ESDAT)	Email	ESdat_AU+douglaspartners@ESdatLabSync.net
------------------------------	-------	---

KENTON HORSLEY

- *AU Certificate of Analysis - NATA (COA)	Email	kenton.horsley@douglaspartners.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kenton.horsley@douglaspartners.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kenton.horsley@douglaspartners.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kenton.horsley@douglaspartners.com.au
- A4 - AU Tax Invoice (INV)	Email	kenton.horsley@douglaspartners.com.au
- Chain of Custody (CoC) (COC)	Email	kenton.horsley@douglaspartners.com.au
- EDI Format - ESDAT (ESDAT)	Email	kenton.horsley@douglaspartners.com.au
- EDI Format - XTab (XTAB)	Email	kenton.horsley@douglaspartners.com.au

ZACHARIAH KRAICH

- *AU Certificate of Analysis - NATA (COA)	Email	zachariah.kraich@douglaspartners.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	zachariah.kraich@douglaspartners.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	zachariah.kraich@douglaspartners.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	zachariah.kraich@douglaspartners.com.au
- Chain of Custody (CoC) (COC)	Email	zachariah.kraich@douglaspartners.com.au
- EDI Format - ESDAT (ESDAT)	Email	zachariah.kraich@douglaspartners.com.au
- EDI Format - XTab (XTAB)	Email	zachariah.kraich@douglaspartners.com.au

Appendix I

Field and laboratory data quality assurance and quality control (QA/QC)

1. Field and laboratory data quality assurance and quality control

The field and laboratory data quality assurance and quality control (QA/QC) procedures and results are summarised in the following Table 1. Reference should be made to the field work methodology and the laboratory results / certificates of analysis for further details. The relative percentage difference (RPD) results, along with the other field QC samples are included at the end of this appendix.

Table 1: Field and laboratory quality control

Item	Evaluation / acceptance criteria	Compliance
Analytical laboratories used	NATA accreditation	C
Holding times	Various based on type of analysis	C
Intra-laboratory replicates	>10% (2 intra-lab replicate for 16 primary samples of primary samples) Typically <30% RPD or low overall difference	C
Inter-laboratory replicates	>5% (1 inter-lab replicate for 16 primary samples); Typically <30% RPD or low overall difference	C
Trip spikes	1 per sampling event; 60-140% recovery	C
Trip blanks	1 per sampling event; <PQL	C
Laboratory / reagent blanks	1 per batch; <PQL	C
Laboratory duplicate	1 per lab batch; as laboratory certificate	C
Matrix spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Surrogate spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Control samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Standard operating procedures (SOP)	Adopting SOP for all aspects of the sampling field work	C

Notes:

C = compliance; PC = partial compliance; NC = non-compliance

The RPD results were all within the acceptable range, with the exception of those indicated in Table QA1 (results in bold). The exceedances are not, however, considered to be of concern given that:

- The actual differences in the concentrations of the replicate pairs where RPD exceedances occurred were typically low;

- The replicate pairs were collected from fill soils which by its nature are heterogeneous;
- Replicates, rather than homogenised duplicates, were used to minimise risk of volatile loss, hence greater analytical variability between replicate pairs can be expected;
- Most of the recorded concentrations were relatively close to the PQL;
- The majority of RPD results from a replicate pair were within the acceptable limits; and
- All other QA/QC parameters met the data quality indicators.

In summary, the QC data is determined to be of sufficient quality to be considered acceptable for the assessment.

2. Data quality indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQI) as outlined in NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)* [NEPM] (NEPC, 2013):

- Completeness: a measure of the amount of usable data from a data collection activity;
- Comparability: the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness: the confidence (qualitative) of data representativeness of media present on-site;
- Precision: a measure of variability or reproducibility of data; and
- Accuracy: a measure of closeness of the data to the 'true' value.

The results of the assessment are summarised in Table 2.

Table 2: Data quality indicators

Data quality indicator	Method(s) of achievement
Completeness	Systematic and selected target locations sampled.
	Preparation of borehole and test pit logs, sample location plan and chain of custody records.
	Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody.
	Samples analysed for contaminants of potential concern (CoPC) identified in the conceptual site model (CSM).
	Completion of chain of custody documentation.
	NATA accredited laboratory results certificates provided by the laboratory.
	Satisfactory frequency and results for field and laboratory quality control (QC) samples as discussed in Section 1.

Data quality indicator	Method(s) of achievement
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project.
	Experienced sampler used.
	Use of NATA registered laboratories, with test methods the same or similar between laboratories.
	Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled.
	Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQO.
	Samples were extracted and analysed within holding times.
	Samples were analysed in accordance with the chain of custody.
Precision	Field staff followed standard operating procedures.
	Acceptable RPD between original samples and replicates.
	Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures.
	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQI have generally been complied with.

3. Conclusion

Based on the results of the field QA and field and laboratory QC, and evaluation against the DQI it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

4. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.



Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID	Depth	Sample Date	Sample Type	Units	Priority metals								Priority PAH	Priority TRH						TRH		BTEX			
						Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene ^b	TRH C6 - C10	TRH >C10-C16	F1 [(C6-C10)-BTEX]	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes
397585	7	0 - 0.1 m	05/12/25	Soil	mg/kg	4	<0.4	9	6	13	<0.1	2	10	<1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
397585	BD3	0 - 0.1 m	05/12/25	Soil	mg/kg	6	<0.4	8	6	12	<0.1	2	7	<1	<25	<50	<25	<50	110	<100	<25	<50	<0.2	<0.5	<1	<1
			Difference		mg/kg	2	0	1	0	1	0	0	3	0	0	0	0	0	10	0	0	0	0	0	0	0
			RPD		%	40%	0%	12%	0%	8%	0%	0%	35%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%

397585	9	0 - 0.1 m	27/11/25	Soil	mg/kg	11	<0.4	14	20	10	<0.1	15	36	<1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
397585	BD2	0 - 0.1 m	05/12/25	Soil	mg/kg	6	<0.4	7	9	7	<0.1	5	23	<1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			Difference		mg/kg	5	0	7	11	3	0	10	13	0	0	0	0	0	0	0	0	0	0	0	0	0
			RPD		%	59%	0%	67%	76%	35%	0%	100%	44%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

397585	19	0 - 0.1 m	05/12/25	Soil	mg/kg	<4	<0.4	44	42	6	<0.1	22	37	<1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
ES2539237	BD4	0 - 0.1 m	05/12/25	Soil	mg/kg	<5	<1	91	39	<5	<0.1	26	32	<1	<10	<50	<10	<50	<100	<100	<10	<50	<0.2	<0.5	<0.5	<0.5
			Difference		mg/kg	1	0.6	47	3	1	0	4	5	0	15	0	15	0	0	0	15	0	0	0	0.5	0.5
			RPD		%	22%	86%	70%	7%	18%	0%	17%	14%	0%	86%	0%	86%	0%	0%	0%	86%	0%	0%	0%	67%	67%