Douglas PARTNERS

GROUNDED EXPERTISE

Report on Detailed Site Investigation Contamination

Randwick Boys and Girls School Upgrade

Rainbow Street, Randwick NSW

Prepared for School Infrastructure NSW

Project 224455.00

30 August 2024

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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.

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Executive Summary

Douglas Partners Pty Ltd (Douglas) has been engaged by School Infrastructure NSW (SINSW) to prepare this Detailed Site Investigation Contamination (DSIC) for proposed upgrade works to a portion of Randwick Girls High School (RGHS) and Randwick Boys High School (RBHS). The targeted proposed works comprised a cohort building (proposed as part of the masterplan dated August 2023 – Option 1) and a two-storey administration / learning building and associated green space (proposed as part of the masterplan dated May 2024 – Option 1).

Douglas previously prepared a preliminary site investigation (PSI) for the whole combined school grounds (the site). The review of title deeds and aerial photographs suggest that the site was possibly used as a hospital prior to 1933, however the earliest available arial photograph (1942) showed that the site to be vacant, which suggest that a hospital is unlikely. The site began to use as a school circa 1960. The regional surrounding the school has historically been urban residential, at least since 1942. The land to the west of the site comprised horse stabling and training facilities (Inglis) until around 2018 when the site was sold and gradually developed into medium rise residential (Newmarket development).

Revision 0 of this DSIC was completed by Douglas in 2023, for a proposed Cohort building area located in the central-west portion of the site (herein referred to as "Area A"). Fieldwork and intrusive sampling were undertaken in conjunction with a geotechnical investigation. The analytical results showed benzo(a)pyrene concentrations in multiple samples of fill above the health screening levels (HIL C) and ecological screening levels (ESL C). Asbestos was not detected by laboratory analysis in any of the samples.

Following revision of the masterplan in 2024, the proposed Cohort building has been removed and the revised development plan includes a new administration / learning building and green space area in the southern part of the site, fronting Rainbow Street (herein referred to as "Area B"). Douglas conducted additional intrusive soil sampling and testing, again in conjunction with a geotechnical investigation, targeting Area B. The analytical results showed benzo(a)pyrene concentrations in one sample of fill above the adopted 'HIL C' and 'ESL C'. Amosite asbestos was also detected by laboratory analysis at the same sample.

Based on the findings of this DSIC, Douglas recommends the following:

Area A

Area A can be made suitable for a new cohort building, or for other forms of building (if changes to the masterplan revert back to a new building at this location) subject to the following:

- The removal of any identified asbestos and other hazardous materials in the existing building within Area A;
- Clearance of the building by a qualified occupational hygienist following the removal of hazardous materials, and then of the ground surface post demolition;
- Further assessment of the area following removal of the building (noting that the footprint of the building could not be sampled) by a suitably qualified environmental consultant. The assessment can be initially visual and then supported through appropriate additional sampling and testing of soils;

- Remediation or management of fill within the area through either:
  - The excavation, waste classification and off-site disposal of fill from Area A; or
  - Capping of the contaminated fill with the proposed building slab and or a layer of clean validated soil. This option is subject to notification and management under a long term environmental management plan; or
  - Further site specific risk assessment of the contaminants through potentially additional sampling and testing and assessment of likely exposure scenarios (note that the outcome may still be that a form of remediation is required);
- Preparation of a remediation action plan (RAP) to document the above options and the preferred option; and
- Validation of the remedial works implemented, confirming that Area A is suitable for the land use from a contamination perspective.

It is noted that the PAH contaminated soils identified are present at relatively shallow depths at this area. As such, the contamination is considered to pose a risk to students and maintenance workers at the area through dermal contact, if exposed over a period of time. Remediation using any of the options listed above is preferred to manage the risk. However, as a minimum, it is recommended that the presence of the contamination be documented in the school's register of hazardous materials, such that any future intrusive works or activities in this area (including any planned intrusive works for the proposed refurbishment of the existing building) appropriately consider the potential exposure to the contaminants. This recommendation applies whether or not new buildings are constructed in this location.

Area B

Area B can be made suitable for the proposed administration / learning building and new green space subject to the following:

- Delineation sampling and testing around BH109 to delineate the extent of asbestos impacted soils (following the removal of the hardstand;
- Excavation of the asbestos impacted soils at BH109 for either:
  - Waste classification and off-site disposal to landfill; or
  - Relocation beneath the footprint of the proposed new building. This option will require an amendment to the asbestos register for the school to include the location and depth of asbestos impacted soil;
- Validation reporting on the remediation method adopted for the asbestos impacted soils; and
- Preparation and implementation of an unexpected finds and contingency plan to manage unexpected and contingent (e.g. asbestos) finds of contamination during civil and construction works.

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1. Introduction

Douglas Partners Pty Ltd (Douglas) has been engaged by School Infrastructure NSW (SINSW) to undertake a Detailed Site Investigation Contamination (DSIC) for a proposed upgrade to Randwick Boys High School (RBHS) and Randwick Girls High School (RGHS) at Rainbow Street, Randwick NSW (referred to here in the "site"). The DSIC was conducted concurrently with geotechnical investigations and undertaken in accordance with the Short Form Work Order DDWO05264/23, signed 7 August 2023, and subsequent approved variations.

The proposed works targeted by this DSIC comprised a cohort building (proposed as part of the masterplan dated August 2023 – Option 1) and a two-storey administration / learning building and associated green space (proposed as part of the masterplan dated May 2024 – Option 1).

The objective of this DSIC is to assess the potential for contamination across the two targeted areas based upon the findings and recommendations made within the preliminary site investigation (PSI) report prepared by Douglas (Douglas, 2023 – refer Section 7) and to assess the suitability for each targeted areas to support the proposed development from a contamination perspective. To assist in project planning the DSIC also presents a preliminary waste classification for soils with the targeted areas.

This report must be read in conjunction with all appendices.

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).

2. Proposed development

2.1 Area A

Area A is located in the central west portion of the school, as shown on Drawings D.001 and D.002 in Appendix A. Area A is currently occupied by a single-level school building with peripheral landscaping and footpaths. The initial master plan design by Tanner Kibble Denton (TKD) Architects (2023) proposed a Cohort Building to be built within this area, however that proposed has now been removed.

Based on the revision of the master plan in 2024, the proposed new Cohort building has been removed and the revised development now comprises refurbishment and modification to existing building.

2.2 Area B

Based on the updated TKD masterplan (2024), construction of a two-storey administration building and lecture learning building, and a new green space are proposed for the southern portion of the site (Area B) as shown on Drawings D.001 and D.002 in Appendix A. No basement levels are proposed for the new building, however, small retaining walls may be required in some areas due to site topography.

3. Scope of work

3.1 Area A (2023)

The scope of work undertaken in 2023 comprised the following:

- Opportunistic soil sampling from seven boreholes (BH01 to BH07) drilled as part of the concurrent geotechnical investigation, as shown on Drawing D.003, Appendix A;
- Boreholes were drilled to depths ranging between 0.3 m to 6.3 m below ground level (bgl);
- Dispatched 10 selected primary samples (including four QA / QC samples) to a National Association of Testing Authorities (NATA) accredited laboratory for the analysis of:
    - Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury nickel, zinc);
    - Polycyclic aromatic hydrocarbons (PAH);
    - Total recoverable hydrocarbons (TRH);
    - Benzene, toluene, ethylbenzene, xylene (BTEX);
    - Phenols;
    - Organochlorine pesticides (OCP);
    - Organophosphate pesticides (OPP);
    - Polychlorinated biphenyls (PCB);
    - Asbestos (FA/AF);
    - Toxicity characteristic leaching procedure (TCLP);
- Development of a conceptual site model (CSM); and
- Preparation of a DSIC report (reference 224455.00.R.002.Rev0, dated October 2023).

3.2 Area B

The scope of work undertaken in 2024 comprised the following:

- Opportunistic sampling from 10 boreholes (BH101 to BH110) drilled in conjunction with the geotechnical investigation using a track-mounted drilling rig and hand tools to depths of between 1 m and 9.8 m bgl;
- Logged and collected samples from the drilled boreholes. Collection and field screening of replicate soil samples for volatile organic compounds (VOC) using a photoionization detector (PID);

- Dispatched selected samples to a NATA accredited laboratory plus quality assurance / quality control samples (QA / QC) for the analysis of combinations of heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRH, BTEX, PAH, OCP, OPP, PCB, Asbestos (fibrous asbestos / asbestos fines – FA / AF;
- Quality samples were collected and analysed, including replicate samples and trip spike and trip blank samples; and
- Preparation of this DSIC report.

4. Site information

Site address	320-346 Avoca Street,
Legal description	Lot 1 Deposited Plan 121453
Area	Total school ground occupies approximately 74, 000 m^2 Area A: approximately 3,500 m^2 Area B: approximately 4,000 m^2
Zoning	Zone SP2 Infrastructure (Educational Establishment)
Local Council Area	Randwick Council
Current use	Boys and Girls High Schools
Surrounding uses	<u>Area A:</u> North – Playground court, and then Randwick Girls High School East – Recreation open space green field South – Randwick Boys High School building structures West – High density residential houses <u>Area B:</u> North – Randwick Boys High School building structures East – Concrete tennis courts, grass areas and school structure South – Randwick Street West – Randwick Boys High School building structures

5. Environmental setting

5.1 Topography

The regional topography of the Randwick Boys and Girls School site slopes gently from about RL 50 m Australian Height Datum (AHD) in the north-east to about RL 38 m (AHD) in south-west.

The Area A, in the central west portion of the school slopes gently from about RL 40 m (AHD) in the north-east to about RL 38 m AHD in south-west, whilst the Area B where the proposed administration building, and greenspace is located has surface levels between about RL 40 AHD in the north to RL 38 AHD in the south.

5.2 Geology

Reference to the Sydney 1:100 000 Geological Series Map indicates that the site is underlain by coastal deposits (transgressive dunes) of the Quaternary period. The deposits are marine deposited and aeolian-reworked fine to coarse grained quartz lithic sand with abundant carbonate, and sporadic humic debris in stabilised dunes.

Hawkesbury sandstone is mapped in localised areas to the west and south-east of the school site, which is the geological unit beneath the coastal deposits. Hawkesbury sandstone, of the Triassic period, comprises medium to coarse grained quartz sandstone with minor shale and laminite lenses.

5.3 Soil landscape

Reference to the Sydney 1:100 000 Soil Landscape Series map indicates that the site is underlain by a landscape group known as the Tuggerah soil landscape.

The Tuggerah soil landscape is an aeolian soil landscape and is characterised by topography of gently undulating to rolling coastal dune hills, with local relief to 20 m and slope gradients of 1% to 10%.

Soils in the Tuggerah soil landscape is typically non-cohesive and highly permeable with high water tables.

5.4 Acid sulfate soils

Reference to the 1:25 000 Acid Sulfate Soils (ASS) Risk map indicates that the school is in an area of no known occurrence of acid sulfate soils. The nearest mapped occurrences of ASS are in Maroubra Bay, Eastlakes, and Eastgardens, which are over 2 km away from the school. The high elevation and expected geology at the school suggests that the presence of acid sulphate soils is unlikely. However, nearby investigations have encountered potential acid sulfate soils within deeper peaty layers closer to the rock surface in some areas.

5.5 Salinity

Dryland salinity risk and hazard mapping was undertaken in 2000 by the former NSW Government Departments of Land and Water Conservation to show the broad distribution of areas considered as having either a high salinity risk or a high salinity hazard.

The school is not located within, or close to, mapped areas with high salinity risk or high salinity hazard. The nearest areas mapped as having high salinity risk/hazard are in Western Sydney.

5.6 Surface water and groundwater

The school slopes towards the south-west, with surface run off likely to collect in stormwater drains across the school, off site or filtering through open gras areas.

The closest course is the Botany Dams which is 1.75 km to the south-west of the school site. The Botany Dams then feeds into the Mill Stream, the Model Yacht Pond, the Mill Pond and into Botany Bay.

A search of the publicly available registered groundwater bore database indicated that there are 26 registered groundwater bores within 500 m of the site. Virtually all noted wells were associated with monitoring of a groundwater contamination plume emanating from a 7 Eleven services station approximately 250 m to the west north-west of the site. Standing water levels, where reported, ranged between 2.5 m and 20 m below ground level.

Based on the regional topography and the inferred flow direction of nearby water courses, the anticipated flow direction of groundwater beneath the site would be to the south-west, towards Botany Bay, the likely receiving surface water body for the groundwater flow path. However, previous groundwater monitoring by DP at the Newmarket site close to the proposed new cohort building showed groundwater levels typically between about RL 36 m and RL 39 m relative to AHD, with groundwater typically flowing downslope in a south and south-easterly direction.

There are six registered groundwater bores within 200 m to the west of the new proposed Area B. The search showed that the intended purpose of all bores are associated with monitoring, with the standing water of 5.20 m bgl.

During the previous geotechnical investigation (Douglas, 2023d) within Area A, water seepage was observed at 6.0 m depth (RL 35.2 m) in one borehole and at 5.0 m depth (RL 37.1 m) in another. No free groundwater was observed in the other boreholes and hole collapse prevented water measurements in the CPT holes after the withdrawal of the rods.

Water seepage was encountered during the recent geotechnical investigation within Area B at depths between 2.4 m (RL 36.4 m) in BH102, 3.5 m (R 35 m) in BH103, and 3.5 m (RL 35.1 m) in BH104.

6. Summary of asbestos register and asbestos management plan

An asbestos register and asbestos management plan for RBHS and RGHS was reviewed by Douglas. The review of asbestos register indicated that asbestos containing material may be present in the grounds as part of fill material. In general asbestos was detected in a few buildings across the school especially cement sheeting used for eaves, ceilings and vinyl floor tiles. Based on the asbestos register, immediate attention for remediation is not require due to all the instances of asbestos are in good condition or some minor damage.

As per the Asbestos Management Plan (AMP) for NSW Government Schools, all asbestos and remediation must be administered by Department of Public Works and Services (DPWS) and the Department of Education (DoE). All removals are to be undertaken according to:

- NSW Work Health and Safety Act 2011;
- NSW Work Health and Safety Regulation 2011;
- How to Mange and Control Asbestos in the Workplace: Code of practice 2011;
- How to Safely remove Asbestos: Code of Practice 2011; and
- Other relevant documentation issued from time to time by WorkCover NSW or SafeWork Australia.

7. Summary of previous investigations

7.1 Previous reports

The following previous reports are relevant to the current investigation:

- Douglas Report on Preliminary Site Investigation (Contamination) PSI – Randwick Boys High School and Randwick Girls High School Upgrade – Ref: 224455.00.R.001.Rev0, dated 22 September 2023 (Douglas, 2023); and
- Douglas Report on Geotechnical Investigation – Randwick Boys High School and Randwick Girls High School Upgrade – Rainbow Street, Randwick – Ref: 224456.01.R.002.Rev1, dated 27 August 2024 (Douglas, 2024).

7.1.1 Douglas (2023)

The PSI was undertaken based on a desktop review of site history and information (i.e. NSW EPA public records, historical aerial photographs, title deeds, geology, acid sulfate soil and hydrology) and environs, a site walkover and development of a conceptual site model (CSM).

The historical aerial photographs and historical title deeds show that the school was possibly used as a hospital prior to 1933, however the earliest available aerial photograph (1942) showed the site to be vacant, which suggests that a hospital use is unlikely. The school was acquired by the Minister for Education in 1941 and began construction and use as a school *circa* 1960. The school development was progressive, including various arrangements of buildings, sports fields and sports courts, with significant changes to the layout *circa* 1961, 1971, 1986 and 1994.

The region surrounding the school had historically been urban residential, at least since 1942. The land to the west of the school comprised horse stabling and training facilities (Inglis) until around 2018 when the land was sold and gradually developed into medium rise residential (Newmarket development).

Potential sources of contamination identified from the site history information reviewed and the site walkover include fill (including potential impacts from previously demolished buildings), the degradation of hazardous building materials in the current school buildings, and the application of herbicides.

The 7-Eleven service station on Barker Street, located about 250 m west north-west of the site, was recorded as a notified site to the EPA under Section 58 of the CLM Act. The service station was declared contaminated with petroleum hydrocarbons including benzene, toluene, ethyl benzene, xylenes and naphthalene resulting from commercial activities of the service station. The 7 Eleven service station currently regulated under the CLM Act and requires ongoing monitoring of groundwater hydraulically downgradient of the source for a period of time. The flow path of the plume from this off-site source has not been tracked to cross the western boundary of the site.

The PSI suggested intrusive soil investigation and sampling to further assess the potential for the above sources of contamination or the associated potential contaminants, to exist in soils within the site.

The report noted that the current building within Area A contains assumed asbestos in backing boards and the asbestos status must be confirmed prior to demolition of the building. An asbestos clearance must be obtained by an occupational hygienist prior to the remaining bulk demolition works and following completion of demolition.

A copy of the historical aerial photographs and titles discussed in here are included in Appendix C and D respectively.

7.1.2 **Douglas (2024)**

During the geotechnical investigations undertaken in conjunction with the DSIC, seven boreholes (BH01 to BH07) were drilled across Area A, and 10 boreholes (BH101 to BH110) across Area B. Details of the investigation methodologies and subsurface conditions encountered are presented in later sections of this DSIC report.

8. 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 outcomes of Douglas (2023), the following potential sources of contamination and associated contaminants of potential concern (CoPC) have been identified and summarised in Table 1.

Table 1: Summary of potential sources

Potential sources and associated CoPC
On-site sources
S1: Fill: Associated with general grading and levelling CoPC (typical screen for fill from an unknown source) include metals, TRH, BTEX, PAH, PCB, OCP, phenols and asbestos **S2:** Former and current buildings / structures (hazardous building materials deterioration and spalling in previous and existing structures) CoPC include asbestos, synthetic mineral fibres (SMF), lead (in paint), zinc and PCB **S3:** Application of pesticides for building maintenance CoPC include copper, OCP, OPP

The following potential human and environmental receptors, along with relevant potential pathways, have been identified and summarised in Table 2.

Table 2: Summary of potential receptors and pathways

Potential human receptors
HR1: Current users [school workers, students and visitors] **HR2:** Construction and maintenance workers **HR3:** End users [school workers, students and visitors] **HR4:** Adjacent site users [education / residential / commercial]
Potential environmental receptors
ER1: Surface water [Botany Dam and Mill Stream] **ER2:** Groundwater **ER3:** Terrestrial ecosystems
Potential pathways to human receptors
HP1: Ingestion and dermal contact **HP2:** Inhalation of dust and/or vapours
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 S3) and receptors are provided in below Table 3.

Table 3: Summary of potentially complete exposure pathways

Source and CoPC	Exposure pathway	Receptor	Risk management action
S1: Fill: CoPC include metals, TRH, BTEX, PAH, PCB, OCP, phenols and asbestos **S3:** Application of pesticides CoPC include copper, OCP, OPP	**HP1:** Ingestion and dermal contact **HP2:** Inhalation of dust and/or vapours	**HR1:** Current users [school workers, students and visitors] **HR2:** Construction and maintenance workers **HR3:** End users [school workers, students and visitors]	Intrusive investigation is recommended to confirm or otherwise the presence of the source and/or its associated CoPC.
	HP2: Inhalation of dust and/or vapours	**HR4:** Adjacent site users [education / residential / commercial]	
	ER1: Surface water [Botany Dam and Mill Stream] **EP3:** Lateral migration of groundwater providing base flow to water bodies	**ER1:** Surface water	
	EP2: Leaching of contaminants and vertical migration into groundwater	**ER2:** Groundwater	
	EP4: Inhalation, ingestion and absorption	**ER3:** Terrestrial ecosystems	

Source and CoPC	Exposure pathway	Receptor	Risk management action
S2: Former and current buildings / structures (hazardous building materials) CoPC include asbestos, synthetic mineral fibres (SMF), lead (in paint), zinc and PCB	**HP1:** Ingestion and dermal contact **HP2:** Inhalation of dust and/or vapours	**HR1:** Current users [school workers, students and visitors] **HR3:** End users [school workers, students and visitors]	Hazardous building material assessment and clearances of current structures to be demolished in Areas A and/or B, and intrusive investigation to assess contamination in soil in those footprints.

9. Sampling plan

9.1 Data quality objectives

The DSIC 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 E.

9.2 Soil sampling rationale

Based on the CSM and data quality objectives (DQO) the following sampling rationale was adopted for Areas A and B.

A systematic sampling strategy was adopted consistent with the scopes defined under the Short Form Work Order DDWO05264/23, and the associated due diligence panel requirements utilising the borehole locations selected for geotechnical investigation purposes to provide general coverage. The total sample numbers do not necessarily comply with the NSW EPA (2022) sampling design guidelines.

Representative fill samples were analysed for the COPCs based on the CSM. The general sampling methods are described in the field work methodology, included in Appendix F.

Area A

A total of seven borehole locations (BH01 to BH07) were drilled within Area A, outside the existing building footprint using truck-mounted and small track-mounted drilling rigs, and hand tools to depths of between 0.3 m and 6.3 m bgl. Drilling was undertaken with the rigs using 110 mm diameter solid flight augers at BH01, BH02, and BH05 to BH07. BH03 and BH04 were drilled using hand tools due to access constraints.

Soil samples were collected directly from the drilling rig solid flight auger at regular depth intervals, or upon signs of contamination, and a change of strata.

The borehole locations are shown on Drawing D.003, Appendix A.

Area B

A total of 10 borehole locations (BH101 to BH110) were drilled within Area B, including drilling of nine machine drilled boreholes (BH101 to BH108 and BH110) and one hand-augured borehole (BH109). Boreholes BH105 to BH109 were drilled within the proposed greenspace area. BH110 was drilled outside the proposed green space area in the vicinity of the site boundary. Boreholes BH101 to BH104 were drilled within the proposed administration / learning space building area.

Concrete coring was undertaken prior to drilling, as required.

BH103 was converted into a temporary groundwater monitoring well at the completion of drilling.

Soil samples were collected directly from auger from each borehole, at regular depth intervals, changes in lithology or signs of contamination (i.e. odours or staining).

The borehole locations are shown on Drawing D.004, Appendix A.

10. Site assessment criteria

The site assessment criteria (SAC) applied in the current investigation are informed by the CSM (Section 8) 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 public open space land use scenario 'HIL C' which also captures secondary schools.

The derivation of the SAC is included in Appendix G and the adopted SAC are listed on the summary analytical results tables in Appendix H.

11. Results

11.1 Field work results

The borehole logs for the field investigation are included in Appendix I.

Area A

The following generalised subsurface profile was encountered in the boreholes and CPT tests:

- PAVEMENT: asphaltic concrete and underlying pavement material was present at CPT08 and CPT09 to depths of 0.3 m (not encountered in the boreholes); overlying,

- FILL: Fill was encountered within all boreholes and CPTs either from the ground surface or beneath the pavement to depths of between 0.3 m to 1.4 m bgl. The fill appeared to be generally in a loose to medium dense condition. It included sand, silty sand and gravelly sand with varying proportions of silt, rootlets, mulch, and igneous gravel. Inclusions of concrete and brick fragments were observed in BH01, BH02 and BH06. BH04 was terminated in fill at 0.3 m depth due to hand auger refusal on tree roots; overlying,
- SAND: medium grained sand encountered in all boreholes and CPTs, except BH04, to depths of between 2.2 m to 6.3 m. The sand was typically medium dense, with some inclusions of loose and medium dense to dense layers. All boreholes (except BH04) were terminated in sand; overlying,
- SANDY CLAY: a thin layer of hard sandy clay was intersected at CPT08 between 6.2 m and 6.8 m depth; overlying, and
- INFERRED SANDSTONE BEDROCK: encountered at the bases of BH06, BH07, and CPT08 to CPT10 at depths of between 5.3 m and 6.8 m.

Water seepage was observed at 6 m depth in BH06 and at 5 m depth in BH07. No free groundwater was observed in the other boreholes. No asbestos containing material (ACM) cement sheet was observed within boreholes or any of the samples collected.

Area B

The general subsurface profile encountered at the borehole locations are summarised as follows:

PAVEMENT	40 mm thick asphaltic concrete slab underlain by road base (cement stabilised sand and gravel) to 0.3 m depth at BH101 to BH104 and 120 mm to 150 mm thick concrete slab at BH105 to BH110.
FILL	Poorly compacted sand fill with traces of sandstone, concrete and blue meatal gravels encountered within all boreholes from beneath the pavements to depths of between 0.5-0.8 m. The sandy fill was typically in a very loose condition.
SAND and SILTY SAND	Medium dense and dense sand, fine grained, yellow brown and pale grey sand encountered in the deeper boreholes (BH101-BH104) to depths ranging from 4.2 m to 5.1 m and within the shallow boreholes (BH105-BH110) to the maximum test depth of 3 m. Silty sand was also encountered in BH103, BH106, BH107 and BH108 from depths of 0f between 0.8 m and 1.5 m.
BEDROCK	Weathered sandstone encountered at the base of the deep boreholes (BH101-BH104) at depths of between 4.2 m and 5.1 m. BH102 and BH103 encountered medium then high strength, generally slightly fractured sandstone, slightly weathered, medium to coarse grained sandstone to the borehole termination depths of 7.6 m and 9.8 m.

Groundwater seepage was encountered during the drilling the deep boreholes located within the area of proposed administration building in BH102 at 2.4 m, BH103 at 3.5 m and at BH104 at 3.5 m. Depth of groundwater was measured a week after completion of the drilling at about 3.5 m at BH103 which is the same level it was encountered during drilling.

The following observations at specific test locations were noted during the fieldwork:

- Building rubble and / or other anthropogenic inclusions (including sandstone gravel, cement stabilised gravel, concrete gravel) were recorded in boreholes;
- No asbestos containing material (ACM) was recorded within any of the boreholes;
- 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 soil at the site; and
- The PID screening results for the retrieved samples were found to range between <1 ppm or <2 ppm suggesting a low potential for VOC contamination.

No asbestos containing material (ACM) cement sheet was observed within boreholes or in any samples collected. It is noted however that the identification of ACM in small diameter boreholes is very difficult, and the presence of ACM in fill can be easily missed through this sampling method. Given the presence of demolition rubble logged in some of the boreholes the presence of ACM in some of the fill is possible.

11.2 Laboratory analytical results

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

- Table H1: Summary of results of soil analysis (comprising Area A and Area B results); and
- Table H2: Summary of preliminary waste classification assessment (comprising Area A and Area B results).

The laboratory certificate(s) of analysis together with the chain of custody and sample receipt information are provided in Appendix J.

12. Discussion

12.1 Soils

Area A

As shown in Table H1, all analytical results for contaminants tested in all samples were below the adopted SAC, with the following exception:

- Benzo(a)pyrene TEQ in samples BH02/0-0.1 m, BH03/0.9-1 m, BH05/0-0.1 m, BH06/0.9-1.0 m and BH07/0.4-0.5 m with concentrations of 3.6 mg/kg, 3.2 mg/kg, 5.2 mg/kg, 5.6 mg/kg and 14 mg/kg exceeded HIL C criteria of 3 mg/kg; and
- Benzo(a)pyrene (BaP) in samples BH02/0-0.1 m, BH02/0.9-1 m, BH03/0.9-1 m, BH05/0-0.1 m, BH06/0-1.0 m, BH06/0.9-1.0 m and BH07/0.4-0.5 m exceeded the ecological criteria of 0.7 mg/kg.

No asbestos was recorded in any of analysed samples.

The elevated PAH (including BaP TEQ) concentrations are considered to be associated with the imported fill placed at the site. Recommendations around the remediation or management are outlined in Section 14.

Area B

As shown in Table H1, the analytical results for contaminants tested in all samples were below the SAC with the exception of:

- Benzo(a)pyrene TEQ in samples BH109/0.1-0.2 m with concentrations of 3.7 mg/kg exceeded health investigation level 'HIL C' criteria of 3 mg/kg; and
- Benzo(a)pyrene (BaP) in samples BH109/0.1-0.2 m with concentration of 2.4 mg/kg exceeded the ecological screening level 'ESL C' criteria of 0.7 mg/kg.

Asbestos was recorded in analysed sample as follow:

- Amosite asbestos was confirmed by laboratory analysis in soil samples collected at BH109/0.1-0.2 m in 0.0002 g of loose fibre bundles.

BH109 is located within the proposed green space area. The elevated PAH and asbestos in BH109 was detected in a layer of fill, directly below the concrete pavement.

Recommendations around the remediation or management are outlined in Section 14.

The presence of these contaminants is subject to remediation, likely to comprise either chasing out and removal to landfill, or further assessed through site specific Tier 2 risk assessment.

It is noted that the B(a)P ESL is a low reliability value. Higher reliability screening levels have been published in CRC CARE *Risk-based Management and Remediation Guidance for Benzo(a)pyrene* (CRC CARE, 2017). The high reliability value of 33 mg/kg (or ranging from 21 mg/kg to 135 mg/kg) for fresh B(a)P suggests that the concentrations of B(a)P detected at the site are unlikely to pose an unacceptable risk to terrestrial ecosystems and therefore the exceedances are not considered to be of concern or warranting remediation.

12.2 Preliminary waste classification

The soil data from the borehole locations from Areas A and B, has been assessed against waste classification criteria in NSW EPA (2014) in order to provide a preliminary waste classification to assist in budgeting for the removal of surplus soils under the proposed development. The preliminary classification is for planning purposes only and does not provide a formal classification to inform off-site disposal of soils.

Table 4: Six step classification

Step	Comments	Rationale
1. Is the waste special waste?	**Area A**	
	No *	No asbestos-containing materials (ACM), clinical or related waste, or waste tyres were observed in the boreholes. * Asbestos was not observed in the boreholes or detected by the analytical laboratory. However, the small diameter boreholes have limited coverage. It is noted herein that there remains a potential for ACM to be present in some of the fill zones of the site, given the presence of building rubble. As such, the potential for asbestos in the fill soils on site remains.
	Area B	
	Yes Borehole BH109/0.1-0.2 m	Amosite asbestos identified by laboratory analysis in 0.0002 g of loose fibre bundles in BH109/0.1-0.2m. This result may be indicative of a wider issue. Asbestos was not detected in any other boreholes by the analytical laboratory. However, according to the asbestos register document, asbestos is present in the buildings, as such given the presence of building rubble materials, the potential for asbestos in the fill soils on site remains.
	No * Remaining area	Asbestos was not detected in other soil samples by the analytical laboratory. However, the small diameter boreholes have limited coverage. As such, the potential for asbestos in the fill soils on site remains.
2. Is the waste liquid waste?	**Area A and Area B**	
	No	The fill comprised a soil matrix.
3. Is the waste "pre-classified"?	**Area A and Area B**	
	No	The fill is not pre-classified with reference to NSW EPA (2014).
4. Does the waste possess hazardous waste characteristics?	**Area A and Area B**	
	No	The fill was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.

Step	Comments	Rationale
5. Determining a wastes classification using chemical assessment	Conducted	Refer to (Table H2, Appendix H).
6. Is the waste putrescible or non-putrescible?	**Area A and Area B**	
	Non-putrescible	The fill does not contain materials considered to be putrescible a.

Note: a wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forestry and crop materials, and natural fibrous organic and vegetative materials (NSW EPA, 2014).

* The use of small diameter boreholes for asbestos sampling is not ideal and there is still a risk that asbestos is present in other parts of the site, between sampling locations.

Area A

As shown in the attached Table H2, Appendix H, all contaminant concentrations for the analysed fill samples were below the contaminant thresholds (CT1s) for general solid waste (GSW) with the exception of the following:

- Benzo(a)pyrene (BaP) in samples BH02/0-0.1 m, BH2/0.9-1.0 m, BH05/0-0.1 m, BH06/0.9-1.0 m and BH07/0.4-0.5 m, exceeded the CT1 extract criteria for GSW of 0.8 m/kg. TCLP extract and analysis was conducted, and the results were within the SCC1 and TCLP1 thresholds for GSW.

No asbestos was recorded within the fill samples during the sampling or by the laboratory.

The current results are therefore consistent with a GSW classification as defined in NSW EPA (2014), and the fill across the site is preliminary classified in situ as GSW (non putrescible).

Area B

As shown in the attached Table H2, Appendix H, all contaminant concentrations for the analysed fill samples were below the CT1 criteria with the exception of the following:

- Benzo(a)pyrene (BaP) in samples BH109/0.1-0.2 m, exceeded the CT1 criteria for GSW of 0.8 mg/kg. Toxicity characteristic leaching procedure (TCLP) extract and analysis was conducted on this sample, and the result was within the SCC1 and TCLP1 thresholds for GSW.

However, asbestos was detected in sample recovered from BH109/0.1-0.2 m by laboratory analysis. Amosite asbestos was identified in 0.0002 g of loose fibre bundles.

Based on the observations at the time of sampling and the reported laboratory results, the following preliminary waste classifications are provided for the fill material within Area B:

- Fill soils in the vicinity of BH109 is provisionally classified as Special Waste Asbestos – GSW (non-putrescible). Further assessment of asbestos in soils should be conducted to confirm the extent of asbestos contamination at this location; and
- Remaining fill within the Area B (following the delineation of asbestos impact at BH109), GSW (non-putrescible) subject to results of subsequent investigations showing that asbestos contamination is not widespread.

These preliminary classifications are not formal waste classifications to inform off-site disposal. They are intended for planning purposes only. It is recommended that further in situ or ex situ investigation including visual and analytical processes using test pits, be conducted to confirm and formalise the preliminary waste classifications, prior to off-site disposal.

12.3 Data quality assurance and quality control

The data quality assurance and quality control (QA / QC) results are included in Appendix K. 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.

13. Conclusions and recommendations

The current investigation included a review of relevant previous reports, and intrusive soil sampling and testing targeting Areas A and B. The site history identified potential contamination sources within the site as discussed in CSM, Section 9 including fill, use of pesticides, former and current buildings potentially containing hazardous building materials.

Area A

Area A can be made suitable for a new cohort building, or for other forms of building (if changes to the masterplan revert back to a new building at this location) subject to the following:

- The removal of any identified asbestos and other hazardous materials in the existing building within Area A;
- Clearance of the building by a qualified occupational hygienist following the removal of hazardous materials, and then of the ground surface post demolition;
- Further assessment of the area following removal of the building (noting that the footprint of the building could not be sampled) by a suitably qualified environmental consultant. The assessment can be initially visual and then supported through appropriate additional sampling and testing of soils;
- Remediation or management of fill within the area through either:
  - The excavation, waste classification and off-site disposal of fill from Area A; or
  - Capping of the contaminated fill with the proposed building slab and or a layer of clean validated soil. This option is subject to notification and management under a long term environmental management plan; or
  - Further site specific risk assessment of the contaminants through potentially additional sampling and testing and assessment of likely exposure scenarios (note that the outcome may still be that a form of remediation is required);
- Preparation of a remediation action plan (RAP) to document the above options and the preferred option; and
- Validation of the remedial works implemented, confirming that Area A is suitable for the land use from a contamination perspective.

It is noted that the PAH contaminated soils identified are present at relatively shallow depths at this area. As such, the contamination is considered to pose a risk to students and maintenance workers at the area through dermal contact, if exposed over a period of time. Remediation using any of the options listed above is preferred to manage the risk. However, as a minimum, it is recommended that the presence of the contamination be documented in the school's register of hazardous materials, such that any future intrusive works or activities in this area (including any planned intrusive works for the proposed refurbishment of the existing building) appropriately consider the potential exposure to the contaminants. This recommendation applies whether or not new buildings are constructed in this location.

Area B

Area B can be made suitable for the proposed administration / learning building and new green space subject to the following:

- Delineation sampling and testing around BH109 to delineate the extent of asbestos impacted soils (following the removal of the hardstand;
- Excavation of the asbestos impacted soils at BH109 for either:
  - Waste classification and off-site disposal to landfill; or
  - Relocation beneath the footprint of the proposed new building. This option will require an amendment to the asbestos register for the school to include the location and depth of asbestos impacted soil;
- Validation reporting on the remediation method adopted for the asbestos impacted soils; and
- Preparation and implementation of an unexpected finds and contingency plan to manage unexpected and contingent (e.g. asbestos) finds of contamination during civil and construction works.

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. (2023a). *Report on Preliminary Site Investigation (Contamination) PSI - Randwick Boys High School and Randwick Girls High School Upgrade - 320-346 Avoca Street, Randwick.* (Reference 224455.00 dated 22 September 2023).

Douglas. (2023b). *Report on Detailed Site Investigation Contamination - Randwick Boys High School (RBH) and Ranwick Girls High School (RGHS) Upgrade - 320-346 Avoca Street, Randwick.*

Douglas. (2023c). *Report on Geotechnical Desktop Study Report - Randwick Boys High School and Randwick* . (Reference 224455.01 dated 15 September 2023).

Douglas. (2023d). *Report on Geotechnical Investigation - Randwick Boys High School and Randwick Girls High School Upgarde - Avoca Street, Randwick.* (Reference 224455.01.R.002.Rev0 dated 31 October 2023).

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 for this project at Rainbow Street, Randwick NSW in line with Douglas' proposal 224455.00.P.001.Rev1 dated 3 June 2024, and variation proposal dated 18 June 2024, and acceptance received from Shareen Prakash of School Infrastructure NSW. The work was carried out under Short Form Work Order DDWO05264/23, signed 7 August 2023. This report is provided for the exclusive use of School Infrastructure NSW 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.

Asbestos has been confirmed by laboratory analysis, in filling material at selected locations tested and analysed. However, building demolition materials, such as brick, concrete and metal were, also observed in test locations where asbestos had not been observed, and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Appendix A

Drawings

REV	DESCRIPTION/COMMENT	DATE	DRAWN BY
0	Initial Issue	29.08.2024	MN

SCALE: 0 20 40 60 80 m
1:2000 @ A3

Douglas PARTNERS
OFFICE: SYDNEY
96-98 Hermitage Rd, West Ryde NSW 2114
(02)9809 0666

CLIENT:
School Infrastructure NSW

NOTE:
1: Basemap from Metromap (Dated 26.06.2024)
2: All Area Boundraies from TKD Architects, Option1 (May 2024)

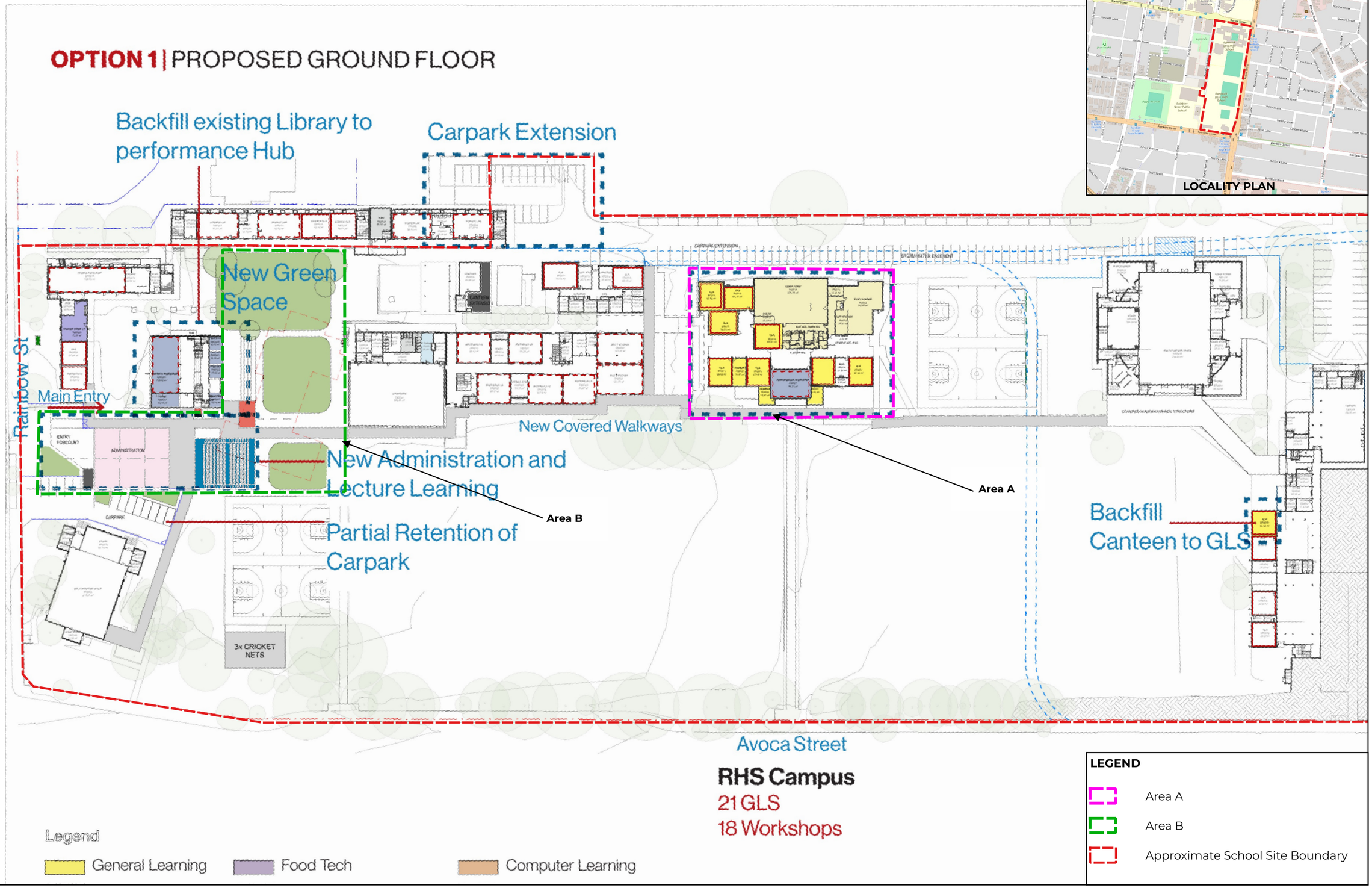
COORDINATE REFERENCE SYSTEM: GDA94 / MGA zone 56

PROJECT NAME:
Randwick Boys High School and Randwick Girls High School Upgrade
PROJECT ADRESS:
320-346 Avoca Street Randwick NSW 2031

DRAWING TITLE:
Site Boundaries

PROJECT NO: **224455.00**
DRAWING NO: **R.002.D.001**
REVISION: **0**

OPTION 1 | PROPOSED GROUND FLOOR



LEGEND

- Area A
- Area B
- Approximate School Site Boundary

REV	DESCRIPTION/COMMENT	DATE	DRAWN BY
0	Initial Issue	29.08.2024	MN

SCALE: 0 10 20 30 40 m — 1:1100 @ A3

Douglas PARTNERS
OFFICE: SYDNEY
96-98 Hermitage Rd, West Ryde NSW 2114
(02)9809 0666

CLIENT: **School Infrastructure NSW**

NOTE:
1: Basemap from Metromap (Dated 26.06.2024)
2: All Area Boundraies from TKD Architects, Option1 (May 2024)

COORDINATE REFERENCE SYSTEM: GDA94 / MGA zone 56

PROJECT NAME: **Randwick Boys High School and Randwick Girls High School Upgrade**

PROJECT ADRESS: **320-346 Avoca Street Randwick NSW 2031**

DRAWING TITLE: **Area A and Area B site boundaries**

PROJECT NO: **224455.00**

DRAWING NO: **R.002.D.002**

REVISION: **0**

REV	DESCRIPTION/COMMENT	DATE	DRAWN BY
0	Initial Issue	29.08.2024	MN

SCALE: 0 10 20 30 40 m
1:700 @ A3

Douglas PARTNERS
OFFICE: SYDNEY
96-98 Hermitage Rd, West Ryde NSW 2114
(02)9809 0666

CLIENT:
School Infrastructure NSW

NOTE:
1: Basemap from Metromap (Dated 26.06.2024)
2: All Area Boundraies from TKD Architects, Option1 (May 2024)

COORDINATE REFERENCE SYSTEM: GDA94 / MGA zone 56

PROJECT NAME:
Randwick Boys High School and Randwick Girls High School Upgrade

PROJECT ADRESS:
320-346 Avoca Street Randwick NSW 2031

DRAWING TITLE:
Previous Area A Borehole Locations (Douglas 2023)

PROJECT NO: **224455.00**
DRAWING NO: **R.002.D.003**
REVISION: **0**

REV	DESCRIPTION/COMMENT	DATE	DRAWN BY
0	Initial Issue	29.08.2024	MN

SCALE: 0 10 20 30 40 m
1:700 @ A3

Douglas PARTNERS
OFFICE: SYDNEY
96-98 Hermitage Rd, West Ryde NSW 2114
(02)9809 0666

CLIENT:
School Infrastructure NSW

NOTE:
1: Basemap from Metromap (Dated 26.06.2024)
2: All Area Boundraies from TKD Architects, Option1 (May 2024)

COORDINATE REFERENCE SYSTEM: GDA94 / MGA zone 56

PROJECT NAME:
Randwick Boys High School and Randwick Girls High School Upgrade
PROJECT ADRESS:
320-346 Avoca Street Randwick NSW 2031

DRAWING TITLE:
Current Area B Borehole Locations (Douglas 2024)

PROJECT NO: **224455.00**
DRAWING NO: **R.002.D.004**
REVISION: **0**

Appendix B

About This Report

About this Report

November 2023

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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Appendix C

Historical Aerial Photographs

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **1942 Historical Aerial Imagery** Randwick Boys High School and Randwick Girls High School Upgrade 320-346 Avoca Street Randwick NSW 2031	PROJECT No: 224455.00
	OFFICE: Sydney DRAWN BY: JZ		DRAWING No: A
	SCALE: 1:4000 DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners *Geotechnics / Environment / Groundwater*	CLIENT: School Infrastructure NSW	TITLE: **1951 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	PROJECT No: 224455.00
	OFFICE: Sydney / DRAWN BY: JZ		DRAWING No: B
	SCALE: 1:4000 / DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **1961 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	PROJECT No: 224455.00
	OFFICE: Sydney / DRAWN BY: JZ		DRAWING No: C
	SCALE: 1:4000 / DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners *Geotechnics / Environment / Groundwater*	CLIENT: School Infrastructure NSW	TITLE: **1971 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	PROJECT No: 224455.00
	OFFICE: Sydney / DRAWN BY: JZ		DRAWING No: D
	SCALE: 1:4000 / DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **1986 Historical Aerial Imagery** Randwick Boys High School and Randwick Girls High School Upgrade 320-346 Avoca Street Randwick NSW 2031	PROJECT No: 224455.00
	OFFICE: Sydney DRAWN BY: JZ		DRAWING No: E
	SCALE: 1:4000 DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **1994 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	PROJECT No: 224455.00
	OFFICE: Sydney / DRAWN BY: JZ		DRAWING No: F
	SCALE: 1:4000 / DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners *Geotechnics / Environment / Groundwater*	CLIENT: School Infrastructure NSW		TITLE: **2002 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	N	PROJECT No: 224455.00
	OFFICE: Sydney	DRAWN BY: JZ			DRAWING No: G
	SCALE: 1:4000	DATE: 22.09.2023			REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **2016 Historical Aerial Imagery** **Randwick Boys High School and Randwick Girls High School Upgrade** **320-346 Avoca Street Randwick NSW 2031**	PROJECT No: 224455.00
	OFFICE: Sydney DRAWN BY: JZ		DRAWING No: H
	SCALE: 1:4000 DATE: 22.09.2023		REVISION: 0

Locality Plan

LEGEND

Site Boundary

0 100 200 300 400 500 m

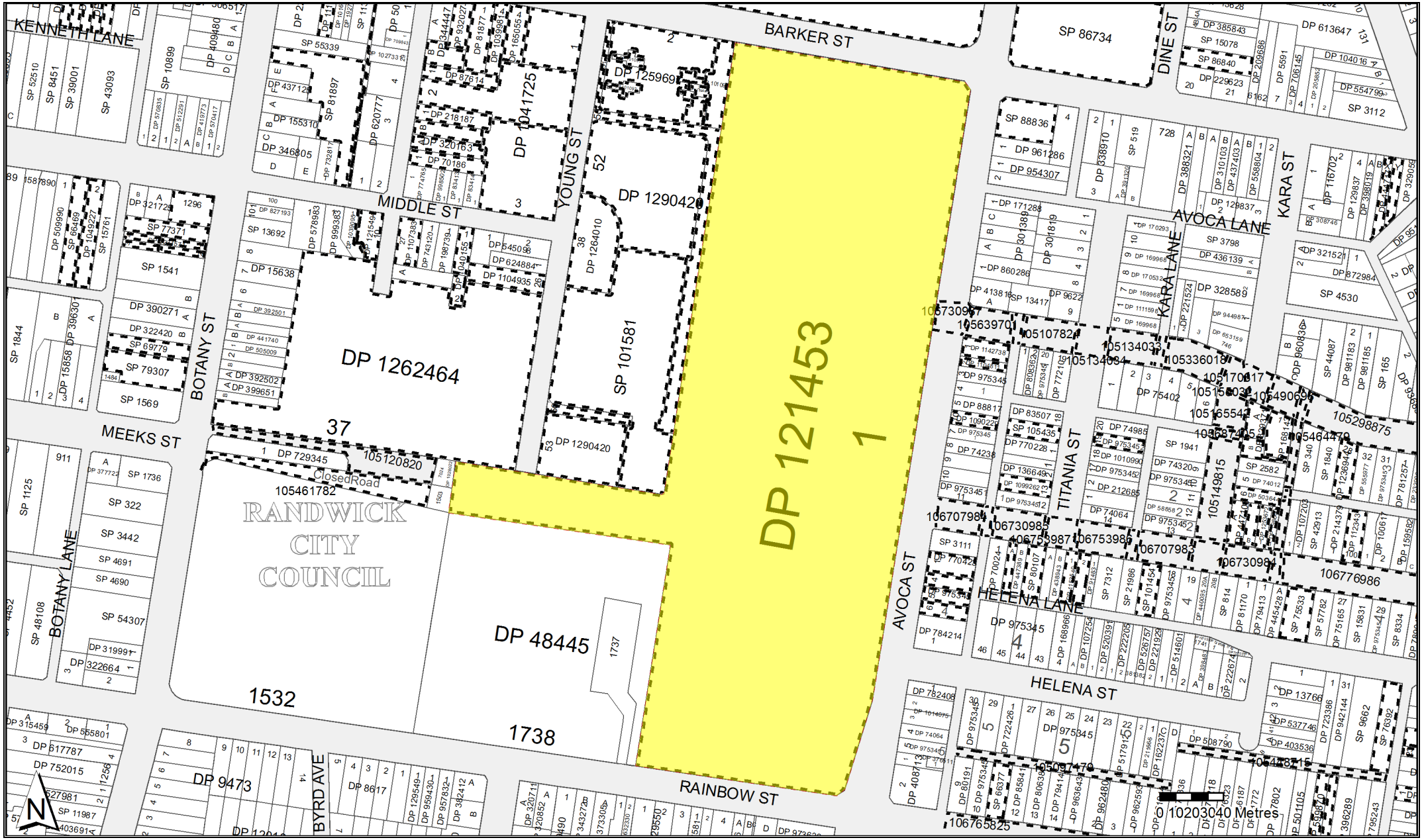
Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	TITLE: **2023 Historical Aerial Imagery** Randwick Boys High School and Randwick Girls High School Upgrade 320-346 Avoca Street Randwick NSW 2031	PROJECT No: 224455.00
	OFFICE: Sydney / DRAWN BY: JZ		DRAWING No: I
	SCALE: 1:4000 / DATE: 22.09.2023		REVISION: 0

Appendix D

Historical Title

Cadastral Records Enquiry Report : Lot 1 DP 121453

Locality : RANDWICK
Parish : ALEXANDRIA
LGA : RANDWICK
County : CUMBERLAND



Plan Form 1

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

***OFFICE USE ONLY**

Council Clerk's Certificate.

I hereby certify that—

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

**(b) the requirements of section 34B of the †Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,*

have been complied with by the applicant in relation to the proposed

(Insert "new road", "subdivision" or "consolidated lot") set out herein.

Subdivision No.

Date

(Signature) *Council Clerk.*

**This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.*
†Delete if inapplicable.

Surveyor's Certificate

I, WILLIAM LAWRENCE REIN

of COLWELL, LARCOMBE & REIN 104 BATHURST ST. SYDNEY

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan

*is accurate and has been made *(1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on †*

23rd September 1980

Signature

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: "A – B"
**Strike out either (1) or (2). †Insert date of survey.*

PLAN

PROPOSED EASEMENT TO DRAIN WATER 1·00 WIDE

~~Mun./Shire~~ ~~City:~~ RANDWICK **Locality:** RANDWICK

Parish: ALEXANDRIA **County:** CUMBERLAND

Reduction Ratio 1: 500 **Lengths are in metres.**

DP 637179 *

Registered: 19.2.1985

C.A.:

Title System: TORRENS

Purpose: EASEMENT

Ref. Map: RANDWICK SH 7 #

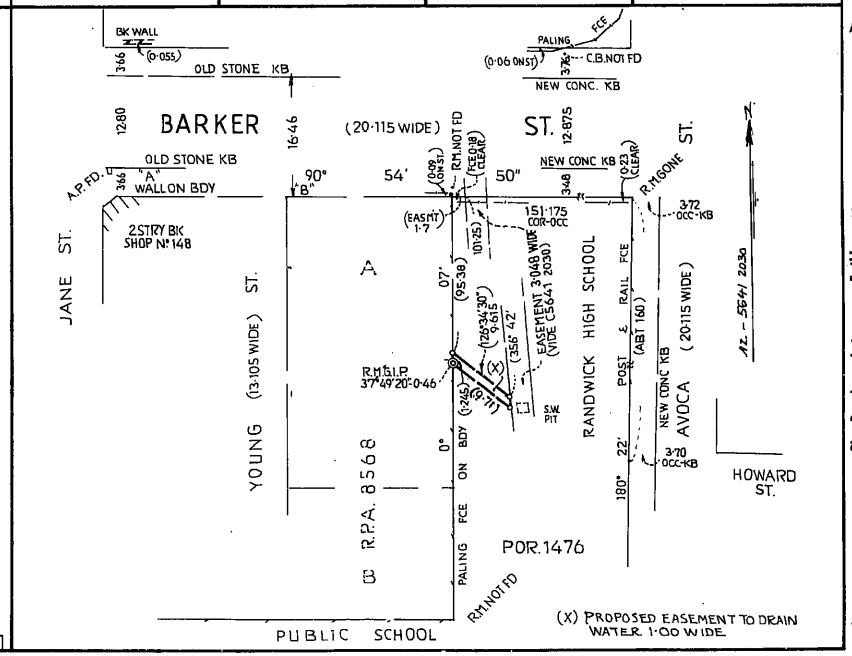
Last Plan: C5641 2030

Signatures, seals and statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

~~PURSUANT TO SEC 88 B OF THE CONVEYANCING ACT 1919 1964~~ 7.1.85
~~IT IS INTENDED TO CREATE :~~

~~(1) EASEMENT TO DRAIN WATER 1.00 WIDE~~ 7.1.85

DD PRINTED



Plan Drawing only to appear in this space.

Plan Drawing only to appear in this space.

0 10 20 30 40 50 60 70 Table of mm 100 110 120 130 140 150 160

M.P.D.

SURVEYOR'S REFERENCE: J152/80365A

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day.

19th February, 1985

10 20 30 40 50 60 70 80 90 100 110 120 130 140 Table of mm

PLAN FORM 2 — Plan Drawing only to appear in this space — *OFFICE USE ONLY

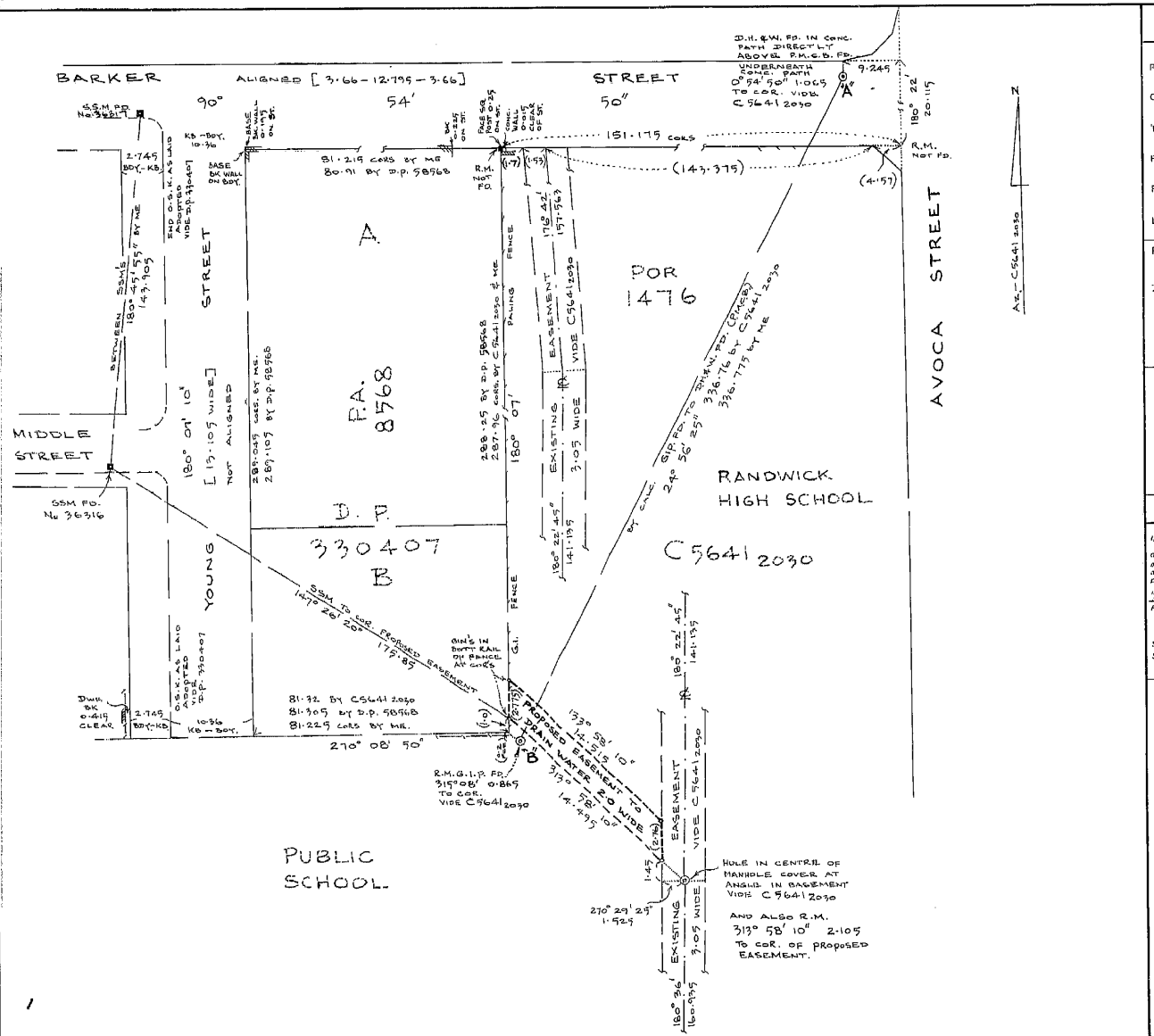
Signatures and seals only.

Director

Secretary

Witness

Witness



DP 642671

Registered: 6·10·1989

C.A.:

Title System: TORRENS

Purpose: EASEMENT

Ref. Map: RANDWICK SH. 7

Last Plan:

PLAN OF PROPOSED EASEMENT TO DRAIN WATER 2·0 WIDE

Reduction Ratio 1: 200
Lengths are in metres.

Mun./~~Shire~~ ~~City~~: RANDWICK

Locality: RANDWICK

Parish: ALEXANDRIA

County: CUMBERLAND

This is sheet 1 of my plan in sheets. (Delete if inapplicable).

I, IAN C. GOWER
of 67 GLENAYR AVE NTH BONDI
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made *(1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on
3RD OCTOBER, 1988
Signature: Ian C. Gower
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: A – B
*Strike out either (1) or (2). Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

PLANS USED IN PREPARATION OF SURVEY
C 5641 2030
D.P. 330407, D.P. 98568
D.P. 637179

SURVEYOR'S REFERENCE 6106/88

Council Clerk's Certificate

I hereby certify that –

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 348 of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed .....
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. .....

Date .....

(Signature) .....
Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

MPD

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day, 9th October, 1989

Appropriated as site for Destitute Children's Asylum vide H.M.R. 55/39 & 40
Approved vide C.S.L. 55-263 of 29th March

Transferred to and vested in the Crown, to be used as a Hospital Home for invalided soldiers and sailors and wounded for such other purposes as the Governor may determine vide Destitute Children's Society (Vesting) Act. 1916 No 82 Mis. 17.1

All areas (with the exception of parts indicated by pencil hatching) requisitioned by Commonwealth for Hospital & Convalescent accommodation from 25th August 1915 until 12 months after the termination of the war vide Commonwealth Gazette No 144 of 30th August 1917 & papers. Misc. 18-6107

(See Papers Pks. 32.5376 for history.)

Pt within RG 375-2 from Sale or Lease generally (Sec 25A) Notified 20.1.33. Revoked 3.2.33

Pt Por 402 Set apart for Public School Purposes Gaz. 26-5-39 (Abt 19 acres)

SKETCH shewing the position of two portions of land comprising ~~60~~Ac. 3r. ~~22~~ per. appropriated as a SITE for ASYLUM for DESTITUTE CHILDREN Parish of Alexandria near Coogee C° of CUMBERLAND.

Within the Metrop. Sewerage Dist Dedicated vide Act 43 Vic. No 32 Prodaimed 8th July 1880

PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE

Scale 8 chains to an Inch.

Pearce

Pearce

Eastern Suburbs Railway

to the Village of Coogee

401

SH&J Pearce 6.2.25 10 ac

Contents

SH&J Pearce 6.2.25 10 ac.

31a. 1r. 18p. by Ded.

A Freehold Asylum

381

S Pearce 10 ac.

382

Jos^h John Watts 10 ac.

402

Destitute Children's Asylum

Geo. Allen Trustee

Contents 28Ac. 3r. 24p.

Cancelled

Land 0%oper resumed for road R18162.1603 Gaz 12.12.30 Rds 29 590 Revoked fr. Dedication Gaz. 26.6.31.

Por. 401 approved for an area of 31a.1r.18p by Ded^n

Authorised Officer

5.12.69.

Parish Boundary Line marked to Sea Coast

636-690

401 & 402 adopted vide Ms 93.750 Dep.

Church Grant

Cancels pt C636-690
Within Sydney Population Area Proclaimed 22nd April 1886
Within R1986 fm Occ^n under M.R or B.L Notd. 9th Aug. 1935
Vested in the Crown by the Destitute Childrens Society (Vesting) Act No 82, 1916
Set apart for Public School purposes Gaz. 26th May 1939.

Papers: LB 40-600

PLAN

OF PORTION 1476

Parish of Alexandria County of Cumberland

Land District of Metropolitan Land Board District of Sydney

RANDWICK MUNICIPALITY

Scale 100 Feet to an Inch

Measured as Site for Post Primary Public School

Por 1476 Resumed for Public School Gaz. 15.8.41
13p. resumed for road R 25648-1603 Gaz. 4-7-1958 page 2013 Rds. 55-1161.

401 C.636-690

PRINCE OF WALES HOSPITAL

Pt. Site for Destitute Childrens Asylum

Dedicated 29th March 1885

3 1a. 3r. 38p.

BARKER STREET — Aligned 12'-42'-12' — R18-1928 Sh.3 — 90° 54' 50" — 480' 11¾" (470-39 fr. Easement) — 90° 56' PO — 265' 5½" p.o. — 54' — 90° — 50" — 12' 42' 12'

BARKER ST Aligd 12'-42'-12'

JANE STREET Aligd 6'-21'-6'

MIDDLE STREET Aligd 8'-24'-8' — Kerb — Laid

YOUNG STREET — Laid — Kerb — Kerb — Laid — (143 Ft Wide Not Aligned) — 246'9" to Kerb Laid

A 8568 B

1476

EASEMENT 10 FT 3½" WIDE 516-94 STORMWATER CHANNEL 54" — Boundary — 9" Angle — 0° 22' 45" 22-5 T.P. — Rad 15' Arc 118-10 Ch. 45°29' 106-21 — T.P. EASEMENT 10 FT WIDE STORMWATER 90° 36' 318'0" CHANNEL 54" — Ch. 64°42' 65-52 Rad 15' Arc 67-19 — 0° 22' 45" 387-75 — 0° 36' 498-85 — 0° Fence 24' — Fence — Boundary — 54" — 40" — 462' ½" — 462' PO — 462' 0" as p.o. — 269° 35' 25" — 269° 36' PO — 446' 11" — 269° 35' 462' 1" (Vide Ms. 8419 Sy.) — Paling 269° 34' — Fence 462' PO adopted. — 269° 35' 258-63 5FT. WIDE EASEMENT — 163-46 — 89°52' 122'3" adopted — 91°36' 142'52" — 90° 08' 50" 266' 9½" irregular — Gal. Iron — Fence — 105'5" — 25' — 22' PO — 25' — 0° — 0° — 0° Fence 24' — Paling — EASEMENT 10 FT WIDE — 1466' 0" (469-45 to Easement) — 180° — 22' — (396-55 Ft. S.W. Channel) — 29-15 Manhole at Angle 0°36' — 135°-36' — 21'3¾" — 15' — 90° — 0° 22' — 304' — 3'6" Conc. Block Pg. — 12' 42' 12'

STREET — Aligned 12'-42'-12' — R 18-1928 Sh. 3

HOWARD Aligned 12'-42'-12' ST

AVOCA STREET — 42' — Kerb — Laid — 11'11½" to Old Kerb Adopted. — 42' best Kerb — Kerb — Laid — 12'2" fm Laid — 11'11½" Kerb Laid — Kerb — Laid — Stone Roundabout — DIG W.P.

C 292099 — 1937

R.P.A. 29747

ROAD VAR. WIDTH

Ms. 8419 Sy.

R. 63983 ~~-4~~ from Sale 63984 fm Lease generally for Public Recreation

Notd 16th June 1933

5a. 2r. 28p.

Ms. 5288 Sy.

Rainbow Street Public School

Resumed 3rd. Sept. 1920

PLAN NOT TO BE AMENDED NO ADDITIONS OR AMENDMENTS TO BE MADE

4a. 3r. 23¾p.

17A 2R 30P. INCL. EASEMENTS

R 25648-1603

Standard Trading Property

RAINBOW STREET — Aligned 12'-42'-12' — R 18-1928 Sh. 3 — 17'-1½" fm Kerb Laid — Kerb — Laid

PARISH — PATON STREET — OF — BOTANY — AVOCA STREET

Azimuth taken from Line C.B.X.
Field Book L.D. 1118 Pages 5 to 10

Calculation Book No? Eclipse
Checked and charted H.G. Drake 2nd Aug 1940
Examined J. H. Debelle 2nd August 1940
Plan approved Chas. Smith Officer-in-Charge
2nd August 1940.

REFERENCE MARKS

AT.	BEARING	FROM	FEET
A	180° 07'	Galvanised Iron Tube	1'6"
B	Gal. Iron Tube at intersection of Alignments		
C	270° 22'	Galvanised Iron Tube	1'6" to peg
E	225° 00'	Galvanised Iron Tube	2'10"
K	315° 08'	Galvanised Iron Tube	2'10"

I, Frederick Charles Carr of Sydney a Surveyor registered under the Surveyors Act, 1929 do hereby solemnly and sincerely declare that the survey represented in this plan has been made by me in accordance with the Survey Practice Regulations 1933 and the special requirements of the Department of Lands was completed on the 12th July 1940, and the reference marks have been placed as shewn hereon.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

Fred^k C. Carr
Surveyor registered under the Surveyors Act, 1929

Subscribed and declared before me at Sydney this nineteenth day of July 1940

L. Wallace Mahon J.P.
Justice of the Peace.

Transmitted to the District Surveyor with my letter of 19 July 1940 No. 63

Cat. No. C5641-2030

NOTIFICATION OF RESUMPTION OF LAND UNDER THE PUBLIC WORKS ACT, 1912.

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that so much of the land hereunder described as is Crown land has been appropriated, and so much thereof as is private property has been resumed, under the Public Works Act, 1912, for the following public purpose, namely, a Public School at MONASH, and is vested in the Minister of Public Instruction on behalf of His Majesty the King for the purposes of the Public Instruction Act of 1880.

Dated the thirtieth day of July, one thousand nine hundred and forty-one.

F. R. JORDAN,
By Deputation from His Excellency the Governor.
By His Excellency's Command,
CLIVE EVATT, Minister of Public Instruction.

DESCRIPTION OF LAND REFERRED TO.

All that piece or parcel of land being part of portion 35 situate in the parish of Byong, county of Cunningham, Goobang Shire and State of New South Wales: Commencing on the southern side of a road 2 chains wide at the north-western corner of portion 35; and bounded thence on the north by the southern side of that road bearing 90 degrees 5 chains; on the east by a line bearing 180 degrees 4 chains; on the south by a line bearing 270 degrees 5 chains to the western boundary of portion 35 aforesaid; and on the west by that boundary bearing 0 degrees 4 chains to the point of commencement,—and containing an area of two acres. (3809)

NOTIFICATION OF RESUMPTION OF LAND UNDER THE PUBLIC WORKS ACT, 1912.

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that so much of the land hereunder described as is Crown Land has been appropriated, and so much thereof as is private property has been resumed, under the Public Works Act, 1912, for the following public purpose, namely, a Public School at RANDWICK, and is vested in the Minister of Public Instruction on behalf of His Majesty the King for the purposes of the Public Instruction Act of 1880.

Dated the thirtieth day of July, one thousand nine hundred and forty-one.

F. R. JORDAN,
By Deputation from His Excellency the Governor.
By His Excellency's Command,
CLIVE EVATT, Minister of Public Instruction.

DESCRIPTION OF LAND REFERRED TO.

All that piece or parcel of land situate in the Municipality of Randwick, parish of Alexandria, county of Cumberland, and State of New South Wales, being portion 1,476, containing an area of 17 acres 2 roods 30 perches more or less: Commencing on the northern side of Rainbow-street at the south-eastern corner of an area of 4 acres 3 roods 23¾ perches shown on plan Ms. 5,288 Sy. at the Department of Lands; and bounded thence on the west and south by the eastern and northern boundaries of that area of 4 acres 3 roods 23¾ perches, being lines bearing 0 degrees 24 minutes 40 seconds 462 feet 1½ inches, and 269 degrees 35 minutes 462 feet 1 inch; thence again on the west by a line bearing 0 degrees 25 minutes 105 feet 5 inches; thence on the north by lines bearing 89 degrees 52 minutes 122 feet 3 inches, 91 degrees 36 minutes 42 feet 5¾ inches, and 90 degrees 8 minutes 50 seconds 266 feet 9½ inches; thence again on the west by a line bearing 0 degrees 7 minutes 944 feet 9 inches to Barker-street; thence again on the north by that street bearing 90 degrees 54 minutes 50 seconds 480 feet 11¾ inches; thence on the north-east by a line bearing 135 degrees 38 minutes 21 feet 3¾ inches to Avoca-street; thence on the east by that street bearing 180 degrees 22 minutes 1,466 feet; thence on the south-east by a line bearing 224 degrees 59 minutes 21 feet 4¼ inches to Rainbow-street aforesaid; and thence again on the south by that street bearing 269 degrees 35 minutes 25 seconds 446 feet 11 inches to the point of commencement,—shown on plan C. 5,641-2,030 at the Department of Lands. (3790)

NOTIFICATION OF USE OF LAND FOR PUBLIC SCHOOL PURPOSES UNDER THE PROVISIONS OF THE DESTITUTE CHILDREN'S SOCIETY (VESTING) ACT, 1916.

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that His Excellency, in pursuance of the powers conferred upon him by section 2 of the Destitute Children's Society (Vesting) Act, 1916, has determined that the land described hereunder shall be used for Public School purposes, in accordance with the provisions of the Public Instruction Act of 1880.

Dated the thirtieth day of July, one thousand nine hundred and forty-one.

F. R. JORDAN,
By Deputation from His Excellency the Governor.
By His Excellency's Command,
CLIVE EVATT, Minister of Public Instruction.

DESCRIPTION OF LAND REFERRED TO.

All that piece or parcel of land situate in the Municipality of Randwick, parish of Alexandria, county of Cumberland, and State of New South Wales, being portion 1,476, containing an area of 17 acres 2 roods 30 perches more or less:—Commencing on the northern side of Rainbow-street at the south-eastern corner of an area of 4 acres 3 roods 23¾ perches shown on plan Ms. 5,288 Sy. at the Department of Lands; and bounded thence on the west and south by the eastern and northern boundaries of that area of 4 acres 3 roods 23¾ perches being lines bearing 0 degrees 24 minutes 40 seconds 462 feet 1½ inches and 269 degrees 35 minutes 462 feet 1 inch, thence again on the west by a line bearing 0 degrees 25 minutes 105 feet 5 inches; thence on the north by lines bearing 89 degrees 52 minutes 122 feet 3 inches, 91 degrees 36 minutes 42 feet 5¾ inches and 90 degrees 8 minutes 50 seconds 266 feet 9½ inches; thence again on the west by a line bearing 0 degrees 7 minutes 944 feet 9 inches to Barker-street; thence again on the north by that street bearing 90 degrees 54 minutes 50 seconds 480 feet 11¾ inches; thence on the north-east by a line bearing 135 degrees 38 minutes 21 feet 3¾ inches to Avoca-street; thence on the east by that street bearing 180 degrees 22 minutes 1,466 feet; thence on the south-east by a line bearing 224 degrees 59 minutes 21 feet 4¼ inches to Rainbow-street aforesaid; and thence again on the south by that street bearing 269 degrees 35 minutes 25 seconds 446 feet 11 inches to the point of commencement,—shown on plan C 5,641-2,030 at the Department of Lands. (3789)

WATER ACT, 1912-1940.

PUBLIC WORKS ACT, 1912, AS AMENDED BY SUBSEQUENT ACTS.

ACQUISITION OF LAND FOR THE CONSTRUCTION OF THE WORKS OF THE DENIBOOTA PROVISIONAL DOMESTIC AND STOCK WATER SUPPLY AND IRRIGATION DISTRICT.

IT is hereby notified that so much of the land hereunder described as is Crown land has been appropriated, and so much thereof as is private property has been resumed for a certain authorised work, viz., the works in connection with the Deniboota Provisional Domestic and Stock Water Supply and Irrigation District, constituted under Part VI of the Water Act, 1912-1940, and is vested in the Water Conservation and Irrigation Commission as Constructing Authority for the purposes of the Public Works Act, 1912, as amended by subsequent Acts.

Dated this thirtieth day of July, 1941.

F. R. JORDAN,
By Deputation from His Excellency the Governor.
By His Excellency's Command,
W. F. DUNN, Minister for Agriculture and Forests.

DESCRIPTION OF LAND REFERRED TO.

All that piece or parcel of land situate in the parish of South Deniliquin, county of Townsend, and State of New South Wales, being part of portion 16, and being part of the land comprised in Conditional Purchase Lease 18-2, Deniliquin: Commencing on the eastern boundary of portion 16 at a point bearing 180 degrees and distant 618.3 links from its easternmost north-eastern corner; and bounded thence on the east by part of said eastern boundary being the western side of a road 300 links wide bearing 180 degrees 400 links thence on the south by a line bearing 270 degrees 918.7 links;

RP36

RPA S7764

OFFICE USE ONLY

$ ~~50~~ OTMS

NEW SOUTH WALES

RESUMPTION APPLICATION

SECTION 31A (2), REAL PROPERTY ACT, 1900

For use where the land and/or easement is not under the provisions of the Real Property Act, 1900.

OR27326 23-11-82

Crown Instrument not liable to payment of Registration or other fees.
H. K. ROBERTS
Crown Solicitor
per

(a) THE MINISTER FOR EDUCATION

herein referred to as the APPLICANT

in consequence of the resumption notified in Government Gazette dated 15th August ,1941, folio 2920 , a true copy of which is set out overleaf, hereby applies to the Registrar General -

(b) for the issue of a certificate of title in favour of the applicant for the land described in the following schedule

Lot No.	Plan No.
	Portion 1476 Parish of Alexandria County of Cumberland excluding road resumed and dedicated by Government Gazette 4-7-1958 Fol.2013 Subject to easement created by Book 2702 No.127

RPA S7764 PT.
Reg. Gen.
28-11-1984

(b) ~~for the recording of the easement so resumed on the folio(s) of the Register~~ described in the following schedule

Reference to title		Whole or Part	Description of land if part only
Volume	Folio		

Dated at Sydney this 1st day of November 1983.

Signed in my presence by an authorised officer of the applicant.

R Skinner
Signature of witness

CHRISTINE SKINNER
Name of witness (BLOCK LETTERS)

Certified correct for the purposes of the Real Property Act, 1900.

H. K. ROBERTS
State Crown Solicitor
per

Signature

Cert. of T., issued Vol. 15165 Fol. 94
Dated 28-11-1983.

RULE UP ALL BLANKS

RP36

DEPARTMENTAL USE ONLY

RESUMPTION APPLICATION 57764

TO BE COMPLETED BY LODGING PARTY

Lodged by: State Crown Solicitor's Goodsell Building 8-12 Chifley Square Sydney 238 0555

Address: Goodsell Bld.

D.X. No.: Phone No.:

Delivery Box Number 813E

Documents lodged herewith

1. _____
2. _____
3. _____
4. _____

Received Documents _____ Receiving Clerk

COPY OF GAZETTE NOTIFICATION

[Published in the Government Gazette No. 101 of 15th August, 1941.]

NOTIFICATION OF RESUMPTION OF LAND UNDER THE PUBLIC WORKS ACT, 1912.

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that so much of the land described as is Crown Land has been appropriated, and so much thereof as is private property has been resumed, under the Public Works Act, 1912, for the following public purpose, namely, a Public School at RANDWICK, and is vested in the Minister of Public Instruction on behalf of His Majesty the King for the purposes of the Public Instruction Act of 1880.

Dated the thirtieth day of July, one thousand nine hundred and forty-one.

F. R. JORDAN,

By Deputation from His Excellency the Governor.

By His Excellency's Command,

CLIVE EVATT, Minister of Public Instruction.

DESCRIPTION OF LAND REFERRED TO.

All that piece or parcel of land situate in the Municipality of Randwick, Parish of Alexandria, County of Cumberland, and State of New South Wales, being portions [illegible] containing an area of 22 perches, or thereabouts, more or less, commencing on the northern side of Blenheim-street at the south-eastern corner of an area of 4 acres 3 roods 24½ perches shown on plan No. [illegible] at the Department of Lands, and bounded thence on the west and south by the eastern and northern boundaries of that area of 4 acres 3 roods 24½ perches, being a line bearing 0 degrees 24 minutes 40 seconds 462 feet 3½ inches, and 266 degrees 35 minutes 462 feet 1 inch; thence again on the west by a line bearing 0 degrees 25 minutes 105 feet 5 inches; thence on the north by lines bearing 89 degrees 52 minutes 122 feet 3 inches, 91 degrees 56 minutes 42 feet 5½ inches, and 90 degrees 8 minutes 50 seconds 256 feet 8½ inches; thence again on the west by a line bearing 0 degrees 7 minutes 944 feet 9 inches to Barker-street; thence again on the north by that street bearing 90 degrees 24 minutes 21 feet 3½ inches to 460 feet 11½ inches; thence on the north-east by a line bearing 135 degrees 24 minutes 21 feet 3½ inches to Avoca street; thence on the east by that street bearing 180 degrees 22 minutes 1,406 feet; thence on the south-east by a line bearing 224 degrees 59 minutes 21 feet 4½ inches to Rainbow-street aforesaid; and thence again on the south by that street bearing 269 degrees 35 minutes 25 seconds 448 feet 11 inches to the point of commencement,—shown on plan D. 5,641 2,030 at the Department of Lands.

(3790)

[illegible], Thomas Henry Tennant, Government Printer—1941.

83/1607 C9/Hcm
Lillian Ingels + Son P/L
Contract Ref 5580/06752 LW/KT

15165094

[redacted]ICATE OF TITLE

NEW SOUTH WALES [redacted] PROPERTY ACT, 1900

Vol. 15165 Fol. 94

EDITION ISSUED 28 11 1983

First Title This Folio

Prior Title P.A. 57764

15165 Fol. 94

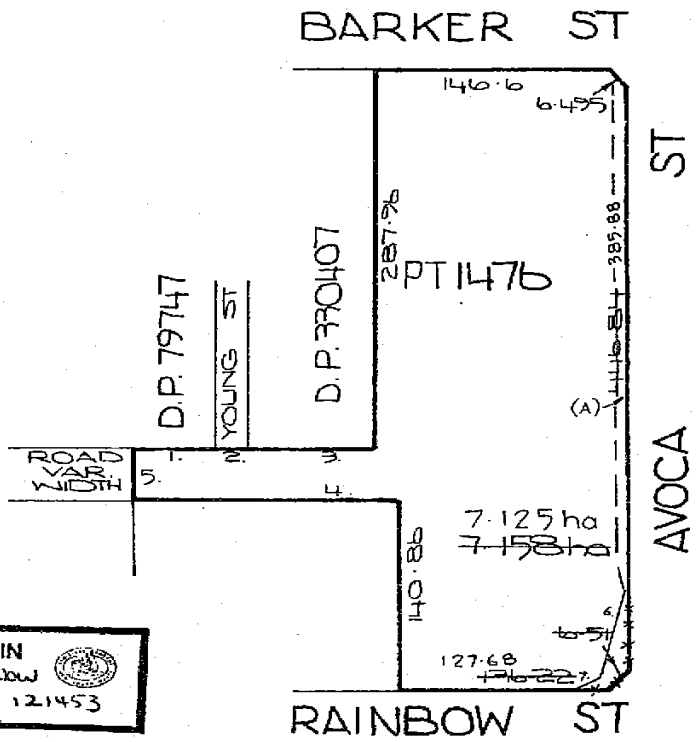
I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

Registrar General.

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES

CANCELLED ON ISSUE OF NEW FOLIO 1/121453



REFERENCE

1.	97·26
2.	12·945
3.	81·92
4.	140·84
5.	92·135
6.	63·39
7.	4·65

RPA 57764 pps Reg. Gen. 28-11-1984

THE LAND WITHIN DESCRIBED IS NOW LOT 1 IN D.P. 121453

R.A. 57764

(A) EASEMENT FOR PIPELINE VAR. WIDTH CREATED BY BK 2702 No. 127.

LAND REFERRED TO

The part of Portion 1476 shown in the plan hereon ~~Portion 1476~~ at Randwick in the Municipality of Randwick Parish of Alexandria County of Cumberland.

FIRST SCHEDULE

RPA 57764 pps Reg. Gen. 28-11-1984

THE MINISTER FOR EDUCATION.

SECOND SCHEDULE

~~NIL.~~

1. Book 2702 No.127 Easement for pipeline affecting the part of the land above described shown so burdened in the plan hereon.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON (Page 1) Vol. 15165 Fol. 94

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

RG 2/64

Vol. 15165 Fol. 94

L.O. 1066 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR | Registrar General

FOLIO CANCELLED. NEW FOLIO IS 1/121453
NO FURTHER DEALINGS TO BE REGISTERED.

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
V647731 Transfer - Easement to drain water affecting the part of the land within described shown as "proposed easement to drain water 1.00 wide" in DP637179. Registered 11-6-1985		

NOTATIONS AND UNREGISTERED DEALINGS

PAS77164 AMDT. D.P. 637179 Reg'd 11-6-1985 V647731 TRG.

LAND REGISTRY SERVICES Historical Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

12/9/2023 9:01PM

FOLIO: 1/121453

First Title(s): VOL 15165 FOL 94
Prior Title(s): VOL 15165 FOL 94

Recorded	Number	Type of Instrument	C.T. Issue
13/7/1989	DP121453	DEPOSITED PLAN	FOLIO CREATED EDITION 1
9/10/1989	DP642671	DEPOSITED PLAN	
7/2/1990	Y624828	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	
7/2/1990	Y624829	TRANSFER GRANTING EASEMENT	EDITION 2
14/2/1991		AMENDMENT: VOL FOL INDEX	
28/8/1997		AMENDMENT: LOCAL GOVT AREA	
5/5/2023	AT50909	CANCELLATION OR EXTINGUISHMENT OF AN EASEMENT	EDITION 3

*** END OF SEARCH ***

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/121453

SEARCH DATE	TIME	EDITION NO	DATE
12/9/2023	9:01 PM	3	5/5/2023

LAND

LOT 1 IN DEPOSITED PLAN 121453
AT RANDWICK
LOCAL GOVERNMENT AREA RANDWICK
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP121453

FIRST SCHEDULE

MINISTER FOR EDUCATION

SECOND SCHEDULE (3 NOTIFICATIONS)

1 BK 2702 NO 127 EASEMENT FOR PIPELINE AFFECTING PART OF THE LAND WITHIN DESCRIBED SHOWN SO BURDENED IN DP121453
2 V647731 EASEMENT TO DRAIN WATER AFFECTING THE PART OF THE LAND WITHIN DESCRIBED SHOWN BURDENED IN DP637179
AT50909 EASEMENT RELEASED IN SO FAR AS IT BENEFITS LOT 32 & 34/1254050, 34 & 35/1262464, 37/1264010
3 Y624829 EASEMENT TO DRAIN WATER 2 WIDE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN DP642671

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

320-346 AVOCA STREET RANDWICK NSW 2031. PRINTED ON 12/9/2023

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
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Summary of Owners Report

Address: - 320 to 346 Avoca Street, Randwick

Description: - Lot 1 D.P. 121453

The early title to this land is Crown Title

I am aware of the following: -

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
22.04.1886	Within Sydney Population Area	Gazette
	Requisitioned by Commonwealth for Hospital and Convalescent accommodation from 25.08.1915 until 12months after the termination of the War	
1917	Vested in the Crown by the Destitute Children's Society (Vesting) Act, 1916 To be used as a Hospital for invalided and wounded soldiers and sailors and for such other purposes as the Governor may determine	Legislation
20.01.1933	Part within Crown Reserve 63752 from Sale or Lease Generally	Revoked 03.02.1933
09.08.1935	Within Reserve 1986 from occupation under Miner's Residence or Business Licence	Gazette
26.05.1939	Set aside for Public School purposes	Gazette
15.08.1941 (1941 to Date)	# Minister for Public Instruction (for the purposes of the Public Instruction Act of 1880) Now # Minister for Education	Gazette Now 1/121453

# Denotes Current Registered Proprietor

Easements: -

- Crown Plan 5641-2030 (1940) shows the existence of various easements affecting
- 15.04.1964 (Book 2702 No. 127) Easement for pipeline
- 11.06.1985 (V 647731 & D.P. 637179) Easement to Drain Water
- 07.02.1990 (Y 624829 & D.P. 642671) Easement to Drain Water

Leases: -NIL

Yours Sincerely
Mark Groll
12 September 2023

Appendix E

Data Quality Objectives

1. Data quality objectives

The DSIC 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 part of the site (Areas A and B) with respect to the proposed redevelopment works. The report is being undertaken as the school is planned for additional development. A preliminary conceptual site model (CSM) has been prepared (Section 9) for the proposed development. The project team consisted 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 8). 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 G.
3: Identify the information inputs	Inputs will be the analytical results for the CoPC (identified in the CSM, Section 8) from NATA accredited laboratories and methods, where possible. The SAC for each of the CoPC are detailed in Appendix F. A photoionisation detector (PID) will be used on-site to screen soils for VOC. PID readings will be used to inform sample selection for laboratory analysis.
4: Define the study boundaries	The lateral boundaries of the investigation area are shown on Drawing 1, Appendix A. The vertical boundaries were to the maximum depth of boreholes drilled, generally between 1 and 9.8 m. Constraints to the assessment are identified and discussed in the conclusions of the report, Section 14.
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the SAC (Appendix G, based on NEPC (2013)). Where guideline values are absent, other sources of guideline values accepted by NEPC (2013) shall be adopted where possible. Where a sample result exceeds the adopted criterion, a further 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 required, summary statistics (including mean, standard deviation and 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL)) to 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 and rinsates, results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment is included in Appendix K.

Step	Summary
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 as such, 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 is assumed that the baseline condition is true.
7: Optimise the design for obtaining data	As the purpose of the investigation is to assess the contamination status of parts of the site, the sampling program is reliant on professional judgement to identify and sample the potentially affected areas. Further details regarding the proposed sampling plan are presented in Section 10.2.

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 F

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).

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 the solid flight auger / hand tools;
- Collect near surface samples using hand tools;
- Place samples into laboratory-prepared glass jars with Teflon lined lids, capping immediately and minimising headspace within the sample jar;
- Collect replicate samples in zip-lock bags for photoionisation detector (PID) screening;
- Collect ~500 ml samples in zip-lock bags for fibrous asbestos and asbestos fines (FA and AF) analysis where possible;
- 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.

2.1 Field testing

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

PID Field Test

- Calibrate the PID with isobutylene gas at 100 ppm and with fresh air prior to commencement of each successive day's field work;
- Allow the headspace in the PID zip-lock bag samples to equilibrate; and
- Screen using the PID.

3. 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 G

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).
- CRC CARE *Health screening levels for petroleum hydrocarbons in soil and groundwater* (CRC CARE, 2011).

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 proposed development of the site (Area B) comprises demolition of Building A which is located within the RBHS campus and construction of a two-storey administration building and lecture learning building, refurbishment of other buildings and development of a new green space area. No basement levels are proposed for the new proposed development plan.

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

- Land use:
    - Corresponding to land use category 'C', public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate; and
- Soil type: sand.

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-C
Metals	
Arsenic	300

Contaminant	HIL-C
Cadmium	90
Chromium (VI)	300
Copper	17 000
Lead	600
Mercury (inorganic)	80
Nickel	1200
Zinc	30 000
PAH	
B(a)P TEQ	3
Total PAH	300
Phenols	
Phenol	40 000
Pentachlorophenol	120
Cresols	4000
OCP	
DDT+DDE+DDD	400
Aldrin and dieldrin	10
Chlordane	70
Endosulfan	340
Endrin	20
Heptachlor	10
HCB	10
Methoxychlor	400
Mirex	20
OPP	
Chlorpyrifos	250
PCB	
PCB	1

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-C	HSL-C
SAND	**0 m to <1 m**	**1 m to <2 m**
Benzene	NL	NL
Toluene	NL	NL
Ethylbenzene	NL	NL
Xylenes	NL	NL
Naphthalene	NL	NL
TRH F1	NL	NL
TRH F2	NL	NL

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
The soil saturation concentration (Csat) 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 Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would results 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-C	DC HSL-IMW
Benzene	120	1100
Toluene	18 000	120 000
Ethylbenzene	5300	85 000
Xylenes	15 000	130 000
Naphthalene	1900	29 000
TRH F1	5100	82 000
TRH F2	3800	62 000
TRH F3	5300	85 000
TRH F4	7400	120 000

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene

2.2 Asbestos in soil

A detailed asbestos assessment was undertaken during the recent DSI (Douglas 2024). 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 4.

Table 4: Health screening levels for asbestos

Form of asbestos	HSL-C
ACM	0.02%
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.

2.3 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 6, with inputs into their derivation shown in Table 5.

Table 5: Inputs to the derivation of the ecological investigation levels

Variable	Input	Rationale
Age of contaminants	"Aged" (>2 years)	
pH	8	Average of measurement pH values
CEC	5.68 $cmol_c/kg$	Average of measurement CEC value
Clay content	10%	Conservative value used as initial screen
Traffic volumes	high	Site is located in an urban residential / commercial area
State / Territory	NSW	

Table 6: Ecological investigation levels (mg/kg)

Contaminant	EIL-A-B-C
Metals	
Arsenic	100
Copper	130
Nickel	50
Chromium III	410
Lead	1100

Contaminant	EIL-A-B-C
Zinc	380
PAH	
Naphthalene	170
OCP	
DDT	180

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

2.4 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 7.

Table 7: 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

Notes: ESL are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability
TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} including naphthalene
ESL-A-B-C urban residential and public open space

2.5 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; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits are in Table 8.

Table 8: 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

Notes: TRH F1 is TRH C_6-C_{10} including BTEX
TRH F2 is TRH >C_{10}-C_{16} including naphthalene
ML-A-B-C residential, parkland and public open space

3. References

CRC CARE. (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater.* Parts 1 to 3, Technical Report No. 10: Cooperative Research Centre for Contamination Assessment and Remediation 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 H

Summary Table Results

Table H1: Summary of Laboratory Results – Priority metals, Priority PAH, PAH, Priority TRH, TRH, BTEX, Priority phenols, Priority OCP, OCP, Priority OPP, OPP, PCB, Asbestos (FA/AF), Asbestos, Other, pH, EC and CEC, Additional PhysChem

				Priority metals								Priority PAH				Priority TRH						BTEX				Priority phenol
				Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P 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	FILL / NATURAL	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
DSI - Douglas 2024																										
BH101	0.5 - 0.6 m	FILL	18/07/24	4	<0.4	2	7	32	<0.1	<1	12	<1	0.4	<0.5	2.9	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH102	0.2 - 0.3 m	FILL	17/07/24	<4	<0.4	1	3	7	<0.1	<1	14	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH103	0.5 - 0.7 m	FILL	17/07/24	<4	<0.4	3	5	13	<0.1	2	18	<1	0.09	<0.5	0.09	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	- -
BH104	0.5 - 0.6 m	FILL	18/07/24	<4	<0.4	8	9	15	<0.1	4	24	<1	0.06	<0.5	0.06	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH105	0.5 - 0.6 m	FILL	18/07/24	<4	<0.4	5	39	27	<0.1	2	32	<1	0.3	<0.5	2.7	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	- -
BD1/20240719	0.5 - 0.6 m	FILL	18/07/2024	5	<0.4	2	8	31	<0.1	1	20	<1	0.3	<0.5	2.4	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	- -
BH106	0.5 - 0.6 m	FILL	19/07/24	<4	<0.4	<1	1	<1	<0.1	<1	2	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH107	0.1 - 0.2 m	FILL	18/07/24	<4	<0.4	<1	2	1	<0.1	<1	3	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	- -
BH108	0.5 - 0.6 m	FILL	19/07/24	<4	<0.4	3	10	21	0.3	1	33	<1	0.1	<0.5	0.76	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH109	0.1 - 0.2 m	FILL	19/07/24	<4	<0.4	2	19	73	0.4	1	88	<1	**2.4**	**3.7**	18	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
BH109	0.5 - 0.6 m	FILL	19/07/2024	<4	<0.4	<1	1	6	<0.1	<1	5	<1	0.06	<0.5	0.2	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	- -
BH110	0.5 - 0.6 m	FILL	19/07/24	<4	<0.4	<1	3	6	<0.1	<1	6	<1	0.08	<0.5	0.08	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17,000 130	600 1100	80 -	1,200 50	30,000 380	NL 170	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2,800	NL 50	NL 85	NL 70	NL 105	120 -
DSIC - Douglas 2023																										
BH01	0 - 0.1 m	FILL	29/09/23	<4	<0.4	5	7	16	<0.1	2	32	<0.1	0.2	<0.5	1.5	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BD01/20230929	0 - 0.1 m	FILL	29/09/23	<4	<1	8	7	19	<0.1	2	42	<0.5	<0.5	<0.5	<0.5	<10	<50	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	-
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	- -
BH02	0 - 0.1 m	FILL	29/09/23	<4	<0.4	28	19	40	<0.1	4	51	<0.1	**2.5**	**3.6**	22	<25	<50	<25	<50	150	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BH02	0.9 - 1 m	FILL	29/09/23	<4	<0.4	2	10	17	<0.1	<1	24	<0.1	**1.8**	2.5	13	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	- -
BH03	0.4 - 0.5 m	FILL	26/09/2023	<4	<0.4	7	33	42	<0.1	6	120	<0.1	1.1	1.5	10	<25	<50	<25	<50	140	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BD01/20230926	0.4 - 0.5 m	FILL	26/09/2023	<4	<0.4	8	30	34	0.1	5	100	<0.1	0.85	1.2	6.8	<25	<50	<25	<50	150	<100	<0.2	<0.5	<1	<1	
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BH03	0.9 - 1 m	FILL	26/09/2023	<4	<0.4	3	13	38	<0.1	2	64	<0.1	**2.4**	**3.2**	15	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	- -
BH04	0 - 0.1 m	FILL	26/09/2023	<4	<0.4	55	38	37	<0.1	7	140	<0.1	0.52	0.7	4.7	<25	<50	<25	<50	190	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BH05	0 - 0.1 m	FILL	29/09/23	<4	<0.4	7	22	55	0.2	4	97	<0.1	**3.6**	**5.2**	30	<25	<50	<25	<50	**320**	160	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BH06	0 - 0.1 m	FILL	29/09/23	<4	<0.4	44	14	35	<0.1	3	42	<0.1	**1.6**	2.2	12	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -
BH06	0.9 - 1 m	FILL	29/09/23	<4	<0.4	5	19	53	<0.1	4	60	<0.1	**4**	**5.6**	34	<25	<50	<25	<50	**310**	150	<0.2	<0.5	<1	<1	-
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	- -
BH07	0.4 - 0.5 m	FILL	28/09/2023	<4	<0.4	5	24	59	0.1	3	55	<0.1	**9.8**	**14**	76	<25	<50	<25	<50	**590**	250	<0.2	<0.5	<1	<1	<5
				300 100	90 -	300 410	17000 130	600 1100	80 -	1200 50	30000 380	NL 370	- 0.7	3 -	300 -	- -	- 120	NL 180	NL -	- 300	- 2800	NL 50	NL 85	NL 70	NL 105	120 -

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 Recreational C including public open space

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

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

Table H1: Summary of Laboratory Results – Priority metals, Priority PAH, PAH, Priority TRH, TRH, BTEX, Priority phenols, Priority OCP, OCP, Priority OPP, OPP, PCB, Asbestos (FA/AF), Asbestos, Other, pH, EC and CEC, Additional PhysChem

				Priority OCP										Priority OPP	PCB	Asbestos (FA/AF)				Asbestos, Other					Additional PhysChem					
				DDT+DDE+DDD [c]	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyriphos	Total PCB	Asb_Sample_mass	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis (NEPC)	Total Asbestos#1	Asbestos Summary	Moisture	Exchangeable Ca	Exchangeable K	Exchangeable Mg	Exchangeable Na
			PQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.001				0.1	0.1	1000	0.1	0.1	0.1	0.1
Sample ID	Depth	FILL / NATURAL	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	g	g	%(w/w)	-	-	-	g/kg		mg/kg	cmol/kg	cmol/kg	cmol/kg	cmol/kg
DSI - Douglas 2024																														
BH101	0.5 - 0.6 m	FILL	18/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	883.58	-	-	<0.001	NAD	NAD	NAD	<0.1	-	46,000	-	-	-	-
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH102	0.2 - 0.3 m	FILL	17/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	390.33	-	-	<0.001	NAD	NAD	NAD	<0.1	-	25,000	-	-	-	-
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH103	0.5 - 0.7 m	FILL	17/07/24	-	-	-	-	-	-	-	-	-	-	-	652.03	-	-	<0.001	NAD	NAD	NAD	<0.1	-	14,000	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH104	0.5 - 0.6 m	FILL	18/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	687.65	-	-	<0.001	NAD	NAD	NAD	<0.1	-	39,000	14	0.2	0.1	<0.1
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH105	0.5 - 0.6 m	FILL	18/07/24	-	-	-	-	-	-	-	-	-	-	-	788	-	-	<0.001	NAD	NAD	NAD	<0.1	-	48,000	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BD1/20240719	0.5 - 0.6 m	FILL	18/07/2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42,000	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -	- -	- -	- -
BH106	0.5 - 0.6 m	FILL	19/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	945.5	-	-	<0.001	NAD	NAD	NAD	<0.1	-	25,000	-	-	-	-
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH107	0.1 - 0.2 m	FILL	18/07/24	-	-	-	-	-	-	-	-	-	-	-	967.36	-	-	<0.001	NAD	NAD	NAD	<0.1	-	61,000	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -						-	- -	- -	- -	- -
BH108	0.5 - 0.6 m	FILL	19/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	861.03	-	-	<0.001	NAD	NAD	NAD	<0.1	-	90,000	-	-	-	-
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
BH109	0.1 - 0.2 m	FILL	19/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	848.28	-	0.0002	<0.001	NAD	**Detected**	NAD	<0.1	**Detected**	89,000	-	-	-	-
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						-	- -	- -	- -	- -
BH109	0.5 - 0.6 m	FILL	19/07/2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40,000	-	-	-	-
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -						- -	- -	- -	- -	- -
BH110	0.5 - 0.6 m	FILL	19/07/24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	801.83	-	-	<0.001	NAD	NAD	NAD	<0.1	-	44,000	0.3	<0.1	<0.1	<0.1
				400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	0.001 -						- -	- -	- -	- -	- -
DSIC - Douglas 2023																														
BH01	0 - 0.1 m	FILL	29/09/23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BD01/20230929	0 - 0.1 m	FILL	29/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -										
BH02	0 - 0.1 m	FILL	29/09/23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BH02	0.9 - 1 m	FILL	29/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND					
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -										
BH03	0.4 - 0.5 m	FILL	26/09/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BD01/20230926	0.4 - 0.5 m	FILL	26/09/2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	250 -	1 -	- -	- -	- -										
BH03	0.9 - 1 m	FILL	26/09/2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND					
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -										
BH04	0 - 0.1 m	FILL	26/09/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BH05	0 - 0.1 m	FILL	29/09/23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BH06	0 - 0.1 m	FILL	29/09/23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										
BH06	0.9 - 1 m	FILL	29/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND					
				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -										
BH07	0.4 - 0.5 m	FILL	28/09/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND					
				400 640	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	250 -	1 -	- -	- -	- -	- -										

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 Recreational C including public open space

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

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

Douglas PARTNERS

Table H2 : Summary of Laboratory Results – Metals, TRH, BTEX, PAH, Phenols, OCP, OPP, PCB, Asbestos

			Metals						TRH		BTEX				PAH				Phenols	OCP			OPP	PCB	Asbestos							
			Total Arsenic	Cadmium	Total Chromium	Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAH	TCLP Total PAH	Total Phenolics	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis (NEPC)	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos#1	Asbestos Comment	Asbestos Summary
		PQL	4	0.4	1	1	0.1	1	25	50	0.2	0.5	1	1	0.05	0.0001	0.05		5	0.1	0.1	0.1	0.1	0.1						0.001	0.1		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/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	g	g	%(w/w)	g/kg	-	
DSI - Douglas 2024																																	
BH101	0.5 - 0.6 m	18/07/24	4	<0.4	2	32	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	0.4	-	2.9	2.9	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH102	0.2 - 0.3 m	17/07/24	<4	<0.4	1	7	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH103	0.5 - 0.7 m	17/07/24	<4	<0.4	3	13	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	0.09	-	0.09	0.09	-	-	-	-	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH104	0.5 - 0.6 m	18/07/24	<4	<0.4	8	15	<0.1	4	<25	<50	<0.2	<0.5	<1	<1	0.06	-	0.06	0.06	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH105	0.5 - 0.6 m	18/07/24	<4	<0.4	5	27	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	0.3	-	2.7	2.7	-	-	-	-	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH106	0.5 - 0.6 m	19/07/24	<4	<0.4	<1	<1	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH107	0.1 - 0.2 m	18/07/24	<4	<0.4	<1	1	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH108	0.5 - 0.6 m	19/07/24	<4	<0.4	3	21	0.3	1	<25	<50	<0.2	<0.5	<1	<1	0.1	-	0.76	0.76	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BH109	0.1 - 0.2 m	19/07/24	<4	<0.4	2	73	0.4	1	<25	<50	<0.2	<0.5	<1	<1	**2.4**	<0.0001	18	18	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	**Detected**	NAD	–	**0.0002**	<0.001	<0.1	**YES**	**Detected**
BH109	0.5 - 0.6 m		<4	<0.4	<1	6	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	0.06	-	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	0.5 - 0.6 m	19/07/24	<4	<0.4	<1	6	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	0.08	-	0.08	0.08	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	–	–	<0.001	<0.1	Nil	-
BD1/20240719	0 m	19/07/24	5	<0.4	2	31	<0.1	1	<25	<50	<0.2	<0.5	<1	<1	0.3	-	2.4	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSIC - Douglas 2023																																	
BH01	0 - 0.1 m	29/09/23	<4	<0.4	5	16	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	0.2	-	1.5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BD01/20230929	-	29/09/23	<4	<0.4	8	34	<0.1	5	<25	140	<0.2	<0.5	<1	<1	**0.85**	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	0 - 0.1 m	29/09/23	<4	<0.4	28	40	<0.1	4	<25	120	<0.2	<0.5	<1	<1	**2.5**	<0.0001	22	<PQL	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BH02	0.9 - 1 m	29/09/23	<4	<0.4	2	17	<0.1	<1	<25	<50	<0.2	<0.5	<1	<1	**1.8**	<0.0001	13	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
BH03	0.4 - 0.5 m	26/09/2023	<4	<0.4	7	42	<0.1	6	<25	120	<0.2	<0.5	<1	<1	**1.1**	-	10	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BD01/20230926	-	26/09/2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03	0.9 - 1 m	26/09/2023	<4	<0.4	3	38	<0.1	2	<25	<50	<0.2	<0.5	<1	<1	**2.4**	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
BH04	0 - 0.1 m	26/09/2023	<4	<0.4	55	37	<0.1	7	<25	160	<0.2	<0.5	<1	<1	0.52	-	4.7	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BH05	0 - 0.1 m	29/09/23	<4	<0.4	7	55	0.2	4	<25	390	<0.2	<0.5	<1	<1	3.6	<0.0001	30	<PQL	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BH06	0 - 0.1 m	29/09/23	<4	<0.4	44	35	<0.1	3	<25	<50	<0.2	<0.5	<1	<1	1.6	-	12	-	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
BH06	0.9 - 1 m	29/09/23	<4	<0.4	5	53	<0.1	4	<25	380	<0.2	<0.5	<1	<1	4	<0.0001	34	<PQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
BH07	0.4 - 0.5 m	29/09/23	<4	<0.4	5	59	0.1	3	<25	700	<0.2	<0.5	<1	<1	**9.8**	<0.0001	76	<PQL	<5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	ND
Waste Classification Criteria [f]																																	
CT1			100	20	100	100	4	40	-	10,000	10	288	600	1000	0.8	-	200	-	288	60	-	-	4	<50	-	-	-	-	-	-	-	-	-
SCC1			500	100	1,900	1,500	50	1,050	-	10,000	18	518	1,080	1,800	10	-	200	-	518	108	-	-	7.5	<50	-	-	-	-	-	-	-	-	-
TCLP1			-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT2			400	80	400	400	16	160	-	40,000	40	1,152	2,400	4,000	3.2	-	800	-	1,152	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	432	-	-	30	<50	-	-	-	-	-	-	-	-	-
TCLP2			-	-	-	-	-	-	-	-	-	-	-	-	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 I

Borehole Logs

Terminology, Symbols and Abbreviations

November 2023

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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Soil Descriptions

Terminology
Symbols
Abbreviations

November 2023

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)
Gravel	Coarse	19 - 63
	Medium	6.7 - 19
	Fine	2.36 – 6.7
Sand	Coarse	0.6 - 2.36
	Medium	0.21 - 0.6
	Fine	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
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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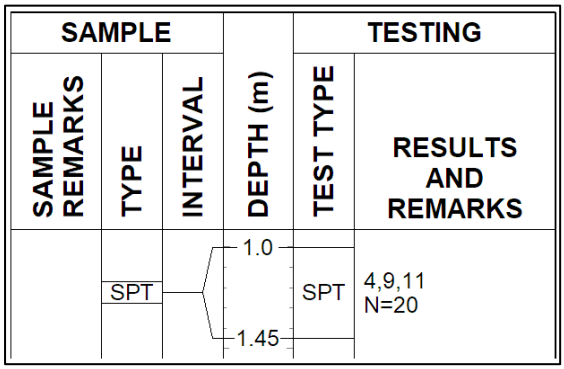
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

November 2023

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:



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
Bulk sample	B
Core sample	C
Disturbed sample	D
Sample from SPT test	SPT
Environmental sample	ES
Gas sample	G
Undisturbed tube sample	U[1]
Water sample	W
Piston sample	P
Core sample for unconfined compressive strength testing	UCS
Material Sample	MT

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

[1] – numeric suffixes indicate tool diameter/width in mm

Douglas PARTNERS

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 42 AHD
EASTING: 337169.6
NORTHING: 6244984.2
DIP/AZIMUTH: 90°/--

BORE No: BH01
PROJECT No: 224455.00
DATE: 29/9/2023
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
42		FILL/ SAND: fine to medium, brown to dark brown, with silt, trace fine to medium igneous gravel, concrete and brick fragments, moist		E*	0.0 0.1				
	0.4	SAND SP: medium, pale grey, moist, loose to medium dense, aeolian		E	0.4 0.5				
41	1			E	0.9 1.0				1
		Below 1.1m: yellow-brown		S			3,4,6 N = 10		
		Between 1.35-1.80m: brown			1.45				
40	2								2
				S	2.5		4,5,6 N = 11		
39	3				2.95				3
	3.0	Bore discontinued at 3.0m Target depth reached							
38	4								4

RIG: Comacchio 205 **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC bit) to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *BD01/20230929TM taken from 0.0-0.1m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.5 AHD
EASTING: 337155.8
NORTHING: 6244957.7
DIP/AZIMUTH: 90°/--

BORE No: BH02
PROJECT No: 224455.00
DATE: 29/9/2023
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
41	0.0	FILL/ SAND: fine to medium, brown, with silt, trace rootlets, fine to medium gravel and concrete fragments, moist		E	0.0–0.1				
				E*	0.4–0.5				
	0.8	FILL/ SAND: medium, grey, moist, possibly reworked natural, apparently in a loose to medium dense condition		E	0.9–1.0				
	1			S			3,4,4 N = 8		1
	1.35	SAND SP: medium, pale grey, moist, medium dense, aeolian		E	1.4–1.45				
40					1.5				
		Below 1.8m: brown to dark brown		E	1.9–2.0				
	2								2
		Below 2.3m: yellow-brown							
39				S	2.5		4,5,7 N = 12		
	3				2.95				3
	3.0	Bore discontinued at 3.0m Target depth reached							
38									
	4								4
37									

RIG: Comacchio 205 **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC bit) to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *BD02/20230929TM taken from 0.4-0.5m, Bulk sample taken from 1.5-2.0m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.7 AHD
EASTING: 337172.9
NORTHING: 6244958.7
DIP/AZIMUTH: 90°/--

BORE No: BH03
PROJECT No: 224455.00
DATE: 26/9/2023
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
41	0.0	FILL/ Silty SAND: fine to medium, grey-brown, trace rootlets and mulch, moist, generally in a loose to medium dense condition		E	0.0–0.1				
				E*	0.4–0.5				
				E	0.9–1.0				
40	1.0	SAND SP: medium, pale grey, moist, medium dense, aeolian							
		Below 1.4m: brown and yellow-brown		E	1.4–1.5				
				E	1.9–2.0				
39	2.2	Bore discontinued at 2.2m Hole collapsing							
38									
37									

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: Hand tools **DRILLER:** RT **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Hand auger to 2.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *BD01/20230926TM taken from 0.4-0.5m

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.6 AHD
EASTING: 337171.9
NORTHING: 6244938.3
DIP/AZIMUTH: 90°/--

BORE No: BH04
PROJECT No: 224455.00
DATE: 26/9/2023
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
41.6	0.0	FILL/ Silty SAND: fine to medium, grey-brown, trace rootlets and fine to medium igneous gravel, moist, generally in a loose to medium dense condition		E	0.0 0.1				
	0.3								
		At 0.9m: DPT bouncing Bore discontinued at 0.3m Refusal due to tree roots							

RIG: Hand tools **DRILLER:** TM **LOGGED:** RT **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.3m

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.8 AHD
EASTING: 337197.3
NORTHING: 6244952.3
DIP/AZIMUTH: 90°/--

BORE No: BH05
PROJECT No: 224455.00
DATE: 29/9/2023
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
41	0.0	FILL/ SAND: fine to medium, brown, with silt, trace rootlets, moist		E	0.0–0.1				
				E	0.4–0.5				
	0.7	SAND SP: medium, pale grey, moist, loose, aeolian		E	0.9–1.0				
	1			S	1.0–1.4		2,3,3 N = 6		1
				E	1.4–1.5				
40		Below 2.0m: brown to yellow-brown							
	2								2
		Below 2.5m: medium dense		S	2.5–2.95		4,5,7 N = 12		
39	3								3
	3.0	Bore discontinued at 3.0m Target depth reached							
38	4								4
37									

RIG: Comacchio 205 **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC bit) to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.2 AHD
EASTING: 337158.6
NORTHING: 6244920.9
DIP/AZIMUTH: 90°/--

BORE No: BH06
PROJECT No: 224455.00
DATE: 29/9/2023
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
41	0	FILL/ SAND: fine to medium, brown to dark brown, with silt, trace fine to medium igneous gravel and concrete fragments, moist, generally in a loose condition		E	0.0				
					0.1				
				E	0.4				
					0.5				
				E	0.9				
40	1				1.0				1
				S			2,2,4 N = 6		
	1.35	SAND SP: medium, pale grey, moist, medium dense, aeolian		E	1.4				
					1.45				
					1.5				
		Between 1.8-2.1m: dark brown		E	1.9				
	2				2.0				2
39		Below 2.1m: yellow							
					2.5				
				S			2,5,7 N = 12		
	3				2.95				3
38									
	4								4
37									

RIG: Comacchio 205 **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased
TYPE OF BORING: Solid flight auger (TC bit) to 6.3m
WATER OBSERVATIONS: Water seepage below 6.0m
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 41.2 AHD
EASTING: 337158.6
NORTHING: 6244920.9
DIP/AZIMUTH: 90°/--

BORE No: BH06
PROJECT No: 224455.00
DATE: 29/9/2023
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
36		SAND SP: medium, pale grey, moist, medium dense, aeolian *(continued)*							
	6							▽	6
35	6.3	Bore discontinued at 6.3m Auger refusal on inferred sandstone bedrock							
	7								7
34									
	8								8
33									
	9								9
32									

RIG: Comacchio 205 **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased
TYPE OF BORING: Solid flight auger (TC bit) to 6.3m
WATER OBSERVATIONS: Water seepage below 6.0m
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 42.1 AHD
EASTING: 337197.1
NORTHING: 6244976
DIP/AZIMUTH: 90°/--

BORE No: BH07
PROJECT No: 224455.00
DATE: 28/9/2023
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
42	0.0	FILL/ SAND: fine to medium, brown, trace silt and rootlets, moist		E	0.0				
					0.1				
				E	0.4				
	0.6				0.5				
		SAND SP: medium, pale grey, moist, medium dense							
				E	0.9				
41	1				1.0				1
				S			2,5,7 N = 12		
		Between 1.3-1.8m: brown indurated (cemented) sand layer			1.45				
		Below 1.8m: yellow-brown and yellow							
40	2				2.5				2
				S			4,5,7 N = 12		
	3				2.95				3
39									
	4				4.0				4
38				S			3,8,11 N = 19		
					4.45				

RIG: Explora **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC bit) to 5.35m

WATER OBSERVATIONS: Water seepage below 5.0m

REMARKS: Bulk sample taken from 5.0-5.3m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Proposed School Building
LOCATION: Avoca Street, Randwick

SURFACE LEVEL: 42.1 AHD
EASTING: 337197.1
NORTHING: 6244976
DIP/AZIMUTH: 90°/--

BORE No: BH07
PROJECT No: 224455.00
DATE: 28/9/2023
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
37		SAND SP: medium, pale grey, moist, medium dense *(continued)*		B	5.0				
				S	5.3		20/50 refusal		
	5.35	Bore discontinued at 5.35m Auger refusal on inferred sandstone bedrock			5.35		No sample recovered		
36	6								6
35	7								7
34	8								8
33	9								9

RIG: Explora **DRILLER:** DB **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC bit) to 5.35m

WATER OBSERVATIONS: Water seepage below 5.0m

REMARKS: Bulk sample taken from 5.0-5.3m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:337180.0, N:6244755.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
18/07/24 No free groundwater observed		0.04	ASPHALT: 40mm thick										
			FILL / ROADBASE GRAVEL; angular to sub-angular, cement stabilised gravel aggregate.		FILL	ND	ND						
		0.28	FILL / SAND, trace glass, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	(MD)			A/ES	0.30 – 0.40	0.30	PID	<1ppm
									A/ES	0.50 – 0.60	0.50	PID	<1ppm
						(D)							
	38	0.80	SAND (SP): yellow-brown; fine.						A/ES	0.90 – 1.00	0.90	PID	<1ppm
		1	From 1.10m: orange-brown									DCP 0/150	
	37		From 1.60m: dark brown						A/ES	1.50 – 1.60	1.50	PID	<1ppm
		2					D		A/ES	1.90 – 2.00	1.90	PID	<1ppm
	36		From 2.40m: yellow brown		AEO	D						SPT	6,11,10 N=21
		3									3		
	35						M						
		4									4	SPT	7,13/50 Double bouncing
	34		Borehole discontinued at 4.20m depth. Refusal on inferred weathered sandstone bedrock.										

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: Bobcat
METHOD: DT to 0.28m, AD/T to 4.2m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.8 AHD
COORDINATE: E:337198.0, N:6244747.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102
PROJECT No: 224455.02
DATE: 17/07/24
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
	38	0.04	ASPHALT: 40mm thick		FILL	ND	ND		A/ES		0.20	PID	<1ppm
		0.30	FILL / ROADBASE GRAVEL; angular to sub-angular, aggregate (basalt gravel).		FILL						0.30		
		0.60	FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.						A/ES		0.50	PID	<1ppm
	37	1	SAND (SP): yellow-brown; fine.				D				0.60		
▼ 17/07/24					AEO	L			A		0.90	PID	<1ppm
	36	2									1.00	DCP 0/150	
												PID	<1ppm
	35	3					M				2	SPT	3,4,7 N=11
	34	4									3		
		4.20	Continued as rock								4	SPT	10,7/50 double bouncing
	33	5									5		
	32	6									6		
	31	7									7		
	30	8									8		
	29	9									9		

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: Bobcat
METHOD: DT to 0.3m, AD/T to 4.2m, NMLC to 7.57m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: HW to 4m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.8 AHD
COORDINATE: E:337198.0, N:6244747.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102
PROJECT No: 224455.02
DATE: 17/07/24
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
▼ 17/07/24	38	0													0				
	37	1													1				
	36	2													2				
	35	3													3				
	34	4	Continued from soil												4				
			SANDSTONE: orange-brown, pale grey, fine to coarse grained. Hawksbury Sandstone		MW	4.20													
					HW	4.80													
	34	5			MW	4.95	M								5	PLT	PL(A)=1MPa		
					HW	5.30													
	33	6				5.50		98	100		5.59m: B, 0°, IR, SN Fe, RF				6	PLT	PL(A)=1.9MPa		
					SW to MW	6.00	H				6.61m: B, 5°, IR, SN Fe, RF 6.64m: B, 0°, PR, SN Fe, RF 6.84m: B, 0°, PR, SN Fe, RF 7.27m: B, 10°, IR, SN Fe, RF				7	PLT	PL(A)=1.7MPa		
	32	7						100	100										
	31	8	Borehole discontinued at 7.57m depth. Target depth reached.													PLT	PL(A)=1.7MPa		
	30	9																	
	29																		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: Bobcat
METHOD: DT to 0.3m, AD/T to 4.2m, NMLC to 7.57m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: HW to 4m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

CORE PHOTO LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.8 AHD
COORDINATE: E:337198.0, N:6244747.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102
PROJECT No: 224455.02
DATE: 17/07/24
SHEET: 1 of 1

4.20-7.57 m depth

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:337172.0, N:6244726.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH103
PROJECT No: 224455.02
DATE: 17/06/24
SHEET: 1 of 2

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	BACKFILL	WELL PIPE
	38	0.04	ASPHALT: 40mm thick		FILL	ND	ND		* A/ES	0.15	0.15	PID	0.6ppm	Backfill	
		0.30	FILL / ROADBASE GRAVEL; angular to sub-angular, aggregate (basalt gravel).							0.30	0.30				
			FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL				A/ES	0.50	0.50	PID	1.3ppm	Bentonite	
		0.80	SAND (SP): pale grey; fine.		AEO	VL	D		A/ES	0.70	0.70				
	37	1.50	Silty SAND (SM): dark brown; fine.						A/ES	0.80	0.80	PID	<1ppm		
			From 2.50m: dark brown organic silt							1.00	1.00				
	36		From 3.10m: brown grading to pale brown		AEO	L	M			1.50	1.50	PID	<1ppm	Gravel	
07/06/24			From 3.50m: saturated						A/ES	1.70	1.70				
	35											SPT	25/130		
	34											SPT	4,7,13 N=20		
	33	5.10	Continued as rock												
	32														
	31														
	30														
	29														

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: Bobcat
METHOD: DT to 0.15m, AD/T to 5.1m, NMLC to 9.8m
REMARKS: *Field replicate BD1/20240717 taken at 0.15-0.3m.

OPERATOR: Ground Test
LOGGED: JAL
CASING: HW to 4m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:337172.0, N:6244726.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH103
PROJECT No: 224455.02
DATE: 17/06/24
SHEET: 2 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
▼ 07/06/24	38	0													0			Backfill	
	37	1													1			Bentonite	
	36	2													2				
	35	3													3				
	34	4													4				
	33	5	Continued from soil												5				
			SANDSTONE: orange-brown, pale grey, fine to coarse grained. Hawksbury Sandstone		FR	5.10													
						5.50	M	100	-										
	32	6			SW										6				
						6.75													
	31	7			MW	7.00					7.13m: B, 5°, PR, VNR Clay, RF				7	PLT	PL(A)=0.6MPa		
											7.78m: B, 10°, CU, VNR Clay, RF								
	30	8			SW		H	100	-		7.91m: B, 5°, IR, VNR Clay, RF				8	PLT	PL(A)=1.1MPa		
	29	9	Borehole discontinued at 9.80m depth. Target depth reached.												9	PLT	PL(A)=1.7MPa		
																PLT	PL(A)=1.5MPa	Gravel	

NOTES: [a] Soil origin is "probable" unless otherwise stated.

Generated with CORE-GS by Geroc - Split Soil-Rock Log

PLANT: Bobcat
OPERATOR: Ground Test
LOGGED: JAL
METHOD: DT to 0.15m, AD/T to 5.1m, NMLC to 9.8m
CASING: HW to 4m
REMARKS: *Field replicate BD1/20240717 taken at 0.15-0.3m.

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

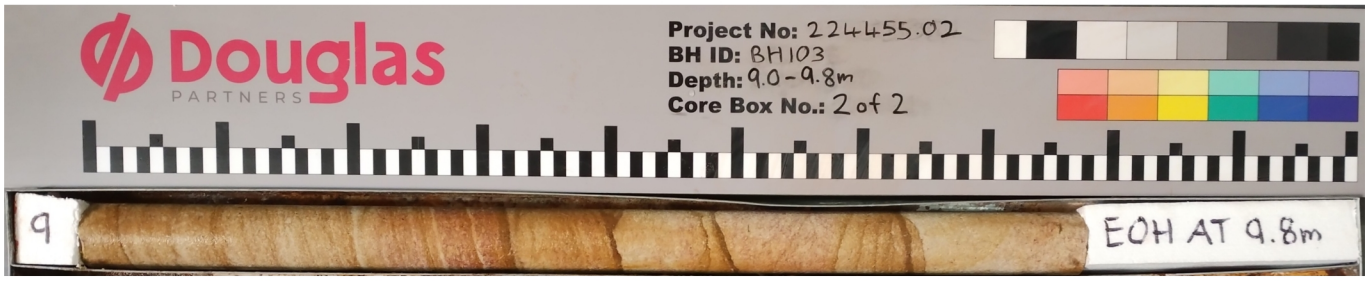
CORE PHOTO LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:337172.0, N:6244726.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH103
PROJECT No: 224455.02
DATE: 17/06/24
SHEET: 1 of 1

5.10-9.00 m depth



9.00-9.80 m depth

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.5 AHD
COORDINATE: E:337188.0, N:6244723.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH104
PROJECT No: 224455.02
DATE: 18/07/24
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
	38	0.04	ASPHALT: 40mm thick FILL / ROADBASE GRAVEL; angular to sub-angular, cement stabilised gravel aggregates.		FILL	ND	ND		A/ES	0.30 0.40	0.30	PID	1.7ppm
		0.30	FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	VL			A/ES	0.50 0.60	0.50	PID	1.5ppm
		0.70	SAND (SP): yellow-brown; fine.						A/ES	0.90 1.00	0.90	PID	1.1ppm
	37	1	1.30m: orange-brown						A/ES	1.50 1.60	1.50	PID	1.2ppm
	36	2			AEO	D	D		A/ES	1.90 2.00	1.90	PID	<1ppm
18/07/24	35	3	From 3.50m: saturated								3		
	34	4	Borehole discontinued at 5.00m depth. Refusal .								4	SPT	4,11,16 N=27

DCP/150 — 5 10 15

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: Bobcat
METHOD: DT to 0.3m, AD/T to 5.0m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Generated with CORE-GS by Geroc - Soil Log

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.7 AHD
COORDINATE: E:337183.0, N:6244772.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH105
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
18/07/24 No free groundwater observed	38	0.12	CONCRETE: 120mm thick; 40%, fine to coarse, sub-angular to angular gravel; aggregate; grey cement mix		FILL	ND	ND		A/ES		0.20	PID	<1ppm
		0.30	FILL / ROADBASE GRAVEL; angular to sub-angular, cement stabilised gravel aggregates.								0.30		
			FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	(D)			A/ES		0.50	PID	<1ppm
								*,			0.60		
		0.80	SAND (SP): yellow-brown; fine.						A/ES		0.90	PID	1.2ppm
	37	1									1.00		
							D		A/ES		1.50	PID	1.4ppm
					AEO	D					1.60		
	36	2							A/ES		1.90	PID	<1ppm
											2.00		
		3	Borehole discontinued at 3.00m depth. Target depth reached.									SPT	7,10,12 N=22
	35	4											
	34												

DCP9/150

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: Bobcat
METHOD: DT to 0.3m, AD/T to 5.0m
REMARKS: *Field replicate BD1-20240718 taken at 0.5-0.6m.

OPERATOR: Ground Test
LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 39.0 AHD
COORDINATE: E:337193.0, N:6244782.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH106
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
19/07/24 No free groundwater observed		0.12	CONCRETE: 120mm; 40%, fine to coarse, sub-angular to angular gravel; aggregate; grey cement mix			ND			A/ES		0.10	PID	<1ppm
			FILL / SAND, trace gravel: pale brown; fine; igneous gravel.		FILL	(MD)	ND				0.20		
									A/ES		0.50	PID	<1ppm
		0.70	SAND (SP): yellow-brown; fine.			D					0.60		
	38	1			AEO	MD	D		A/ES		0.90	PID	<1ppm
											1.00		
									A/ES		1.50	PID	<1ppm
		1.80	Silty SAND (SM): dark brown and yellow; fine.								1.60		
	37	2			AEO	L to MD	M		A/ES		1.90	PID	<1ppm
											2.00		
	36	3	Borehole discontinued at 3.00m depth. Target depth reached.									SPT	3,4,5 N=9
	35	4											

DCP9/150

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: Bobcat
METHOD: DT to 0.12m, HA to 1.0m, AD/T to 3.0m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.2 AHD
COORDINATE: E:337197.0, N:6244805.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH107
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS
18/07/24 No free groundwater observed	38	0.12	CONCRETE: 120mm thick; 40%, fine to coarse, sub-angular to angular gravel; aggregate; grey cement mix			ND	ND		A/ES		0.10	PID	<1ppm
			FILL / SAND, trace glass, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL						0.20		
		0.50	SAND (SP): yellow-brown; fine.						A/ES		0.50	PID	<1ppm
											0.60		
		1							A/ES		0.90	PID	<1ppm
	37				AEO						1.00		
												SPT	7,9,6 N=15
						MD	D		A/ES		1.50	PID	<1ppm
		1.70	Silty SAND (SM): orange-brown, yellow; fine.								1.60		
		2							A/ES		1.90	PID	<1ppm
	36				AEO						2.00		
												SPT	3,5,7 N=12
		3	Borehole discontinued at 3.00m depth. Target depth reached.										
	35												
		4											
	34												

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: Bobcat
METHOD: DT to 0.12m, AD/T to 3.0m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.4 AHD
COORDINATE: E:337167.0, N:6244814.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH108
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS
19/07/24 No free groundwater observed	38	0.12	CONCRETE: 120mm thick; 30%, fine to coarse, sub-angular to angular gravel; aggregate; grey cement mix			ND	ND		A/ES	0.20	0.20	PID	1.1ppm
			FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	(MD)			A/ES	0.30	0.30		
									A/ES	0.50	0.50	PID	1.3ppm
		0.80	Silty SAND (SM): dark brown and yellow; fine.						A/ES	0.60	0.60		
	37	1				MD			A/ES	0.90	0.90	PID	<1ppm
									A/ES	1.00	1.00		
			From 1.80m: yellow-brown		AEO		D		A/ES	1.50	1.50	PID	<1ppm
	36	2				(MD)			A/ES	1.60	1.60		
									A/ES	1.90	1.90	PID	<1ppm
									A/ES	2.00	2.00		
						MD						SPT	5,10,10 N=20
	35	3	Borehole discontinued at 3.00m depth. Target depth reached.										
	34	4											

DCP9/150

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: Bobcat
METHOD: DT to 0.12m, HA to 1.0m, AD/T to 3.0m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

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BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.7 AHD
COORDINATE: E:337131.0, N:6244789.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH109
PROJECT No: 224455.02
DATE: 18/07/24
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
19/07/24 No free groundwater observed	38.7 / 0.00	CONCRETE: 150mm thick			ND	ND		A/ES		0.10	PID	<1ppm
	38.55 / 0.15	FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	(MD)			A/ES		0.20		
	38.1 / 0.60	SAND (SP): yellow-brown; fine.		AEO		D		A/ES		0.50	PID	<1ppm
	37.7 / 1.00	Borehole discontinued at 1.00m depth. Borehole collapse.			MD			A/ES		0.60		
										0.90	PID	<1ppm
										1.00		

PID P9/150

0 5 10 15

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: HA to 1.0m
REMARKS:

OPERATOR: JAL

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Randwick Boys and Girls School Upgrade
LOCATION: Avoca Street, Randwick, NSW 2031

SURFACE LEVEL: 38.2 AHD
COORDINATE: E:337136.0, N:6244830.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH110
PROJECT No: 224455.02
DATE: 18/07/24
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*]	DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS
18/07/24 No free groundwater observed	38	0.20	CONCRETE: 200mm thick; 50%, fine to coarse, sub-angular to angular gravel; aggregate; grey cement mix			ND		ND						
			FILL / SAND, trace gravel: pale brown; fine; sandstone and concrete gravel.		FILL	(L)				A/ES		0.20 0.30	PID	<1ppm
		0.60	SAND (SP): yellow-brown; fine.							A/ES		0.50 0.60	PID	1.1ppm
	37	1								A/ES		0.90 1.00	PID	1.3ppm
													SPT	5,3,3 N=6
					AEO	L		D		A/ES		1.50 1.60	PID	1.6ppm
	36	2								A/ES		1.90 2.00	PID	<1ppm
													SPT	5,6,4 N=10
	35	3	Borehole discontinued at 3.00m depth. Target depth reached.											
	34	4												

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: Bobcat
METHOD: DT to 0.2m, AD/T to 3.0m
REMARKS:

OPERATOR: Ground Test

LOGGED: JAL
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Appendix J

Laboratory Analysis Certificates, Chain of Custody Documentation

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

CERTIFICATE OF ANALYSIS 334614

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**224455.00 Randwick**
Number of Samples	13 Soil
Date samples received	05/10/2023
Date completed instructions received	05/10/2023

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

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

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

Report Details

Date results requested by	12/10/2023
Date of Issue	12/10/2023

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

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Anthony Clark
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor
Nancy Zhang, Laboratory Manager, Sydney
Priya Samarawickrama, Senior Chemist
Tim Toll, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023	09/10/2023	09/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	85	80	107	105	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-10
Your Reference	UNITS	BH05	BH06	BH06	BH07	BD01/20230926
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	-
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	28.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023	09/10/2023	09/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	86	105	83	91	73

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		334614-11	334614-12	334614-13
Your Reference	UNITS	TS	TB	BH03
Depth		-	-	0.9-1
Date Sampled		28.9.23	28.9.23	26.9.23
Type of sample		Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023
TRH C_6 - C_9	mg/kg	[NA]	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	<25
Benzene	mg/kg	104%	<0.2	<0.2
Toluene	mg/kg	104%	<0.5	<0.5
Ethylbenzene	mg/kg	105%	<1	<1
m+p-xylene	mg/kg	106%	<2	<2
o-Xylene	mg/kg	106%	<1	<1
Naphthalene	mg/kg	[NA]	<1	<1
Total +ve Xylenes	mg/kg	[NA]	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	105	114

svTRH (C10-C40) in Soil						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	08/10/2023	08/10/2023
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	120	<100	120	160
Total +ve TRH (C10-C36)	mg/kg	<50	120	<50	120	160
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	150	<100	140	190
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	150	<50	140	190
Surrogate o-Terphenyl	%	88	86	85	87	90

svTRH (C10-C40) in Soil						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-10
Your Reference	UNITS	BH05	BH06	BH06	BH07	BD01/20230926
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	-
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	28.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	08/10/2023	08/10/2023	08/10/2023	08/10/2023	08/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	160	<100	140	310	<100
TRH C_{29} - C_{36}	mg/kg	230	<100	230	390	140
Total +ve TRH (C10-C36)	mg/kg	390	<50	380	700	140
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	320	<100	310	590	150
TRH >C_{34} -C_{40}	mg/kg	160	<100	150	250	<100
Total +ve TRH (>C10-C40)	mg/kg	480	<50	460	830	150
Surrogate o-Terphenyl	%	88	84	88	91	84

svTRH (C10-C40) in Soil		
Our Reference		334614-13
Your Reference	UNITS	BH03
Depth		0.9-1
Date Sampled		26.9.23
Type of sample		Soil
Date extracted	-	06/10/2023
Date analysed	-	08/10/2023
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	67

PAHs in Soil						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	07/10/2023	07/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	1.0	0.2	0.8	0.2
Anthracene	mg/kg	<0.1	0.3	<0.1	0.2	<0.1
Fluoranthene	mg/kg	0.3	3.6	1.7	1.8	0.8
Pyrene	mg/kg	0.2	3.4	1.9	1.7	0.8
Benzo(a)anthracene	mg/kg	0.1	1.9	1.0	0.8	0.4
Chrysene	mg/kg	0.1	1.8	1.1	0.8	0.4
Benzo(b,j+k)fluoranthene	mg/kg	0.3	3.8	2.7	2	0.8
Benzo(a)pyrene	mg/kg	0.2	2.5	1.8	1.1	0.52
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	1.4	1.0	0.6	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.4	0.2	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	1.8	1.3	0.7	0.4
Total +ve PAH's	mg/kg	1.5	22	13	10	4.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	3.6	2.5	1.5	0.7
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	3.6	2.5	1.5	0.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	3.6	2.5	1.5	0.8
Surrogate p-Terphenyl-d14	%	107	111	108	108	105

PAHs in Soil						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-10
Your Reference	UNITS	BH05	BH06	BH06	BH07	BD01/20230926
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	-
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	28.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	07/10/2023	07/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.2	0.1	0.3	0.5	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.1	0.3	1.6	1.9	0.2
Anthracene	mg/kg	0.3	0.1	0.5	0.6	<0.1
Fluoranthene	mg/kg	4.3	1.7	5.5	10	1.1
Pyrene	mg/kg	4.4	1.8	5.5	11	1.1
Benzo(a)anthracene	mg/kg	2.5	1	3.0	5.5	0.6
Chrysene	mg/kg	2.5	1.0	2.9	7.2	0.6
Benzo(b,j+k)fluoranthene	mg/kg	5.5	2.4	5.6	15	1
Benzo(a)pyrene	mg/kg	3.6	1.6	4.0	9.8	0.85
Indeno(1,2,3-c,d)pyrene	mg/kg	2.0	0.9	2.0	5.6	0.4
Dibenzo(a,h)anthracene	mg/kg	0.6	0.2	0.5	1.3	0.1
Benzo(g,h,i)perylene	mg/kg	2.5	1.2	2.7	7.3	0.6
Total +ve PAH's	mg/kg	30	12	34	76	6.8
Benzo(a)pyrene TEQ calc (zero)	mg/kg	5.2	2.2	5.6	14	1.2
Benzo(a)pyrene TEQ calc(half)	mg/kg	5.2	2.2	5.6	14	1.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	5.2	2.2	5.6	14	1.2
Surrogate p-Terphenyl-d14	%	107	109	104	109	106

PAHs in Soil		
Our Reference		334614-13
Your Reference	UNITS	BH03
Depth		0.9-1
Date Sampled		26.9.23
Type of sample		Soil
Date extracted	-	09/10/2023
Date analysed	-	10/10/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.3
Anthracene	mg/kg	0.2
Fluoranthene	mg/kg	1.6
Pyrene	mg/kg	2.1
Benzo(a)anthracene	mg/kg	1.5
Chrysene	mg/kg	1.0
Benzo(b,j+k)fluoranthene	mg/kg	3.2
Benzo(a)pyrene	mg/kg	2.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.9
Dibenzo(a,h)anthracene	mg/kg	0.2
Benzo(g,h,i)perylene	mg/kg	1.1
Total +ve PAH's	mg/kg	15
Benzo(a)pyrene TEQ calc (zero)	mg/kg	3.2
Benzo(a)pyrene TEQ calc(half)	mg/kg	3.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	3.2
Surrogate p-Terphenyl-d14	%	75

Organochlorine Pesticides in soil						
Our Reference		334614-1	334614-2	334614-4	334614-5	334614-6
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0-0.1	0-0.1	0.4-0.5	0-0.1	0-0.1
Date Sampled		29.9.23	29.9.23	26.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	07/10/2023	07/10/2023
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
Surrogate TCMX	%	106	108	104	105	106

Organochlorine Pesticides in soil			
Our Reference		334614-7	334614-9
Your Reference	UNITS	BH06	BH07
Depth		0-0.1	0.4-0.5
Date Sampled		29.9.23	29.9.23
Type of sample		Soil	Soil
Date extracted	-	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	108	104

Organophosphorus Pesticides in Soil						
Our Reference		334614-1	334614-2	334614-4	334614-5	334614-6
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0-0.1	0-0.1	0.4-0.5	0-0.1	0-0.1
Date Sampled		29.9.23	29.9.23	26.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	07/10/2023	07/10/2023
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 TCMX	%	106	108	104	105	106

Organophosphorus Pesticides in Soil			
Our Reference		334614-7	334614-9
Your Reference	UNITS	BH06	BH07
Depth		0-0.1	0.4-0.5
Date Sampled		29.9.23	29.9.23
Type of sample		Soil	Soil
Date extracted	-	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023
Dichlorvos	mg/kg	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1
Surrogate TCMX	%	108	104

PCBs in Soil						
Our Reference		334614-1	334614-2	334614-4	334614-5	334614-6
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0-0.1	0-0.1	0.4-0.5	0-0.1	0-0.1
Date Sampled		29.9.23	29.9.23	26.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023	07/10/2023	07/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	106	108	104	105	106

PCBs in Soil			
Our Reference		334614-7	334614-9
Your Reference	UNITS	BH06	BH07
Depth		0-0.1	0.4-0.5
Date Sampled		29.9.23	29.9.23
Type of sample		Soil	Soil
Date extracted	-	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	108	104

Acid Extractable metals in soil						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	28	2	7	55
Copper	mg/kg	7	19	10	33	38
Lead	mg/kg	16	40	17	42	37
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	4	<1	6	7
Zinc	mg/kg	32	51	24	120	140

Acid Extractable metals in soil						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-10
Your Reference	UNITS	BH05	BH06	BH06	BH07	BD01/20230926
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	-
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	28.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	44	5	5	8
Copper	mg/kg	22	14	19	24	30
Lead	mg/kg	55	35	53	59	34
Mercury	mg/kg	0.2	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	4	3	4	3	5
Zinc	mg/kg	97	42	60	55	100

Acid Extractable metals in soil			
Our Reference		334614-13	334614-14
Your Reference	UNITS	BH03	BH01 - [TRIPLICATE]
Depth		0.9-1	0-0.1
Date Sampled		26.9.23	29.9.23
Type of sample		Soil	Soil
Date prepared	-	09/10/2023	06/10/2023
Date analysed	-	10/10/2023	11/10/2023
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	3	4
Copper	mg/kg	13	7
Lead	mg/kg	38	16
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	2	2
Zinc	mg/kg	64	33

Misc Soil - Inorg						
Our Reference		334614-1	334614-2	334614-4	334614-5	334614-6
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0-0.1	0-0.1	0.4-0.5	0-0.1	0-0.1
Date Sampled		29.9.23	29.9.23	26.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg			
Our Reference		334614-7	334614-9
Your Reference	UNITS	BH06	BH07
Depth		0-0.1	0.4-0.5
Date Sampled		29.9.23	29.9.23
Type of sample		Soil	Soil
Date prepared	-	06/10/2023	06/10/2023
Date analysed	-	06/10/2023	06/10/2023
Total Phenolics (as Phenol)	mg/kg	<5	<5

Misc Inorg - Soil				
Our Reference		334614-1	334614-6	334614-8
Your Reference	UNITS	BH01	BH05	BH06
Depth		0-0.1	0-0.1	0.9-1
Date Sampled		29.9.23	26.9.23	29.9.23
Type of sample		Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023
pH 1:5 soil:water	pH Units	7.7	6.9	8.3

CEC				
Our Reference		334614-1	334614-6	334614-8
Your Reference	UNITS	BH01	BH05	BH06
Depth		0-0.1	0-0.1	0.9-1
Date Sampled		29.9.23	26.9.23	29.9.23
Type of sample		Soil	Soil	Soil
Date prepared	-	10/10/2023	10/10/2023	10/10/2023
Date analysed	-	10/10/2023	10/10/2023	10/10/2023
Exchangeable Ca	meq/100g	2.3	3.7	5.4
Exchangeable K	meq/100g	<0.1	<0.1	<0.1
Exchangeable Mg	meq/100g	0.1	0.5	0.1
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	2.5	4.3	5.6

Moisture						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023	09/10/2023	09/10/2023
Moisture	%	12	4.3	6.7	10	16

Moisture						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-10
Your Reference	UNITS	BH05	BH06	BH06	BH07	BD01/20230926
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	-
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	28.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	09/10/2023	09/10/2023	09/10/2023	09/10/2023	09/10/2023
Moisture	%	6.0	5.0	6.6	5.7	8.9

Moisture		
Our Reference		334614-13
Your Reference	UNITS	BH03
Depth		0.9-1
Date Sampled		26.9.23
Type of sample		Soil
Date prepared	-	06/10/2023
Date analysed	-	09/10/2023
Moisture	%	8.2

Asbestos ID - soils						
Our Reference		334614-1	334614-2	334614-3	334614-4	334614-5
Your Reference	UNITS	BH01	BH02	BH02	BH03	BH04
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0-0.1
Date Sampled		29.9.23	29.9.23	29.9.23	26.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023
Sample mass tested	g	Approx. 70g	Approx. 105g	Approx. 75g	Approx. 65g	Approx. 65g
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		334614-6	334614-7	334614-8	334614-9	334614-13
Your Reference	UNITS	BH05	BH06	BH06	BH07	BH03
Depth		0-0.1	0-0.1	0.9-1	0.4-0.5	0.9-1
Date Sampled		26.9.23	29.9.23	29.9.23	29.9.23	26.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/10/2023	12/10/2023	12/10/2023	12/10/2023	12/10/2023
Sample mass tested	g	Approx. 100g	Approx. 200g	Approx. 30g	Approx. 40g	Approx. 80g
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-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 by ICP-AES.
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	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			09/10/2023	1	09/10/2023	09/10/2023		09/10/2023	09/10/2023
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	123	85
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	123	85
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	124	86
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	120	83
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	123	84
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	125	85
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	128	87
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	117	1	85	65	27	106	82

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]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	09/10/2023	09/10/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	9	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	9	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	9	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	9	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	9	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	9	91	90	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			07/10/2023	1	07/10/2023	07/10/2023		07/10/2023	07/10/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	101	116
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	88	120
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	110
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	101	116
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	88	120
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	110
Surrogate o-Terphenyl	%		Org-020	82	1	88	92	4	91	93

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	08/10/2023	08/10/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	9	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	9	310	260	18	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	9	390	330	17	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	9	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	9	590	480	21	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	9	250	210	17	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	9	91	93	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			10/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			10/10/2023	1	07/10/2023	07/10/2023		07/10/2023	07/10/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	97
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	101
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	90
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	#
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	0.3	0.3	0	106	#
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	107	#
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.1	0	85	#
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	0.3	0.3	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	0.2	0.2	0	96	#
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	105	1	107	106	1	94	96

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	07/10/2023	07/10/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	9	0.5	0.4	22	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	9	1.9	1.8	5	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	9	0.6	0.6	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	9	10	8.1	21	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	9	11	8.9	21	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	9	5.5	4.5	20	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	9	7.2	5.8	22	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	9	15	11	31	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	9	9.8	7.5	27	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	9	5.6	3.9	36	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	9	1.3	1.1	17	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	9	7.3	5.3	32	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	9	109	108	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			07/10/2023	1	07/10/2023	07/10/2023		07/10/2023	07/10/2023
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	96
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	92
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	89
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	77	77
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	96
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	107
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	120
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	94
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	80
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	102
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	103	1	106	106	0	96	96

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	07/10/2023	07/10/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	9	104	104	0	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			07/10/2023	1	07/10/2023	07/10/2023		07/10/2023	07/10/2023
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	107
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	95
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	75
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	89
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	94
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	76	76
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	115
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	103	1	106	106	0	96	96

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	07/10/2023	07/10/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	9	104	104	0	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date extracted	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			07/10/2023	1	07/10/2023	07/10/2023		07/10/2023	07/10/2023
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	80	105
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	103	1	106	106	0	96	96

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	07/10/2023	07/10/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	9	104	104	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date prepared	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			11/10/2023	1	11/10/2023	11/10/2023		11/10/2023	11/10/2023
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	105	112
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	98	98
Chromium	mg/kg	1	Metals-020	<1	1	5	4	22	105	91
Copper	mg/kg	1	Metals-020	<1	1	7	21	100	106	122
Lead	mg/kg	1	Metals-020	<1	1	16	17	6	124	108
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	106	102
Nickel	mg/kg	1	Metals-020	<1	1	2	11	138	104	106
Zinc	mg/kg	1	Metals-020	<1	1	32	34	6	101	98

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	11/10/2023	11/10/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	9	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	9	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	9	5	4	22	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	9	24	24	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	9	59	61	3	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	9	0.1	0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	9	3	2	40	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	9	55	58	5	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	334614-2
Date prepared	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			06/10/2023	1	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	103	105

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Date analysed	-			[NT]	9	06/10/2023	06/10/2023		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	9	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date prepared	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
Date analysed	-			09/10/2023	[NT]	[NT]	[NT]	[NT]	09/10/2023	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			10/10/2023	[NT]	[NT]	[NT]	[NT]	10/10/2023	[NT]
Date analysed	-			10/10/2023	[NT]	[NT]	[NT]	[NT]	10/10/2023	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

PAHs in Soil - # Percent recovery for the surrogate/matrix spike is not possible to report as the high concentration of analytes in sample/s 334614-2ms have caused interference.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 334614-1 for Cu and Ni. Therefore a triplicate result has been issued as laboratory sample number 334614-14.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-001 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 334614-4, 6, 8, 9 were sub-sampled from jars provided by the client.
Note: Samples 334614-1, 2, 3, 5, 13 were sub-sampled from bags provided by the client.

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CERTIFICATE OF ANALYSIS 334614-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**224455.00 Randwick**
Number of Samples	Additional TCLP analysis
Date samples received	05/10/2023
Date completed instructions received	12/10/2023

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

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

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

Report Details

Date results requested by	19/10/2023
Date of Issue	17/10/2023

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Results Approved By
Liam Timmins, Organics Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)						
Our Reference		334614-A-2	334614-A-3	334614-A-6	334614-A-8	334614-A-9
Your Reference	UNITS	BH02	BH02	BH05	BH06	BH07
Depth		0-0.1	0.9-1	0-0.1	0.9-1	0.4-0.5
Date Sampled		29.9.23	29.9.23	26.9.23	29.9.23	29.9.23
Type of sample		Soil	Soil	Soil	Soil	Soil
pH of soil for fluid# determ.	pH units	8.0	8.0	8.0	7.5	7.5
pH of soil TCLP (after HCl)	pH units	1.8	1.8	1.8	1.7	1.7
Extraction fluid used		1	1	1	1	1
pH of final Leachate	pH units	5.4	5.1	5.4	5.1	5.0
Date extracted	-	16/10/2023	16/10/2023	16/10/2023	16/10/2023	16/10/2023
Date analysed	-	16/10/2023	16/10/2023	16/10/2023	16/10/2023	16/10/2023
Naphthalene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Acenaphthylene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Acenaphthene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fluorene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phenanthrene in TCLP	mg/L	<0.0001	0.0007	<0.0001	<0.0001	<0.0001
Anthracene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fluoranthene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Pyrene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo(a)anthracene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chrysene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a)pyrene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total +ve PAH's	mg/L	NIL (+)VE	0.0007	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	70	73	77	71	67

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			16/10/2023	[NT]	[NT]	[NT]	[NT]	16/10/2023	[NT]
Date analysed	-			16/10/2023	[NT]	[NT]	[NT]	[NT]	16/10/2023	[NT]
Naphthalene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Acenaphthylene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	79	[NT]
Fluorene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	79	[NT]
Phenanthrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	81	[NT]
Anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	77	[NT]
Pyrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	74	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.0002	Org-022/025	<0.0002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	66	[NT]	[NT]	[NT]	[NT]	80	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Samples received in good order: Holding time exceedance

Anna Bui

From: Nancy Zhang
Sent: Thursday, 12 October 2023 4:24 PM
To: Paul Gorman
Cc: Setareh Pourkazemi; Irha Riaz; Anna Bui; Samplereceipt
Subject: RE: Results for Registration 334614 224455.00 Randwick

Hi Paul,

No problem, will get that organized for you.

ELS REF: 334614-A
PAT: STANDARD
DUE: 19/10/23
AB

Kind Regards,

Nancy Zhang | Laboratory Manager, Sydney | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E NZhang@envirolab.com.au | W www.envirolab.com.au

Follow us on: LinkedIn | Facebook | Twitter

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

From: Paul Gorman <paul.gorman@douglaspartners.com.au>
Sent: Thursday, October 12, 2023 4:23 PM
To: Nancy Zhang <NZhang@envirolab.com.au>
Cc: Setareh Pourkazemi <Setareh.Pourkazemi@douglaspartners.com.au>; Irha Riaz <Irha.Riaz@douglaspartners.com.au>
Subject: RE: Results for Registration 334614 224455.00 Randwick

Thanks Nancy.

Can we please request the following additional testing on a standard turnaround:

2	BH02/0-0.1	TCLP PAH
3	BH02/0.9-1.0	TCLP PAH
6	BH05/0-0.1	TCLP PAH
8	BH06/0.9-1.0	TCLP PAH
9	BH07/0.4-0.5	TCLP PAH

Thanks

Paul Gorman | Principal
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au

96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0632 | M: +61 427 949 878 | E: Paul.Gorman@douglaspartners.com.au

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

From: Nancy Zhang <NZhang@envirolab.com.au>
Sent: Thursday, October 12, 2023 4:17 PM
To: Paul Gorman <paul.gorman@douglaspartners.com.au>
Subject: Results for Registration 334614 224455.00 Randwick

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
ESDAT Extracts
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

How did we do? Send Feedback

Kind Regards,

Nancy Zhang | Laboratory Manager, Sydney | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E NZhang@envirolab.com.au | W www.envirolab.com.au

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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	224455.00 Randwick
Envirolab Reference	334614-A
Date Sample Received	05/10/2023
Date Instructions Received	12/10/2023
Date Results Expected to be Reported	19/10/2023

Sample Condition

Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	Additional TCLP analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

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

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	PAHs in TCLP (USEPA 1311)	On Hold
BH01-0-0.1		✓
BH02-0-0.1	✓	
BH02-0.9-1	✓	
BH03-0.4-0.5		✓
BH04-0-0.1		✓
BH05-0-0.1	✓	
BH06-0-0.1		✓
BH06-0.9-1	✓	
BH07-0.4-0.5	✓	
BD01/20230926		✓
TS		✓
TB		✓
BH03-0.9-1		✓
BH01 - [TRIPLICATE]-0-0.1		✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	224455.00	**Suburb:**	Randwick	**To:**	Envirolab Services
Project Manager:	Paul Gorman	**Order Number:**		**Sampler:** TM	12 Ashley St, Chatswood NSW 2067
Email:	paul.gorman@douglaspartners.com.au			**Attn:**	Sample Receipt
Turnaround time:	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				(02) 9910 6200 samplereceipt@envirolab.com.au
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: Location / Other ID	Depth From	Depth To	Date Sampled	Sample Type: S - soil W - water M - Material	Container Type: G - glass P - plastic	Analytes: Combo 8a	Combo 3a	Combo 3	pH	CEC	BTEX						Notes/ Preservation/ Additional Requirements
1	BH01	0	0.1	29.9.23	S	G	X			X	X							
2	BH02	0	0.1	29.9.23	S	G	X											
3	BH02	0.9	1	29.9.23	S	G		X										
4	BH03	0.4	0.5	26.9.23	S	G	X											
13	BH03	0.9	1	26.9.23	S	G		X										
85	BH04	0	0.1	26.9.23	S	G	X											
6	BH05	0	0.1	29.9.23	S	G	X			X	X							
7	BH06	0	0.1	29.9.23	S	G	X											
8	BH06	0.9	1	29.9.23	S	G		X		X	X							
9	BH07	0.4	0.5	28.9.23	S	G	X											
-	BD01/20230929								X									Inter-laboratory (ALS)
10	BD01/20230926								X									Intra-laboratory (ELS)
11	TS											X						
12	TB											X						

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

Job No: 334614
Date Received: 5/10/23
Time Received: 1200
Received By: KW
Temp: Cool/Ambient
Cooling: Ice/Icepack 6°C
Security: Intact/Broken/None

Metals to analyse:		**LAB RECEIPT**	
Number of samples in container:	**Transported to laboratory by:**	**Lab Ref. No:**	334614
Send results to:	Douglas Partners Pty Ltd	**Received by:**	Katy Wayne
Address:	96 Hermitage Road, West Ryde NSW 211 **Phone:** (02) 9809 0666	**Date & Time:**	5/10/23 1200
Relinquished by:	**Date:** **Signed:**	**Signed:**	

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	224455.00 Randwick
Envirolab Reference	334614
Date Sample Received	05/10/2023
Date Instructions Received	05/10/2023
Date Results Expected to be Reported	12/10/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	Misc Inorg - Soil	CEC	Asbestos ID - soils
BH01-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH02-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			
BH02-0.9-1	✓	✓	✓				✓				✓
BH03-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓			✓
BH04-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓
BH05-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH06-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓
BH06-0.9-1	✓	✓	✓				✓		✓	✓	✓
BH07-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓			✓
BD01/20230926	✓	✓	✓				✓				
TS	✓										
TB	✓										
BH03-0.9-1	✓	✓	✓				✓				✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 357286

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**224455.00 Randwick**
Number of Samples	13 Soil
Date samples received	23/07/2024
Date completed instructions received	23/07/2024

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

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

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

Report Details

Date results requested by	30/07/2024
Date of Issue	30/07/2024

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

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

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Lucy Zhu, Asbestos Supervisor
Nancy Zhang, Laboratory Manager, Sydney
Tabitha Roberts, Senior Chemist
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
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	%	111	108	109	84	83

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
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	%	97	99	104	94	80

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		357286-11	357286-12	357286-13
Your Reference	UNITS	BD1/20240719	TS	TB
Depth		-	-	-
Date Sampled		19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024
TRH C_6 - C_9	mg/kg	<25	[NA]	[NA]
TRH C_6 - C_{10}	mg/kg	<25	[NA]	[NA]
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	[NA]
Benzene	mg/kg	<0.2	89%	<0.2
Toluene	mg/kg	<0.5	90%	<0.5
Ethylbenzene	mg/kg	<1	90%	<1
m+p-xylene	mg/kg	<2	90%	<2
o-Xylene	mg/kg	<1	90%	<1
Naphthalene	mg/kg	<1	[NA]	[NA]
Total +ve Xylenes	mg/kg	<1	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%	109	91	96

svTRH (C10-C40) in Soil						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	26/07/2024	26/07/2024	26/07/2024	26/07/2024	26/07/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	79	80	74	80	75

svTRH (C10-C40) in Soil						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	26/07/2024	26/07/2024	26/07/2024	26/07/2024	26/07/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	82	77	74	82	72

svTRH (C10-C40) in Soil		
Our Reference		357286-11
Your Reference	UNITS	BD1/20240719
Depth		-
Date Sampled		19/07/2024
Type of sample		Soil
Date extracted	-	24/07/2024
Date analysed	-	26/07/2024
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	75

PAHs in Soil						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	29/07/2024	29/07/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	<0.1	<0.1	<0.1	0.3
Pyrene	mg/kg	0.4	<0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	0.3	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.6	<0.2	<0.2	<0.2	0.6
Benzo(a)pyrene	mg/kg	0.4	<0.05	0.09	0.06	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.3	<0.1	<0.1	<0.1	0.3
Total +ve PAH's	mg/kg	2.9	<0.05	0.09	0.06	2.7
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	0.6	<0.5	<0.5	<0.5	0.5
Surrogate p-Terphenyl-d14	%	103	100	99	95	97

PAHs in Soil						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.2	<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	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.1	1.8	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	2.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	1.6	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	1.3	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.2	4.0	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.1	2.4	0.08
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	1.6	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.5	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.1	2.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.76	18	0.08
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	3.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	3.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	3.7	<0.5
Surrogate p-Terphenyl-d14	%	93	94	95	103	91

PAHs in Soil		
Our Reference		357286-11
Your Reference	UNITS	BD1/20240719
Depth		-
Date Sampled		19/07/2024
Type of sample		Soil
Date extracted	-	24/07/2024
Date analysed	-	29/07/2024
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.3
Pyrene	mg/kg	0.4
Benzo(a)anthracene	mg/kg	0.2
Chrysene	mg/kg	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.6
Benzo(a)pyrene	mg/kg	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2
Total +ve PAH's	mg/kg	2.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	96

Organochlorine Pesticides in soil						
Our Reference		357286-1	357286-2	357286-4	357286-6	357286-8
Your Reference	UNITS	BH101	BH102	BH104	BH106	BH108
Depth		0.5-0.6	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	18/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	29/07/2024	29/07/2024	29/07/2024
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
Surrogate 4-Chloro-3-NBTF	%	102	97	88	91	88

Organochlorine Pesticides in soil			
Our Reference		357286-9	357286-10
Your Reference	UNITS	BH109	BH110
Depth		0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	19/07/2024
Type of sample		Soil	Soil
Date extracted	-	24/07/2024	24/07/2024
Date analysed	-	29/07/2024	29/07/2024
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	92

Organophosphorus Pesticides in Soil						
Our Reference		357286-1	357286-2	357286-4	357286-6	357286-8
Your Reference	UNITS	BH101	BH102	BH104	BH106	BH108
Depth		0.5-0.6	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	18/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	29/07/2024	29/07/2024	29/07/2024
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	%	102	97	88	91	88

Organophosphorus Pesticides in Soil			
Our Reference		357286-9	357286-10
Your Reference	UNITS	BH109	BH110
Depth		0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	19/07/2024
Type of sample		Soil	Soil
Date extracted	-	24/07/2024	24/07/2024
Date analysed	-	29/07/2024	29/07/2024
Dichlorvos	mg/kg	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	92

PCBs in Soil						
Our Reference		357286-1	357286-2	357286-4	357286-6	357286-8
Your Reference	UNITS	BH101	BH102	BH104	BH106	BH108
Depth		0.5-0.6	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	18/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	29/07/2024	29/07/2024	29/07/2024
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	91	91	90	89

PCBs in Soil			
Our Reference		357286-9	357286-10
Your Reference	UNITS	BH109	BH110
Depth		0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	19/07/2024
Type of sample		Soil	Soil
Date extracted	-	24/07/2024	24/07/2024
Date analysed	-	29/07/2024	29/07/2024
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	92	90

Misc Soil - Inorg						
Our Reference		357286-1	357286-2	357286-4	357286-6	357286-8
Your Reference	UNITS	BH101	BH102	BH104	BH106	BH108
Depth		0.5-0.6	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	18/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	26/07/2024	26/07/2024	26/07/2024	26/07/2024	26/07/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg			
Our Reference		357286-9	357286-10
Your Reference	UNITS	BH109	BH110
Depth		0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	19/07/2024
Type of sample		Soil	Soil
Date prepared	-	24/07/2024	24/07/2024
Date analysed	-	26/07/2024	26/07/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5

Acid Extractable metals in soil						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Arsenic	mg/kg	4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	1	3	8	5
Copper	mg/kg	7	3	5	9	39
Lead	mg/kg	32	7	13	15	27
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	<1	2	4	2
Zinc	mg/kg	12	14	18	24	32

Acid Extractable metals in soil						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	<1	3	2	<1
Copper	mg/kg	1	2	10	19	3
Lead	mg/kg	<1	1	21	73	6
Mercury	mg/kg	<0.1	<0.1	0.3	0.4	<0.1
Nickel	mg/kg	<1	<1	1	1	<1
Zinc	mg/kg	2	3	33	88	6

Acid Extractable metals in soil		
Our Reference		357286-11
Your Reference	UNITS	BD1/20240719
Depth		-
Date Sampled		19/07/2024
Type of sample		Soil
Date prepared	-	24/07/2024
Date analysed	-	29/07/2024
Arsenic	mg/kg	5
Cadmium	mg/kg	<0.4
Chromium	mg/kg	2
Copper	mg/kg	8
Lead	mg/kg	31
Mercury	mg/kg	<0.1
Nickel	mg/kg	1
Zinc	mg/kg	20

Moisture						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Moisture	%	4.6	2.5	1.4	3.9	4.8

Moisture						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2024	24/07/2024	24/07/2024	24/07/2024	24/07/2024
Date analysed	-	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Moisture	%	2.5	6.1	9.0	8.9	4.4

Moisture		
Our Reference		357286-11
Your Reference	UNITS	BD1/20240719
Depth		-
Date Sampled		19/07/2024
Type of sample		Soil
Date prepared	-	24/07/2024
Date analysed	-	25/07/2024
Moisture	%	4.2

Asbestos ID - soils NEPM						
Our Reference		357286-1	357286-2	357286-3	357286-4	357286-5
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.6	0.2-0.3	0.5-0.7	0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	17/07/2024	17/07/2024	18/07/2024	18/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Sample mass tested	g	883.58	390.33	652.03	687.65	788
Sample Description	-	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Grey fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil

Asbestos ID - soils NEPM						
Our Reference		357286-6	357286-7	357286-8	357286-9	357286-10
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Depth		0.5-0.6	0.1-0.2	0.5-0.6	0.1-0.2	0.5-0.6
Date Sampled		19/07/2024	18/07/2024	19/07/2024	19/07/2024	19/07/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Sample mass tested	g	945.5	967.36	861.03	848.28	801.83
Sample Description	-	Grey sandy soil & rocks	Grey sandy soil & rocks	Brown sandy soil & rocks	Grey fine-grained soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	Amosite	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	0.0002	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	YES	Nil

Misc Inorg - Soil			
Our Reference		357286-4	357286-10
Your Reference	UNITS	BH104	BH110
Depth		0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	19/07/2024
Type of sample		Soil	Soil
Date prepared	-	25/07/2024	25/07/2024
Date analysed	-	25/07/2024	25/07/2024
pH 1:5 soil:water	pH Units	8.6	8.6

CEC			
Our Reference		357286-4	357286-10
Your Reference	UNITS	BH104	BH110
Depth		0.5-0.6	0.5-0.6
Date Sampled		18/07/2024	19/07/2024
Type of sample		Soil	Soil
Date prepared	-	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024
Exchangeable Ca	meq/100g	14	0.3
Exchangeable K	meq/100g	0.2	<0.1
Exchangeable Mg	meq/100g	0.1	<0.1
Exchangeable Na	meq/100g	<0.1	<0.1
Cation Exchange Capacity	meq/100g	15	<1

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. NOTE#1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF 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.
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.
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 by ICP-AES.
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.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			25/07/2024	1	25/07/2024	25/07/2024		25/07/2024	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	111	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	111	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	107	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	108	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	113	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	114	[NT]
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	97	[NT]
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	120	1	111	87	24	110	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	25/07/2024	25/07/2024		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	10	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	10	80	99	21	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			25/07/2024	1	26/07/2024	26/07/2024		25/07/2024	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	98	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	94	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	98	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	94	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	81	1	79	77	3	79	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	26/07/2024	26/07/2024		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	10	72	73	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			29/07/2024	1	25/07/2024	25/07/2024		29/07/2024	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.1	0	100	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.4	0	106	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.5	22	102	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.3	0.3	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	0.3	0.3	0	82	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	0.6	0.6	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	0.4	0.4	0	84	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	0.3	0.3	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	96	1	103	103	0	99	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	29/07/2024	29/07/2024		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	10	0.08	0.06	29	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	10	91	89	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			29/07/2024	1	25/07/2024	25/07/2024		29/07/2024	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	1	102	100	2	93	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	29/07/2024	29/07/2024		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	10	92	89	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			29/07/2024	1	25/07/2024	25/07/2024		29/07/2024	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	1	102	100	2	93	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	29/07/2024	29/07/2024		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	10	92	89	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			29/07/2024	1	25/07/2024	25/07/2024		29/07/2024	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	113	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	91	1	92	93	1	93	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	29/07/2024	29/07/2024		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	10	90	88	2	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	357286-2
Date prepared	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	24/07/2024
Date analysed	-			26/07/2024	1	26/07/2024	26/07/2024		26/07/2024	26/07/2024
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	103	99

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			24/07/2024	1	24/07/2024	24/07/2024		24/07/2024	[NT]
Date analysed	-			29/07/2024	1	25/07/2024	25/07/2024		25/07/2024	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	4	<4	0	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	2	2	0	102	[NT]
Copper	mg/kg	1	Metals-020	<1	1	7	9	25	103	[NT]
Lead	mg/kg	1	Metals-020	<1	1	32	35	9	102	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	88	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	<1	1	0	99	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	12	14	15	98	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	24/07/2024	24/07/2024		[NT]	[NT]
Date analysed	-			[NT]	10	25/07/2024	25/07/2024		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	10	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	10	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	10	<1	<1	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	10	3	1	100	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	10	6	4	40	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	10	<1	<1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	10	6	3	67	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			25/07/2024	[NT]	[NT]	[NT]	[NT]	25/07/2024	[NT]
Date analysed	-			25/07/2024	[NT]	[NT]	[NT]	[NT]	25/07/2024	[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-W1	[NT]
Date prepared	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
Date analysed	-			30/07/2024	[NT]	[NT]	[NT]	[NT]	30/07/2024	[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]	101	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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.

Factual description of asbestos identified in the soil samples: NEPM
Sample 357286-9; Amosite asbestos identified in 0.0002g of loose fibre bundles

Note: All samples analysed as received. However, sample 357286-2 was below the minimum recommended 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

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

CERTIFICATE OF ANALYSIS 357286-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**224455.00 Randwick**
Number of Samples	Additional analysis
Date samples received	23/07/2024
Date completed instructions received	31/07/2024

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

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

Report Details

Date results requested by	07/08/2024
Date of Issue	07/08/2024

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Nancy Zhang, Laboratory Manager, Sydney

Authorised By
Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		357286-A-9
Your Reference	UNITS	BH109
Depth		0.1-0.2
Date Sampled		19/07/2024
Type of sample		Soil
pH of soil for fluid# determ.	pH units	8.7
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used		1
pH of final Leachate	pH units	5.0
Date extracted	-	06/08/2024
Date analysed	-	07/08/2024
Naphthalene in TCLP	mg/L	<0.0001
Acenaphthylene in TCLP	mg/L	<0.0001
Acenaphthene in TCLP	mg/L	<0.0001
Fluorene in TCLP	mg/L	<0.0001
Phenanthrene in TCLP	mg/L	<0.0001
Anthracene in TCLP	mg/L	<0.0001
Fluoranthene in TCLP	mg/L	<0.0001
Pyrene in TCLP	mg/L	<0.0001
Benzo(a)anthracene in TCLP	mg/L	<0.0001
Chrysene in TCLP	mg/L	<0.0001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.0002
Benzo(a)pyrene in TCLP	mg/L	<0.0001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.0001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.0001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.0001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	77

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			06/08/2024	[NT]	[NT]	[NT]	[NT]	06/08/2024	[NT]
Date analysed	-			06/08/2024	[NT]	[NT]	[NT]	[NT]	06/08/2024	[NT]
Naphthalene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Acenaphthylene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	91	[NT]
Fluorene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Phenanthrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Pyrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.0002	Org-022/025	<0.0002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	88	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.0001	Org-022/025	<0.0001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	89	[NT]

Result Definitions

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

Anna Bui

From: Stuart Chen
Sent: Wednesday, 31 July 2024 10:56 AM
To: Paul Gorman; Samplereceipt
Cc: Setareh Pourkazemi
Subject: RE: Results for Registration 357286 224455.00 Randwick

No worries Paul.

@Samplereceipt Please book in -A job.

ELS REF : 357286-A
TAT: STANDARD
DUE. 7/8/24
AB

Kind Regards,

Stuart Chen | Reporting Coordinator | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E SChen2@envirolab.com.au | **W** www.envirolab.com.au

Follow us on: LinkedIn | Facebook | Twitter

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

From: Paul Gorman <paul.gorman@douglaspartners.com.au>
Sent: Wednesday, July 31, 2024 8:40 AM
To: Stuart Chen <SChen2@envirolab.com.au>
Cc: Setareh Pourkazemi <Setareh.Pourkazemi@douglaspartners.com.au>
Subject: RE: Results for Registration 357286 224455.00 Randwick

Thanks Stuart.

Can we please schedule TCLP testing for the following sample:

9 BH109/0.1-0.2 PAH

Standard turnaround.

Regards

Paul Gorman | Principal

02 8878 0632 +61 427 949 878 Paul.Gorman@douglaspartners.com.au

www.douglaspartners.com.au 96 Hermitage Road, West Ryde
NSW 2114 | Wallumedegal Country
PO Box 472, West Ryde, NSW 1685

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	224455.00 Randwick
Envirolab Reference	357286-A
Date Sample Received	23/07/2024
Date Instructions Received	31/07/2024
Date Results Expected to be Reported	07/08/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	Additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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Sample ID	PAHs in TCLP (USEPA 1311)	On Hold
BH101-0.5-0.6		✓
BH102-0.2-0.3		✓
BH103-0.5-0.7		✓
BH104-0.5-0.6		✓
BH105-0.5-0.6		✓
BH106-0.5-0.6		✓
BH107-0.1-0.2		✓
BH108-0.5-0.6		✓
BH109-0.1-0.2	✓	
BH110-0.5-0.6		✓
BD1/20240719		✓
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.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	224455.00	**Suburb:**	Randwick	**To:**	*Envirolab Services*
Project Manager:	Paul Gorman	**Order Number:**		**Sampler:**	JL
Email		paul.gorman@douglaspartners.com.au		**Attn:**	*Aileen Hie*
Turnaround time:	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day			**Contact:**	*02 99106200 Email ahie@envirolab.com.au*
Prior Storage:	☑ Fridge ☐ Freezer ☐ Shelf	**Do samples contain 'potential' HBM?**	☐ No ☑ Yes (If YES, then handle, transport and store in accordance with FPM HAZID)		

Lab ID	Sample ID: Location / Other ID	Depth From	Depth To	Date Sampled	Sample Type: S - soil W - water	Container Type: G - glass P - plastic	Analytes: Combo 8a NEPM	Combo 3a NEPM	Combo 3	BTEX	pH	CEC						Notes/ Preservation/ Additional Requirements
1	BH101	0.5	0.6	18.7.24	S	G/P	x											
2	BH102	0.2	0.3	17.7.24	S	G/P	x											
3	BH103	0.5	0.7	17.7.24	S	G/P		x										
4	BH104	0.5	0.6	18.7.24	S	G/P	x				x	x						
5	BH105	0.5	0.6	18.7.24	S	G/P		x										
6	BH106	0.5	0.6	19.7.24	S	G/P	x											
7	BH107	0.1	0.2	18.7.24	S	G/P		x										
8	BH108	0.5	0.6	19.7.24	S	G/P	x											
9	BH109	0.1	0.2	19.7.24	S	G/P	x											
10	BH110	0.5	0.6	19.7.24	S	G/P	x				x	x						
11	BD1/20240719				S	G			x									
12	TS				S	G				x								
13	TB				S	G				x								

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

Job No: 357286
Date Received: 23/7/24
Time Received: 1410
Received By: CW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Number of samples in container:		**Transported to laboratory by:**	courier
Send results to:	Douglas Partners Pty Ltd		
Address:	96 Hermitage Road, West Ryde	**Phone:**	
Relinquished by:		**Date:**	**Signed:**

LAB RECEIPT

Lab Ref. No:	
Received by:	
Date & Time:	
Signed:	

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SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	224455.00 Randwick
Envirolab Reference	357286
Date Sample Received	23/07/2024
Date Instructions Received	23/07/2024
Date Results Expected to be Reported	30/07/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Misc Soil - Inorg	Acid Extractable metalsin soil	Asbestos ID - soils NEPM	Misc Inorg - Soil	CEC
BH101-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH102-0.2-0.3	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH103-0.5-0.7	✓	✓	✓					✓	✓		
BH104-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH105-0.5-0.6	✓	✓	✓					✓	✓		
BH106-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH107-0.1-0.2	✓	✓	✓					✓	✓		
BH108-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH109-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH110-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD1/20240719	✓	✓	✓					✓			
TS	✓										
TB	✓										

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Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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

CERTIFICATE OF ANALYSIS 357965

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**224455.00 Randwick**
Number of Samples	1 Soil
Date samples received	31/07/2024
Date completed instructions received	31/07/2024

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

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

Report Details

Date results requested by	07/08/2024
Date of Issue	06/08/2024

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

Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		357965-1
Your Reference	UNITS	BH109
Depth		0.5-0.6
Type of sample		Soil
Date extracted	-	01/08/2024
Date analysed	-	03/08/2024
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	107

svTRH (C10-C40) in Soil		
Our Reference		357965-1
Your Reference	UNITS	BH109
Depth		0.5-0.6
Type of sample		Soil
Date extracted	-	01/08/2024
Date analysed	-	02/08/2024
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	87

PAHs in Soil		
Our Reference		357965-1
Your Reference	UNITS	BH109
Depth		0.5-0.6
Type of sample		Soil
Date extracted	-	01/08/2024
Date analysed	-	01/08/2024
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1
Total +ve PAH's	mg/kg	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	110

Acid Extractable metals in soil		
Our Reference		357965-1
Your Reference	UNITS	BH109
Depth		0.5-0.6
Type of sample		Soil
Date prepared	-	01/08/2024
Date analysed	-	02/08/2024
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	<1
Copper	mg/kg	1
Lead	mg/kg	6
Mercury	mg/kg	<0.1
Nickel	mg/kg	<1
Zinc	mg/kg	5

Moisture		
Our Reference		357965-1
Your Reference	UNITS	BH109
Depth		0.5-0.6
Type of sample		Soil
Date prepared	-	01/08/2024
Date analysed	-	02/08/2024
Moisture	%	4.0

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
Date analysed	-			03/08/2024	[NT]	[NT]	[NT]	[NT]	03/08/2024	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	110	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	109	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	114	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	109	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	88	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
Date analysed	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	129	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	129	[NT]
Surrogate o-Terphenyl	%		Org-020	95	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
Date analysed	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	90	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	113	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date prepared	-			01/08/2024	[NT]	[NT]	[NT]	[NT]	01/08/2024	[NT]
Date analysed	-			02/08/2024	[NT]	[NT]	[NT]	[NT]	02/08/2024	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	108	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	108	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	224455.00	**Suburb:**	Randwick	**To:**	Envirolab Services
Project Manager:	Paul Gorman	**Order Number:**		**Sampler:**	TM
Email:	paul.gorman@douglaspartners.com.au			**Attn:**	Sample Receipt
Turnaround time:	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				12 Ashley St, Chatswood NSW 2067
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)		(02) 9910 6200 samplereceipt@envirolab.com.au

Lab ID	Sample ID: Location / Other ID	Depth From	Depth To	Date Sampled	Sample Type: S - soil W - water M - Material	Container Type: G - glass P - plastic	Analytes: Combo 8a	Combo 3a	Combo 3	pH	CEC	BTEX					Notes/ Preservation/ Additional Requirements
1	BH109	0.5	0.6		S	G			X								

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

Job No: 357965
Date Received: 3/7/24
Time Received: 1445
Received By: CW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Metals to analyse:			
Number of samples in container:		**Transported to laboratory by:**	
Send results to:	Douglas Partners Pty Ltd		
Address:	96 Hermitage Road, West Ryde NSW 211	**Phone:** (02) 9809 0666	
Relinquished by:		**Date:**	**Signed:**

LAB RECEIPT	
Lab Ref. No:	
Received by:	
Date & Time:	
Signed:	

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	224455.00 Randwick
Envirolab Reference	357965
Date Sample Received	31/07/2024
Date Instructions Received	31/07/2024
Date Results Expected to be Reported	07/08/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Acid Extractable metalsin soil
BH109-0.5-0.6	✓	✓	✓	✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2334471**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Contact	: Customer Services EM
Address	: 96 HERMITAGE ROAD WEST RYDE NSW, AUSTRALIA 2114	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3237 8900	Telephone	: +61 3 8549 9600
Project	: 224455.00	Date Samples Received	: 06-Oct-2023 18:30
Order number	: ----	Date Analysis Commenced	: 11-Oct-2023
C-O-C number	: ----	Issue Date	: 16-Oct-2023 15:15
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : 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
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BD01/20230929	----	----	----	----
				Sampling date / time	[29-Sep-2023]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2334471-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**5.0**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		**8**	----	----	----	----
Copper	7440-50-8	5	mg/kg		**7**	----	----	----	----
Lead	7439-92-1	5	mg/kg		**19**	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**2**	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**42**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BD01/20230929	----	----	----	----
				Sampling date / time	[29-Sep-2023]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2334471-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**72.9**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**76.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**63.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**86.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**85.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**96.6**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**96.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**100**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BD01/20230929	----	----	----	----
				Sampling date / time	[29-Sep-2023]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2334471-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**109**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

QUALITY CONTROL REPORT

Work Order	: **ES2334471**	Page	: 1 of 7
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Contact	: Customer Services EM
Address	: 96 HERMITAGE ROAD WEST RYDE NSW, AUSTRALIA 2114	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3237 8900	Telephone	: +61 3 8549 9600
Project	: 224455.00	Date Samples Received	: 06-Oct-2023
Order number	: ----	Date Analysis Commenced	: 11-Oct-2023
C-O-C number	: ----	Issue Date	: 16-Oct-2023
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

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**

				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: 5358131)									
ES2334459-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	19	16	16.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	48	50	5.7	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	50	56	11.0	0% - 50%
ES2334616-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	9	21.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	9	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	46	42	9.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	26	26	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	72	55	26.1	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5353253)									
ES2334192-035	Anonymous	EA055: Moisture Content	----	0.1	%	12.9	12.8	1.2	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5358130)									
ES2334616-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.0	No Limit
ES2334457-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5354980)									
ES2334459-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	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 (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5354980) - continued									
ES2334459-001	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.7	<0.5	27.6	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.2	0.6	61.8	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.2	0.6	60.7	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.5	0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.2	1.7	84.7	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5352953)									
ES2334192-035	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2334471-001	BD01/20230929	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5354981)									
ES2334459-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	240	110	74.3	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	250	130	65.3	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5352953)									
ES2334192-035	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2334471-001	BD01/20230929	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5354981)									
ES2334459-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	430	200	72.5	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	130	<100	29.8	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 5352953)									
ES2334192-035	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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

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: BTEXN (QC Lot: 5352953) - continued									
ES2334471-001	BD01/20230929	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5358131)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	109	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	130	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	118	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	107	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	111	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	102	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	96.9	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5358130)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	100	70.0	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5354980)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	87.5	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	84.5	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	83.8	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	87.2	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	85.6	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	92.6	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	90.8	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.9	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.4	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.4	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	89.9	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	81.4	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	79.7	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	79.6	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5352953)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	89.0	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5354981)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	89.3	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5354981) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	99.4	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	101	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5352953)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	88.7	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5354981)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	97.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	99.0	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	103	63.0	131
EP080: BTEXN (QCLot: 5352953)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	91.7	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.9	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	100	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	104	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	112	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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5358131)							
ES2334459-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	111	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.9	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	105	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	100	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	106	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5358130)							
ES2334457-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	105	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5354980)							
ES2334459-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	82.7	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5354980) - continued							
ES2334459-001	Anonymous	EP075(SIM): Pyrene	129-00-0	10 mg/kg	108	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5352953)							
ES2334471-001	BD01/20230929	EP080: C6 - C9 Fraction	----	32.5 mg/kg	64.0	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5354981)							
ES2334459-001	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	125	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	119	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	120	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5352953)							
ES2334471-001	BD01/20230929	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	63.8	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5354981)							
ES2334459-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	110	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	121	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	101	52.0	132
EP080: BTEXN (QCLot: 5352953)							
ES2334471-001	BD01/20230929	EP080: Benzene	71-43-2	2.5 mg/kg	69.4	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	77.3	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.6	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	86.4	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.5	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	106	61.1	115

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2334471**	Page	: 1 of 5
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Telephone	: +61 3 8549 9600
Project	: 224455.00	Date Samples Received	: 06-Oct-2023
Site	: ----	Issue Date	: 16-Oct-2023
Sampler	: ----	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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved						
BD01/20230929	----	----	----	14-Oct-2023	13-Oct-2023	**1**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved						
BD01/20230929	----	----	----	14-Oct-2023	13-Oct-2023	**1**
EP080: BTEXN						
Soil Glass Jar - Unpreserved						
BD01/20230929	----	----	----	14-Oct-2023	13-Oct-2023	**1**

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 / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BD01/20230929	**29-Sep-2023**	**----**	----	----	**11-Oct-2023**	13-Oct-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BD01/20230929	**29-Sep-2023**	**13-Oct-2023**	27-Mar-2024	✓	**13-Oct-2023**	27-Mar-2024	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BD01/20230929	**29-Sep-2023**	**13-Oct-2023**	27-Oct-2023	✓	**14-Oct-2023**	27-Oct-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**14-Oct-2023**	21-Nov-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**13-Oct-2023**	21-Nov-2023	✓
Soil Glass Jar - Unpreserved (EP080)							
BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**14-Oct-2023**	13-Oct-2023	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071) BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**13-Oct-2023**	21-Nov-2023	✓
Soil Glass Jar - Unpreserved (EP080) BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**14-Oct-2023**	13-Oct-2023	×
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BD01/20230929	**29-Sep-2023**	**12-Oct-2023**	13-Oct-2023	✓	**14-Oct-2023**	13-Oct-2023	×

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	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	**10.53**	**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	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**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	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**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	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**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	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**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 (SnCl2) (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 SnCl2 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).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is 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, Na2SO4 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 : **ES2334471**

Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Contact	: Customer Services EM
Address	: 96 HERMITAGE ROAD WEST RYDE NSW, AUSTRALIA 2114	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: paul.gorman@douglaspartners.com.au	E-mail	: ALSEnviro.Melbourne@alsglobal.com
Telephone	: +61 07 3237 8900	Telephone	: +61 3 8549 9600
Facsimile	: +61 07 3237 8999	Facsimile	: +61-2-8784 8500
Project	: 224455.00	Page	: 1 of 2
Order number	: ----	Quote number	: EM2017DOUPAR0002 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 06-Oct-2023 18:30	Issue Date	: 10-Oct-2023
Client Requested Due Date	: 16-Oct-2023	Scheduled Reporting Date	: **16-Oct-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 17.6'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.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 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-26 8 metals/TRH/BTEXN/PAH
ES2334471-001	[29-Sep-2023]	BD01/20230929	✓	✓

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	apinvoices@douglaspartners.com.au

ESDAT ESDAT

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

PAUL GORMAN

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

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	224455.00	**Suburb:**	Randwick	**To:**	Envirolab Services
Project Manager:	Paul Gorman	**Order Number:**		**Sampler:**	TM
Email:	paul.gorman@douglaspartners.com.au			**Attn:**	Sample Receipt
Turnaround time:	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				12 Ashley St, Chatswood NSW 2067
					(02) 9910 6200 samplereceipt@envirolab.com.au
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: Location / Other ID	Depth From	Depth To	Date Sampled	Sample Type: S - soil W - water M - Material	Container Type: G - glass P - plastic	Analytes: Combo 8a	Combo 3a	Combo 3	pH	CEC	BTEX						Notes/ Preservation/ Additional Requirements
1	BH01	0	0.1	29.9.23	S	G	X			X	X							
2	BH02	0	0.1	29.9.23	S	G	X											
3	BH02	0.9	1	29.9.23	S	G		X										
4	BH03	0.4	0.5	26.9.23	S	G	X											
NR	BH03	0.9	1	26.9.23	S	G		X										
5	BH04	0	0.1	26.9.23	S	G	X											
6	BH05	0	0.1	29.9.23	S	G	X			X	X							
7	BH06	0	0.1	29.9.23	S	G	X											
8	BH06	0.9	1	29.9.23	S	G		X		X	X							
9	BH07	0.4	0.5	28.9.23	S	G	X											
(1) –	BD01/20230929								X									Inter-laboratory (ALS)
10	BD01/20230926								X									Intra-laboratory (ELS)
NR	TS											X						
NR	TB											X						

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

Job No: 334614
Date Received: 5/10/23
Time Received: 1200
Received By: KW
Temp: Cool/Ambient 6°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Environmental Division
Sydney
Work Order Reference
ES2334471

Telephone : +61-2-8784 8555

Andrew 6/10/23 0:30

Metals to analyse:		**LAB RECEIPT**	
Number of samples in container:	**Transported to laboratory by:**	**Lab Ref. No:**	334614
Send results to:	Douglas Partners Pty Ltd	**Received by:**	Katy Wayne
Address:	96 Hermitage Road, West Ryde NSW 211 **Phone:** (02) 9809 0666	**Date & Time:**	5/10/23 1200
Relinquished by:	~~ALS~~ ELS SYD Jenna Nguyen 06/10/23, 1200 **Date:** **Signed:**	**Signed:**	

Appendix K

Data Quality Assurance and Quality Control

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 in the summary results tables OR 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% of primary soil samples	C
	<30% RPD	PC
Inter-laboratory replicates	5% 10% of primary soil samples	C
	<30% RPD	PC
Trip spikes	1 per sampling event	C
	60-140% recovery	C
Trip blanks	1 per sampling event	C
	<PQL	C
Rinsates	1 per sampling event	NC
	<PQL	NC
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 some heavy metals, PAH and TRH as indicated in Table QA1, QA2 and QA3 (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.

A trip spike and trip blank were taken into the field during the soil sampling. No analytes were recorded above the PQL in the trip blank samples analysed (Table QA4, at the end of this appendix). All results in the trip spike samples were within the acceptable range of recovery (Table QA5, at the end of this Appendix).

No rinsate sample was collected during the limited investigations. Where possible soil samples were collected from recovered materials which had not been in direct contact with drilling equipment. However, all other QA procedures were met and given the results of field trip spike and trip blank and recorded concentrations of analysed samples, it is considered that the non compliance does not impact the reliability of the results.

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.

Table 2: Data quality indicators

Data quality indicator	Method(s) of achievement
Completeness	Systematic and selected target locations sampled, consistent with the requirements of SINSW under the due diligence panel works.
	Preparation of borehole 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 (COC) 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.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project.
	Experienced sampler(s) 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 COC.
Precision	Field staff followed standard operating procedures.
	RPD of >30% exceedances occurred for field duplicates in multiple samples between primary and secondary samples. However, the concentrations of all samples analysed were either below the SAC.
	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 been generally 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 to QA3: Relative Percentage Difference Results – Soil

Lab Report No	Sample ID	Depth	Sample Date	Sample Type	Units	Priority metals								PAH				Priority TRH				BTEX			
						Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAH	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes
Table QA1																									
357021	BH105	0.5-0.6	18/07/2024	Soil	mg/kg	<4	<0.4	5	39	27	<0.1	2	32	<1	0.3	<0.5	2.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1
357021	BD1/20240719	0.5-0.6	18/07/2024	Soil	mg/kg	5	<0.4	2	8	31	<0.1	1	20	<1	0.3	<0.5	2.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			Difference		mg/kg	1	0	3	31	4	0	1	12	0	0	0	3	0	0	0	0	0	0	0	0
			RPD		%	16%	0%	**81%**	**132%**	14%	0%	0%	**46%**	0%	0%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%
Table QA2																									
334614	BD01/20230929	0 - 0.1 m	29/09/23	Normal	mg/kg	<4	<1	8	7	19	<0.1	2	42	<0.5	<0.5	<0.5	<0.5	<10	<50	<100	<100	<0.2	<0.5	<1	<1
334614	BH01	0 - 0.1 m	29/09/23	Normal	mg/kg	<4	<0.4	5	7	16	<0.1	2	32	<0.1	0.2	<0.5	1.5	<25	<50	<100	<100	<0.2	<0.5	<0.5	<0.5
			Difference			0	0.3	3	0	3	0	0	10	0.4	0.3	0	1	15	0	0	0	0	0	0.4	0.4
			RPD			0%	**860%**	**46%**	0%	17%	0%	0%	27%	**133%**	**82%**	0%	**100%**	**86%**	0%	0%	0%	0%	0%	**67%**	**67%**
Table QA3																									
334614	BD01/20230926	0.4 - 0.5 m	26/09/2023	Normal	mg/kg	<4	<0.4	8	30	34	<0.1	5	100	<0.1	0.85	1.2	6.8	<25	<50	150	<100	<0.2	<0.5	<1	<1
334614	BH03	0.4 - 0.5 m	26/09/2023	Normal	mg/kg	<4	<0.4	7	33	42	<0.1	6	120	<0.1	1.1	1.5	10	<25	<50	140	<100	<0.2	<0.5	<1	<1
			Difference			0	0	1	3	8	0	1	20	0	0.25	0.3	5.3	0	0	10	0	0	0	0	0
			RPD			0%	0%	13%	10%	21%	0%	18%	18%	0%	26%	22%	**128%**	0%	0%	7%	0%	0%	0%	0%	0%

Table QA4: Trip Blank Results

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	BTEX					TRH				Lab Report No
					Benzene	Toluene	Ethylbenzene	o-Xylene	Total Xylenes	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	
TB	19/07/24	Soil	Soil	mg/kg	<0.2	<0.5	<1	<1	<1	-	-	-	-	357286
TB	29/09/2023	Soil	Soil	mg/kg	<0.2	<0.5	<1	<1	<1	<25	-	-	-	334614

Table QA5: Trip Spike Results (% Recovery)

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	BTEX					TRH				Lab Report No
					Benzene	Toluene	Ethylbenzene	o-Xylene	Total Xylenes	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	
TS	19/07/24	Soil	Soil	mg/kg	89	90	90	90	90	-	-	-	-	357286
TS	29/09/2023	Soil	Soil	mg/kg	104	104	105	106	106	-	-	-	-	334614