GCA

Geotechnical Consultants Australia

Triple Eight Corporation

Detailed Site Investigation

Proposed Development at:

241-245 Pennant Hills Road

Carlingford NSW 2118

Lots 1, 2, 5 and 6/-/DP805059

E21172-1

9th September 2021

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Report Distribution

Detailed Site Investigation

Address: 241-245 Pennant Hills Road Carlingford NSW 2118

GCA Report No.: E21172-1

Date: 9th September 2021

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1 Soft Copy (PDF) – Secured and Issued by Email	Triple Eight Corporation Nigel White nigel@planningdirection.com.au
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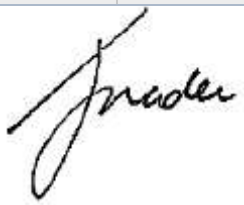
Version	Prepared By	Reviewed By	Date Issue
Draft	***Ehsan Zare*** *Environmental Consultant* 	**Nick Caltabiano** *Project Manager* 	7th September 2021
FINAL	**Ehsan Zare** *Environmental Consultant* 	**Nick Caltabiano** *Project Manager* 	9th September 2021

Report Revision	Details	Report No.	Date	Amended By
0	FINAL Report	E21172-1	9th September 2021	-

Issued By:



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Executive Summary

Geotechnical Consultants Australia Pty Ltd (GCA) were appointed by Mr. Nigel White of Triple Eight Corporation (the client) to undertake a Detailed Site Investigation (DSI) for the property located at nos. 241-245 Pennant Hills Road Carlingford NSW 2118 (Lots 1, 2, 5 and 6 /-/DP805059; total approx. area 6,476m^2 of site; current zoning B2 - Local Centre).

The proposed development for this site is expected to be a mix of commercial and residential land uses at a scale and density that is compatible with other recently developed sites within the Carlingford town centre.

The objective of this DSI was to provide a detailed assessment of current and/or historical potentially contaminating activities that may have impacted the site.

A site investigation was undertaken on the 20th August 2021 by a qualified environmental consultant. GCA obtained 26 soil samples from fourteen (14) boreholes (one (1) or two (2) samples per borehole and five (5) duplicate sample for QA/QC procedures). Further, four (4) groundwater monitoring wells were installed, and one (1) water sample was collected from each well. Samples were submitted to National Association of Testing Authorities, Australia (NATA) accredited laboratory for chemical analysis.

During the site inspection, no visible or aromatic indicators of potential contamination were identified, and no obvious features associated with any underground tanks (bowsers, breather pipe, inlet valve and piping) or odour that would indicate the potential for contamination were discovered.

Based on the site investigation and analytical results, GCA considers the potential for significant contamination of the underlying natural soils and groundwater onsite to be low. Laboratory analysis confirmed minimal indications of; TRH, BTEX, OCP/OPP, PAH, Asbestos or Heavy Metals contamination within the soil and groundwater of the site.

However, elevated level of carcinogenic PAHs (as BaP TEQ) was detected above the assessment criteria (HIL-A) of 3mg/kg within the topsoil/fill layer in samples; BH1.1 (9.6mg/kg) and BH4 (5.1mg/kg). It is worth noting that HILs relevant to BaP and carcinogenic PAHs assessed on the basis of BaP TEQ. Elevated levels of BaP in relatively immobile sources, such as bitumen fragments, do not represent a significant health risk (NEPM 2011, Guideline on health-based investigation levels-B7- Page10).

GCA confirm that elevated levels of carcinogenic PAHs are associated with the bitumen fragments of the ground surface directly above BH1 and BH4.

In addition, the analytical results indicate Heavy Metal values including Cadmium, Chromium, Copper, Nickel and Zinc although bellow GIL for drinking water guidelines but exceeded the GIL for Marine and Fresh Water guidelines for some or all the water samples.

Since the dissolved heavy metal concentrations are typical of background levels present in the geology within the Sydney basin. The observed exceedances are probably due to existing background levels associated with the site conditions and geology. Moreover, the subject site does not adjoin an area of high ecological value, such as a sensitive and protected wetland. Thus, the risk of these elevated values of Heavy Metal concentration is considered not significant.

Therefore, GCA finds that the site is suitable for the proposed development and land use, providing the recommendations within **Section 16, Recommendations** of this report are undertaken during the Construction Certificate (CC) stage.

1. Introduction

Geotechnical Consultants Australia Pty Ltd (GCA) were appointed by Mr. Nigel White of Triple Eight Corporation (the client) to undertake a Detailed Site Investigation (DSI) for the property located at nos. 241-245 Pennant Hills Road Carlingford NSW 2118 (Lots 1, 2, 5 and 6 /-/DP805059; total approx. area 6,476m^2 of site; current zoning B2 - Local Centre).

The proposed development for this site is expected to be a mix of commercial and residential land uses at a scale and density that is compatible with other recently developed sites within the Carlingford town centre.

The objectives of the DSI were to provide a detailed assessment of current and/or historical potentially contaminating activities that may have impacted the site. Additionally, GCA will make recommendations for further investigations based on the identification of data gaps and the overall findings of this DSI if required.

A site inspection was undertaken on the 20th August 2021 by a qualified environmental consultant. Reporting and site photographs were collected on this date (**Appendix A**) with reference to the relevant regulatory criteria (**Section 2, Scope of Work**). Further information obtained during the inspection is described in **Section 4, Site Conditions** of this report.

2. Scope of Work

The DSI has been prepared in general accordance with the following regulatory framework:

- National Environmental Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council, 2013;
- National Environment Protection Measures (NEPM), *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013*;
- National Environment Protection Measures (NEPM), *Schedule B2 – Guideline on Site Characterisation,* 2013;
- National Environmental Protection Measures (NEPM), Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- National Environment Protection Measures (NEPM), Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- National Environment Protection Measures (NEPM), *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- NSW Environmental Protection Authority (EPA), *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (3rd Edition);
- NSW Environmental Protection Authority (EPA), *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW Environmental Protection Authority (EPA), *Sampling Design Guidelines*, 1995;
- NSW Environmental Protection Authority (EPA), *Technical Note: Investigation of Service Station Sites,* 2014;
- NSW Department of Environment and Conservation, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- NSW Environmental Protection Authority, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- Protection of the Environment and Operation Act, 1997;
- Protection of the Environment Operations (Waste) Regulations, 2005;
- The Contaminated Land Management Act, 1997;

- NSW Environmental Protection Authority (EPA), *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;
- Work Health and Safety Act, 2011;
- Work Health and Safety Regulation, 2011; and
- Parramatta Local Environmental Plan, 2012.

The scope of works required to complete the DSI includes:

- A site inspection for evidence of sources of potential contamination onsite and neighbouring properties;
- Historical investigations relating to the site (if any);
- Historical aerial photographs;
- Local Council records and planning certificates;
- NSW EPA environmental contaminated lands register;
- Protection of the Environment Operations (POEO) Act public register;
- Dial-Before-You-Dig enquiry for an evaluation into local underground services and assets;
- Review of local geological and hydrogeological information, including an evaluation of the WaterNSW registered groundwater bore database;
- Acid Sulphate Soils (ASS) data maps;
- Establish whether data gaps may exist within the investigation; and
- Development of a Conceptual Site Model (CSM) to identify the connections between potential sources of contamination, exposure pathways, and human/ecological receptors.

3. Site Details

Table 1: Site Details

Address	241-245 Pennant Hills Road Carlingford NSW 2118
Deposited Plan	Lots 1, 2, 5 and 6/-/DP805059
Zoning	B2 - Local Centre
Locality Map	**Figure 1, Appendix A**
Site Plan	**Figure 1, Appendix A**
Area (approx.)	6,476m^2

Table 2: Surrounding Land Use

Direction from Site	**Land Use**
North	Felton Road
East	Pennant Hills Road
South	Pennant Hills Road
West	Residential properties

4. Site Condition

A qualified environmental consultant inspected the site on the 20th August 2021. Site photographs are provided in **Appendix A**. Observations noted during the inspection are summarised below:

- The site is currently occupied by a part single and part two-storey commercial building comprising several tenancies, including small businesses and a 24-hour gym;
- The building is in deteriorating condition;
- The existing building on the site has variable setbacks to street and neighbouring property boundaries, due to the irregular configuration of the subject land and the building itself;
- The northern and southern boundaries of the site were mainly landscaped areas while the north-western corner and south-eastern part were bitumen paved car parking areas. Vehicular access was via the south-eastern Pennant Hills Road frontage and two other driveways at the north-western and north-eastern corners via Felton Road;
- Bitumen and concrete pathways were found to be in good condition with no visible cracking or major staining;
- The site contains mature trees and vegetation areas along the boundaries;
- The vegetation across the site indicated good quality soil and drainage underlying the surface;
- There was a distinct change in elevation across the site, sloping from north-west of the site towards south-east; and
- There were no visibility or olfactory indicators of potential contamination.

The surrounding sites within a 500m radius include residential dwellings, Carlingford Transmission Substation, K13 Submarine Memorial Park, James Ruse Agricultural High School, 7 – Eleven Carlingford fuel station and Domino's Pizza Carlingford.

The closest water bodies to the site are The Ponds Creek approximately 500m to the south-east and Hunts Creek approximately 500m to the north-west of the site.

5. Site History

5.1 History of Region and Site

A review of the historical aerial photographs indicates how the site and surrounding suburbs have changed over time (**Figures 3-6, Appendix A**).

Table 3.1: Summary of Historical Aerial Photographs

Year	Description of Image
2000	The site contained a commercial building and low vegetative cover. The surrounding area was consisted of low-density residential and commercial properties with overall low to moderate vegetation.
2009	The site contained the same commercial building. The vegetation around the site was improved. The surrounding area had improved in medium density residential buildings, specially to the west and south of the site.
2016	The site had little or no change from 2009. The surrounding area had improved in medium density residential buildings to the east of the site.
2021	The site had remained largely unchanged from 2009 and 2016. The surrounding area had improved further in medium density residential buildings to the north and east of the site.

Table 3.2: Summary of Historical Ownership

Year	Proprietors (s)
	Lots 1, 2, 5 and 6 /DP805059
2010 to date	Triple Eight Corporation Pty Limited
1959 to 2010	Electricity Commission of New South Wales
1959 to 1959	Maggie Frances Freestone (Widow)
Lots 2 & 6) (1951 to 2010	Sydney County Council (Then Electricity Commission of New South Wales
1944 to 1951 – Lots 2 & 6) (1944 to 1959 – Lots 1 & 5	Charles Albert Harry Freestone (Fibrous Plaster Manufacturer)
1932 to 1938	Linda Dagma Gavel (Married Woman)
1886 to 1932	Frederick Charles Cox (Gentleman)

5.2 Section 10.7 (2) Planning Certificate

A Section 10.7 Planning Certificate describes how a property may be used and the restrictions on development. The Planning Certificate is issued under Section 149 of the Environmental Planning and Assessment Act 1979. At the time of reporting, GCA could not get access to the Planning Certificate.

5.3 NSW EPA Contaminated Land Register

A search within the NSW EPA contaminated land register was undertaken for the site. No results were found for the site or within 200m of the site.

5.4 Protection of the Environment Operations Act (POEO) Public Register

A search on the POEO public register of licensed and delicensed premises (DECC) was undertaken for the site. No results were found for the site or within 200m of the site.

5.5 SafeWork NSW Hazardous Goods

Referring to Stage 1 Environmental Site Assessment by Environmental Investigations (2011), an on-line search of the Contaminated Land – Record of EPA Notices was conducted, this being a database that is maintained by the Department of Environment, Climate Change and Water (DECCW NSW). This search confirmed that the DECCW NSW has no current involvement, or regulation, under Section 58 of the Contaminated Land Management Act 1997 (CLM Act) for the property identified as 241-245 Pennant Hills Road, Carlingford, NSW.

Section 58 of the CLM Act 1997 relates to the investigation, remediation and management of sites where contamination poses a significant risk of harm and includes Sections 35 and 36 of the Environmentally Hazardous Chemicals Act 1985.

5.6 Product Spill and Loss History

The site inspection carried out found no evidence to suggest chemical contamination impact on the site (i.e. chemical staining, unhealthy vegetation).

5.7 Dial Before You Dig

A Dial-Before-You-Dig request suggests the potential for the location of underground services and assets that may be impacted or act as a portal to transport contamination off-site (Appendix C).

- Ausgrid

6. Environmental Setting

6.1 Geology

Information on regional sub-surface conditions, referenced from the Department of Mineral Resources geological map Sydney 1:100,000 Geological Series Sheet 9130 (DMR, 1983), indicated that the site overlies Ashfield Shale (Rwa) of the Wianamatta Group. Ashfield shale is characterised by black to dark-grey shale and laminate.

The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 1989), indicated that the site overlies a Glenorie Landscape – Epping Marsfields (gn). According to Chapman and Murphy, this landscape is underlain by Winanmatta Group Ashfield Shale and Bringelly Shale formations. The Ashfield Shale is comprised of laminate and dark grey shale. Bringelly Shale consists of shale, calcareous claystone, laminate, fine to medium grained lithic-quartz sandstone.

The topography consists of low rolling and steep hills. Local relief is 50-120 metres with slopes of 5-20%. Convex narrow (20-300m) ridges and hillcrests grade into moderately inclined side slopes with narrow concave drainage lines. Moderately inclined slopes of 10- 15% are the dominant landform elements.

Extensively cleared tall open-forests are characteristics of the vegetation of this landscape. Land is used for urban residential sites over the majority of this landscape. Minor gully erosion is evident along unpaved roads. Moderate sheet erosion occurs on undisturbed areas.

Soils are shallow to moderately deep (<100cm) red podzolic soils on crests. Moderately deep (70-150cm) red and brown podzolic soils on are found within upper slopes with deep (>200cm) yellow podzolic soils on lower slopes.

6.2 Hydrology

The subject site overlies The Glenhaven Hydrogeological Landscape (HGL). The Groundwater flow in HGL Landscape is unconfined along structures (bedding, joints, faults) in the fractured bedrock. Flow also occurs through connected pore spaces in sandstone units. Lateral flow occurs through colluvial and alluvial sediments on slopes and plains. Hydraulic conductivity and transmissivity are low to moderate. Groundwater systems are local with short flow lengths and are loosely defined by topographic catchments. Water quality within these systems is fresh. Water table depths are intermediate to deep (2->8m). Residence times are short to medium. These landscapes have a fast to medium response time to changes in land management.

A groundwater bore search was conducted on 30th August 2021 and ten (10) registered groundwater bores were detected within close proximity to the north of the site. The references for these bores are GW115352 to GW115361.

6.3. Acid Sulphate Soils

To determine the potential for Acid Sulphate Soils (ASS) to occur at the site, data were reviewed utilising the NSW Department of Planning, Industry and Environment eSPADE map viewer. The ASS maps identify five (5) classes of sulphuric acid on land, with Class 1 being the highest at risk of ASS.

The data obtained indicated that there is no known occurrence of ASS beneath this site.

7. Areas of Environmental Concern

Based on the above information, the potential Areas of Environmental Concern (AEC) and their associated Contaminants of Potential Concern (CoPC) for the site were identified and summarised below (**Table 4**).

Table 4. Potential Areas and Contaminants of Concern

Potential Areas of Concern	Potentially Contaminating/ Hazardous Activity	CoPCs	Likelihood of Site Impact	Comments
North-western part of the site where previous fibrous plaster manufacturing activities may have been conducted	Potentially contaminated soil from manufacturing activities	Metals, TPH, BTEX, PAH, OCPs, Asbestos	Low	Soil samples were collected from this area to determine the presence or absence of CoPCs, particularly Asbestos.
Entire site	Importation of fill material from unknown origin	Metals, TPH, BTEX, PAH, OCPs, Asbestos	Low	Based on site observations and location, the presence of imported fill material is likely. 14 Soil Samples were taken from the fill layer to determine the presence or absence of CoPCs.
Building structures	Hazardous materials	ACM, SMF, ODS, Lead (paint and/or dust), PCBs	Low	Based on site observations, it cannot be concluded that any of the hazardous materials mentioned here are present at this location. Therefore, we recommend a HMS be carried out to determine the presence or absence of these materials.

Abbreviations: Asbestos Containing Materials (ACM), Hazardous Materials Survey (HMS), Benzene Toluene Ethylbenzene and Xylene (BTEX), Ozone Depleting Substances (ODS), Polychlorinated biphenyls (PCBs), Polycyclic Aromatic Hydrocarbon (PAH), Total Petroleum Hydrocarbons (TPH), Synthetic Mineral Fibres (SMF), Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs).

8. Conceptual Site Model

A CSM was developed to provide an indication of potential risks associated with contamination source and contamination migration pathways, receptors and exposure mechanisms. The CSM provides a framework for the review of the reliability and useability of the data collected and to identify data gaps in the existing site characterisation. Here, we consider the connections between the following elements:

- Potential contamination sources and their associated CoPCs;
- Potential human receptors that may be impacted by the site contamination are current and future site users including occupants to the dwelling/infrastructures onsite, site workers and the general public within the immediate vicinity of the site;
- Potential environmental receptors to the site including but not limited to: groundwater and surface water bodies, residual soils at and/or nearby the site;
- Potential exposure pathways; and
- Whether source-pathway-receptor connections are complete based on current and future suite conditions.

Table 5. Conceptual Site Model

Potential Sources	Potential Receptor	Potential Exposure Pathway	Complete Connection	Risk	Justification/Control Measures
Contaminated soil from importation of uncontrolled fill across the site. Historically contaminated soil on site. ACM, Lead Paint and other Heavy Metals from residential properties.	Site occupants, workers, general public	Dermal contact, inhalation or ingestion of particulates	Limited (current)	Moderate	Direct contact with potentially contaminated soils is possible.
			No (future)	Low	If present, impacted soils are required to be disposed of and remediated offsite.
	The Ponds Creek and Hunts Creek	Migration of impacted groundwater and surface water run-off.	No (current)	Low	The local topography surrounding the site falls toward both The Ponds Creek and Hunts Creek, located approximately 500m to the south-east and northwest of the site, respectively. However, the chance of reaching the CoPCs to these water courses are low due to large distance.
			Limited (future)	Low	If present, contaminated soils and groundwater are likely to be remediated. Unlikely contamination would

					reach Finlayson Creek due to distance from site and topography.
	Underlying aquifer	Leaching and migration of contaminants through groundwater infiltration.	Unknown (current)	Low	Migration of CoPCs is possible.
			Limited (future)	Low	If present, contaminated soil and/or groundwater would require remediation.

9. Data Gaps

The following data gaps have been identified at the site:

- Extent of potential Asbestos Containing Materials (ACM) or heavy metals within structures on-site;
- Condition of soils beneath the hardstands on-site; and
- Detailed groundwater conditions.

10. Assessment Criteria

The following soil assessment criteria were adopted for the investigation.

10.1 NEPM Health Investigation Level A (HIL-A)

HILs are scientific, risk-based guidance levels to be used as in the primary stage of assessing soil contamination to evaluate the potential risks to human health from chronic exposure to contaminants. HILs are applicable to a broad range of metals and organic substances, and generally apply to depths up to 3m below the surface for residential use.

Tier 1 HILs are divided into the following sub-criteria:

- HIL A – residential with garden/accessible soils.
- HIL B – residential with minimal opportunities for soil access.
- HIL C – public open space/recreational areas.
- HIL D – commercial/industrial premises.

Table 6. HIL-A Guidelines for Pesticides, Metals and Polycyclic Aromatic Hydrocarbons

NEPM Assessment Criteria	NEPM 2013 Residential Soil **HIL-A**, mg/kg
Pesticides	
HCB	**10**
Heptachlor	**6**
Chlordane	**50**
Aldrin & Dieldrin	**6**
Endrin	**10**
DDT+DDE+DDT	**240**
Endosulfan	**270**
Methoxychlor	**300**
Mirex	**10**
Metals	
Arsenic, As	**100**
Cadmium, Cd	**20**
Chromium, Cr	**100**
Copper, Cu	**6,000**
Lead, Pb	**300**
Nickel, Ni	**400**
Zinc, Zn	**7,400**
Mercury, Hg	**40**
Polycyclic Aromatic Hydrocarbons	
Carcinogenic PAHs (as BaP TEQ)	**3**
Total PAH (18)	**300**

10.2 NEPM Health Screening Level A (HSL-A)

HSLs have been developed for selected petroleum compounds and fractions and are used for the assessment of potential risks to human health from chronic inhalation and direct contact pathways of petroleum vapour emanating off petroleum contaminated soils (Vapour Risk). HSLs are guided by land-use scenarios, specific soil physicochemical properties and generally apply to depths below surface to >4m.

Tier 1 HSLs are divided into the following sub-criteria:

- HSL A – residential with garden/accessible soils.
- HSL B – residential with minimal opportunities for soil access.
- HSL C – public open space/recreational areas.
- HSL D – commercial/industrial premises.

Table 7.1 HSL-A for Benzene Toluene Ethylbenzene and Xylene (BTEX), Naphthalene and Total Recoverable Hydrocarbon Fractions

NEPM Assessment Criteria	NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, **Silt**, mg/kg	NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 1-<2m depth, **Silt**, mg/kg	NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg
Benzene	**0.6**	**0.7**	**100**
Toluene	**390**	**NL**	**14,000**
Ethylbenzene	**NL**	**NL**	**4,500**
Xylenes	**95**	**210**	**12,000**
Naphthalene	**4**	**NL**	**1,400**
TRH C6-C10			**4,400**
TRH C6-C10 - BTEX (F1)	**40**	**65**	
TRH >C10-C16			**3,300**
TRH >C10-C16 - Naphthalene (F2)	**230**	**NL**	
TRH >C16-C34 (F3)			**4,500**
TRH >C34-C40 (F4)			**6,300**

Table 7.2 Health Screening Level for Groundwater

Analyte	NEPM 2013 Commercial/Industrial Groundwater **HSL-A** for Vapour Intrusion 2-<4m **Silt**, mg/L	NEPM 2013 Commercial/Industrial Groundwater **HSL-A** for Vapour Intrusion 4-<8m **Silt**, mg/L
Benzene	**5**	**5**
Toluene	NL	NL
Ethylbenzene	NL	NL
Xylenes	NL	NL
Naphthalene	NL	NL
C6-C10 - BTEX (F1)	NL	NL
>C10-C16 - N (F2)	NL	NL

10.3 NEPM Ecological Investigation Level (EIL) – Urban Residential and Public Open Space

Ecological investigation levels (EILs) have been developed to assess the risk for the presence of metals and organic substance in a terrestrial ecosystem. EILs are guided by land-use scenarios, specific soil physicochemical properties and generally apply to the top 2m of soil. EILs can be applied for arsenic (As), copper (Cu), chromium III (Cr(III)), dichlorodiphenyltrichloroethane (DDT), naphthalene, nickel (Ni), lead (Pb) and zinc (Zn). The NEPM Soil Quality Guidelines (SQG) for EILs are calculated using the Added Contamination Limit (ACL) to determine the amount of contamination that had to be added to the soil to cause toxicity, including ambient background concentration (ABC).

Table 8. Generic EIL for Arsenic, DDT and Naphthalene

NEPM Assessment Criteria	NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg
DDT	**180**
Naphthalene	**170**
Arsenic, As	**100**
Chromium, Cr	**460***
Copper, Cu	**220***
Lead, Pb	**1100**
Nickel, Ni	**170***
Zinc, Zn	**450***

*Calculated based on estimated CEC of 10 cmol(+)/kg, pH of 6.5 and Clay content of 15%.

10.4 NEPM Ecological Screening Level (ESL) – Urban Residential and Public Open Space

ESLs have been developed for selected petroleum hydrocarbons (BTEX, benzo(a)pyrene, TRH F1 and F2) in soil, based on fresh contamination. These parameters are applicable to coarse and fine-grained soil and apply from the surface of the soil to 2m below ground level, which corresponds with the root and habitat zone for many species.

Table 9. ESL for Benzene Toluene Ethylbenzene and Xylene (BTEX), Benzo(a)pyrene and Total Recoverable Hydrocarbon Fractions

NEPM Assessment Criteria	NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **Fine-Grained Soil**, mg/kg
Benzene	**65**
Toluene	**105**
Ethylbenzene	**125**
Xylenes	**45**
BaPyr (B(a)P)	**0.7**
TRH C6-C10	**180**
TRH >C10-C16	**120**
TRH >C16-C34 (F3)	**1,300**
TRH >C34-C40 (F4)	**5,600**

10.5 NEPM Management Limits – Residential, Parkland and Public Open Space

Management Limits for petroleum have been developed for prevention of explosive vapour accumulation, prevention of the formation of observable Light Non-Aqueous Phase Liquids (LNAPL) and protection against effects on buried infrastructure. Residential, parkland and public open space limits have been adopted based on the proposed land use.

Table 10. Management Limits for Total Recoverable Hydrocarbon Fractions

NEPM Assessment Criteria	NEPM 2013 Management Limits for Residential, Parkland and Public Open Space for **Fine-Grained Soil**, mg/kg
TRH C6-C10	**800**
TRH >C10-C16	**1,000**
TRH >C16-C34 (F3)	**3,500**
TRH >C34-C40 (F4)	**10,000**

10.7 NEPM Groundwater Investigation Levels (GIL)

Groundwater Investigation Levels (GILs) are the concentration of a contaminant in the groundwater above which further investigation or a response is required. These levels are based on Australian water quality guidelines and drinking water guidelines and are applicable for assessing human health risk and ecological risk (fresh water or marine water) from direct contact within groundwater.

Table 11. Groundwater Investigation Level

Analyte	**NEPM 2013 GIL Drinking Water, mg/L**	**NEPM 2013 GIL Marine Waters, µg/L**	**NEPM 2013 GIL Fresh Waters, µg/L**
Monocyclic Aromatic Hydrocarbons			
Benzene	**0.001**	**500C**	**950**
Toluene	**0.8**	**-**	**-**
Ethylbenzene	**0.3**	**-**	**-**
Xylenes	**0.6**	**-**	**350 as o-x; 200 as p-x**
Polycyclic Aromatic Hydrocarbons			
Naphthalene	**-**	**50C**	**16**
Benzo(a)pyrene	**0.00001**	**-**	**-**
Metals			
Arsenic, As	**0.01**	**-**	**24 A(III); 13 As(V)**
Cadmium, Cd	**0.002**	**0.7**	**0.2**
Chromium, Cr	**0.05**	**4.4**	**1**
Copper, Cu	**2**	**1.3**	**1.4**
Lead, Pb	**0.01**	**4.4**	**3.4**
Nickel, Ni	**0.02**	**7**	**11**
Zinc, Zn	**-**	**15**	**8**
Mercury	**0.001**	**0.1**	**0.06**
Pesticides			
Heptachlor	**0.01**	**-**	**-**
Aldrin plus Dieldrin	**0.0003**	**-**	**-**
Endrin	**-**	**0.004**	**0.01**
DDT	**0.009**	**-**	**0.006**
Methoxychlor	**0.3**	**-**	**-**
Dichlorvos	**0.005**	**-**	**-**
Dimethoate	**0.007**	**-**	**0.15**
Diazinon (Dimpylate)	**0.004**	**-**	**0.01**
Fenitrothion	**0.007**	**-**	**0.2**
Malathion	**0.07**	**-**	**0.05**
Chlorpyrifos (Chlorpyrifos Ethyl)	**0.01**	**0.009**	**0.01**
Parathion-ethyl (Parathion)	**0.02**	**-**	**0.004**
Methidathion	**0.006**	**-**	**-**

Ethion	**0.004**	-	-
Azinphos-methyl	**0.03**	-	-

10.6 NEPM Guidelines for Asbestos

The assessed soil must not contain Asbestos Containing Materials (ACM) in the excess of 0.01%w/w and surface soil within the site must be free of visible ACM, Asbestos Fines (AF) and Fibrous Asbestos (FA).

11. Sampling and Analysis Plan

11.1 Sampling Rationale

<table>
<tr><th>Sampling Rationale</th><th>Chosen Approach</th><th>Justification</th></tr>
<tr><td>Sampling Pattern</td><td>A systematic sampling pattern was adopted for soil samples and groundwater monitoring well installation.</td><td>Sampling points evenly spaced across the accessible areas of the site and considering the infrastructure within the site.</td></tr>
<tr><td>Sampling Density</td><td>Total of 21 soil samples were obtained from 14 borehole locations. One (1) shallow (0.3-0.5m) sample was collected from each borehole and one (1) additional deep (0.7-1.5m) soil sample was collected from every second borehole.

Four (4) Ground water monitoring wells were installed across the site</td><td>This sampling density was selected based on the extent of the potential contaminated area to be detected, feasibility, the site history, distribution of current and historical uses on site, location and condition of structures</td></tr>
<tr><td>Duplicate Samples (total)</td><td>5 QA/QC Samples as follows:
<table>
<tr><th>Duplicates</th><th>Primary Sample</th></tr>
<tr><td>D1</td><td>BH1.2</td></tr>
<tr><td>D2</td><td>BH5.2</td></tr>
<tr><td>D3</td><td>BH9.1</td></tr>
<tr><td>D4</td><td>BH10</td></tr>
<tr><td>D5</td><td>BH12.2</td></tr>
</table></td><td>QA/QC sampling was undertaken in general accordance with specifications outlined in Australian Standards (AS) 4482.1-2005, Standard Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil and NEPM Schedule B2 Guideline on Site Characterisation.</td></tr>
<tr><td>Sampling Depths</td><td>Soil sampling depths:
0.3m – 1.5m</td><td>These depths were selected in compliment with sampling density and to target depths of potential contaminants. Additionally, fill layer and subsoil soil thickness were considered when determining these depths. Boreholes for soil samples were terminated once natural soils were reached, this varied from 0.7m to 1.5m</td></tr>
</table>

	Groundwater sampling depths: 3.3m – 5.5m	across the site. Groundwater well drilling was terminated when bedrock level was reached.

11.2 Field Sampling Methodology

All boreholes were completed with a drill auger to a depth of 0.3 to 1.5m below ground level (bgl). By using a drill auger for the boreholes, the qualified environmental consultant was able to conduct a visual inspection of the soil cross section. These depths were selected in compliment with sampling density and to target depths of potential contaminants. Boreholes for soil samples were terminated once natural soils were reached, this varied from 0.7m to 1.5m across the site.

Soil was scraped from the freshly cut cross section for sample collection. Drill auger was decontaminated with deionised water between boreholes. Samples were immediately placed in laboratory prepared jars (labelled prior to arriving on site), with the lid securely attached to jar and only removed for the purpose of storing each sample. This sample storage approach allowed the preservation of any potential fill layers as well as natural underlying clay to be stored in stratigraphic layers.

Table 12. Sample Information

Borehole ID	Sample ID	Depth (m)	Soil Type	Soil Matrix
BH1	BH1.1	0.3	Silty Clay	Fill material/topsoil
MW1	BH1.2/D1	1.0	Silty Clay Loam	Natural soil
BH2	BH2	0.5	Silty Clay	Fill material/topsoil
BH3	BH3.1	0.4	Silty Clay	Fill material/topsoil
	BH3.2	1.2	Silty Clay Loam	Natural soil
BH4	BH4	0.5	Silty Clay	Fill material/topsoil
BH5	BH5.1	0.5	Silty Clay	Fill material/topsoil
MW2	BH5.2/D2	1.2	Silty Clay Loam	Natural soil
BH6	BH6	0.5	Silty Clay	Fill material/topsoil
BH7	BH7.1	0.4	Silty Clay	Fill material/topsoil
	BH7.2	0.7	Clay	Natural soil
BH8	BH8	0.4	Silty Clay	Fill material/topsoil
BH9	BH9.1/D3	0.3	Silty Clay	Fill material/topsoil
MW3	BH9.2	1.0	Silty Clay Loam	Natural soil

BH10	BH10/D4	0.5	Silty Clay	Fill material/topsoil
BH11	BH11	0.5	Sandy Silt	Fill material/topsoil
BH12	BH12.1	0.4	Silty Clay	Fill material/topsoil
MW4	BH12.2/D5	1.5	Clay Loam	Natural soil
BH13	BH13	0.5	Sandy Silt	Fill material/topsoil
BH14	BH14.1	0.3	Sandy Silt	Fill material/topsoil
	BH14.2	0.8	Silty Clay Loam	Natural soil

Five (5) duplicate samples were collected for quality control and assurance as part of the Sampling and Analysis Plan.

The 26 soil samples (21 samples and five (5) duplicate sample) were placed on ice in an esky for transport under Chain of Custody (COC) to a NATA accredited laboratory for the analysis of the CoPC.

11.3 Field Groundwater

Four (4) monitoring wells were installed within the subject site using a drill auger by a qualified environmental technician. The well drilling was terminated when bedrock level was reached. All pipes were cut off to ground surface level and covered using a cast iron well cover. Groundwater sampling was attempted one week after well installation. One (1) water sample was collected from each well.

Table 13. Groundwater Monitoring Well Details

Sample	Depth to Water (m)	Total Well Depth (m)
MW1	5.38	7.61
MW2	5.53	8.35
MW3	3.79	6.53
MW4	3.27	8.81

11.4 Field Quality Assurance & Quality Control Procedures

The following procedures were undertaken to ensure the data quality for each sample:

- Selection of appropriate sampling methods;
- Decontamination procedures;
- Appropriate containers selected for planned analyses;
- Appropriate preservation and storage measures to minimise contamination or analyte loss;
- Statement of duplicate frequency;
- Sampling devices and equipment;
- Field instrument calibrations.

11.5 Chemical Analysis Methodology

Soil samples were extracted and analysed for Benzene Toluene Ethylbenzene and Xylenes (BTEX), Naphthalene, Total Recoverable Hydrocarbons (TRH), Pesticides (OCP/OPP), Metals and Asbestos. Soil samples were solvent extracted with methanol and analysed using Gas Chromatography-Mass Spectrometry (GC-MS) Purge and Trap for BTEX, Naphthalene and F1 (C_6-C_9) of TRH. Three (3) different extraction surrogates (Bromofluorobenzene, d4-1,2-dichloroethane and d8-toluene) were spiked with a known concentration into each sample to evaluate extraction efficiency.

Due to the volatility and potential loss of F1 (C_6-C_9) of TRH, this fraction was analysed with GC-MS P&T because this instrument provides a suitable detection limit for these low molecular weight hydrocarbons. The remainder of TRH (F2, F3 and F4) was extracted with Acetone:Dichloromethane (ratio 50:50) and analysed using Gas Chromatography-Flame Ionisation Detection (GC-FID), spiked with the three (3) extraction surrogates used in the previous analysis.

Metals (aside from Mercury (Hg)) were digested with nitric acid to decompose organic matter (OM) and hydrochloric acid to complete digestion of metals, then analysed using Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES), with results reported as dry sample. Hg was analysed by digestion with nitric acid, hydrogen peroxide and hydrochloric acid. Hg ions were reduced via stannous chloride reagent in acidic solution to elemental Hg. The vapour was purged using nitrogen as the carrier gas into a cold cell in an Atomic Absorption Spectrometer (AAS).

Soil moisture % was carried out by placing a known amount of sample in a weighed evaporating basin and drying the soil at either 40°C or 105°C.

11.6 Laboratory Quality Assurance & Quality Control Procedures

The following procedures were undertaken to ensure the data quality for each sample:

- A copy of signed chain-of-custody forms acknowledging receipt date, time and temperature and identity of samples included in shipments;
- Record of holding times;
- Analytical methods used, including any deviations or method detection limit;
- Laboratory accreditation for analytical methods used;
- Laboratory performance for the analytical method using duplicates calculated as Relative Percentage Differences (RPD);
- Surrogates used during extraction process;
- Practical quantification limits (PQL);
- Reference laboratory control sample (LCS) used throughout the full method process from extraction to injection;
- Matrix spikes (MS) indicate percentage of recovery of an expected result, via a known concentration if an analyte spiked in a field sub-sample;
- Laboratory blank results (tabulate);
- Results are within control chart limits; and
- Instrument detection limit.

12. Data Quality Objectives (DQOs)

The DQOs have been developed in accordance with the NEPM Appendix B of Schedule B2 and provide the type, quantity, and quality of data to support decisions regarding the environmental conditions of this site.

Table 14. Data Quality Objectives Steps 1 – 7

Step 1: State the problem	GCA have identified the following risks to human and environmental receptors: - current and/or historical potentially contaminating activities that may have impacted the soils at the site.
Step 2: Identify the decision/goal of the study	GCA considered the site history, the use of this site, and the NEPM Guidelines, when identifying the decisions required for the site to be considered suitable for its continued land use. The decisions required to meet these decisions are as follows: - Was the sampling, analysis and quality plan designed appropriate to achieve the aim of the DSI? - If present, is on-site contamination capable of migrating off-site? - Are there any unacceptable risks to the future on site or off-site receptors in the soil or groundwater? - Is the site suitable for its continued land use?
Step 3: Identify the information inputs	GCA has identified issues of potential environmental concern; ● Appropriate identification of CoPC; ● Soil sampling and analysis programs across the site; ● Appropriate quality assurance/quality control to enable an evaluation of the reliability of the analytical data; and ● Screening sampler analytical results against appropriate assessment criteria for the intended land use.
Step 4: Define the boundaries of the study	The study boundaries are: - Lateral boundary: The legally defined area of the site; - Vertical boundary: The soil interface to the maximum depth reached during soil sampling; and - Temporal boundary: Constrained to a single visit to the site.
Step 5: Develop the analytical approach	Here, GCA integrates the information from steps 1 – 4 to support and justify our proposed analytical approach. Our aim is to confirm if the site is suitable for the proposed development. If the findings of the SAQP identify; - Any exceedance of the adopted assessment criteria for soil; - Groundwater flow direction confirms contamination likely to be transported offsite; - Professional opinion that further assessment is required; and/or

	- Adopted RPD for QC data not met. Further assessment may be required to confirm suitability of the site in the form of; Data Gap investigation, Remediation Action Plan and Site Validation.
Step 6: Specify performance or acceptance criteria	To determine if the soils are within acceptable ranges, we employ the following NEPM criteria: - The 95% upper confidence limit (UCL) is calculated for the mean concentration of each contaminant for each individual sample across a sampling plane (eg. surface samples, depth samples), which provides the probability that 95% of the data obtained will meet the acceptance criteria; and - a limit on decision error will be 5% that the conclusion may be incorrect.
Step 7: Optimise the design for obtaining data	Systematic sampling pattern within the AEC will provide suitable coverage of the site to produce reliable data in alignment with the Data Quality Indicators (DQIs) to cover precision, accuracy, representativeness, completeness and comparability (PARCC). This sampling pattern will ensure that critical locations are assessed and analysed appropriately for CoPC.
The DQOs align with CSM	Yes

13. Investigation Results

The soil analytical results are summarised below. Soil and groundwater analytical results are presented in the laboratory reports in **Appendix C.**

Results Indicator	
▲	Exceedance of guideline limit for one or more samples.
▼	No exceedance of guideline limit for all samples.

13.1 Soil Analytical Results

Table 15. Total Recoverable Hydrocarbons (TRH) and Benzene Toluene Ethylbenzene and Xylene (BTEX) Analytical Results

Total Recoverable Hydrocarbons (TRH) and Benzene Toluene, Ethylbenzene and Xylene (BTEX)	NEPM 2013 HSL-A for Vapour Intrusion, 0-<1m Depth, Silt, mg/kg	NEPM 2013 HSL-A for Vapour Intrusion, 1-<2m Depth, Silt, mg/kg	NEPM 2013 HSL-A for Direct Contact, mg/kg	NEPM 2013 ESL for Urban, Residential and Public Open Spaces, Fine-Grained Soil, mg/kg	NEPM 2013 Management Limits for Residential, Parkland and Public Open Space, Fine-Grained Soil, mg/kg
Benzene	▼	▼	▼	▼	
Toluene	▼	▼	▼	▼	
Ethylbenzene	NL	NL	▼	▼	
Xylenes	▼	▼	▼	▼	
TRH C6-C10				▼	▼
TRH C6-C10 minus BTEX (F1)	▼	▼			
TRH >C10-C16			▼	▼	▼
TRH >C10-C16 - Naphthalene (F2)	▼	▼			
TRH >C16-C34 (F3)			▼	▼	▼
TRH >C34-C40 (F4)			▼	▼	▼

Table 16. Analytical Results for Polycyclic Aromatic Hydrocarbons (PAH)

Polycyclic Aromatic Hydrocarbons (PAH)	NEPM 2013 HSL-A for Vapour Intrusion, 0-<1m Depth, Silt, mg/kg	NEPM 2013 HSL-A for Vapour Intrusion, 1-<2m Depth, Silt, mg/kg	NEPM 2013 HSL-A for Direct Contact, mg/kg	NEPM 2013 HIL-A, mg/kg	NEPM 2013 Soil ESL for Urban, Residential and Public Open Spaces for Fine-Grained Soil, mg/kg	NEPM 2013 Generic EIL for Urban Residential and Public Open Space, mg/kg
Naphthalene	▼	▼	▼			▼
Benzo[a]pyrene					▲	
Carcinogenic PAHs (as BaP TEQ)				▲		
Total PAH (18)				▼		

Table 17. Analytical Results for Pesticides

Pesticides	NEPM 2013 HIL-A, mg/kg	NEPM 2013 Generic EIL for Urban Residential and Public Open Space, mg/kg
HCB	▼	
Heptachlor	▼	
Chlordane	▼	
Aldrin & Dieldrin	▼	
Endrin	▼	
DDT		▼
DDT+DDE+DDT	▼	
Endosulfan	▼	
Methoxychlor	▼	
Mirex	▼	

Table 18. Analytical Results for Heavy Metals

Metals	NEPM 2013 HIL-A, mg/kg	NEPM 2013 Generic EIL for Urban Residential and Public Open Space, mg/kg
Arsenic, As	▼	▼
Cadmium, Cd	▼	
Chromium, Cr	▼	▼
Copper, Cu	▼	▼
Lead, Pb	▼	▼
Nickel, Ni	▼	▼
Zinc, Zn	▼	▼
Mercury, Hg	▼	

Abbreviations: Benzene Toluene Ethylbenzene and Xylene (BTEX), Total Recoverable Hydrocarbons (TRH), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Nickel (Ni), Zinc (Zn), Mercury (Hg). Not Limiting (NL).

Table 19. Analytical Results for Asbestos

Chemical	All Soil Samples
Asbestos Detected	No

13.2 Groundwater Analytical Results

The groundwater analytical results are summarised below. Detailed groundwater analytical results are presented in the laboratory reports in **Appendix B.**

Table 20. Summary of groundwater HSL-Aanalytical results.

NEPM Assessment Criteria	**NEPM 2013 Commercial/Industrial Groundwater HSL-A for Vapour Intrusion 2 - <4m Silt, mg/L**	**NEPM 2013 Commercial/Industrial Groundwater HSL-A for Vapour Intrusion 4 - <8m Silt, mg/L**
Benzene	▼	▼
Toluene	NL	NL
Ethylbenzene	NL	NL
Xylenes	NL	NL
Naphthalene	NL	NL
Benzo(a)pyrene	NA	NA
TRH C6-C10 minus BTEX (F1)	NL	NL
TRH >C10-C16 - Naphthalene (F2)	NL	NL

Table 21. Summary of Groundwater GIL Analytical Results

Analytes	NEPM 2013 GIL Drinking Water, mg/L	NEPM 2013 GIL Marine Waters, µg/L	NEPM 2013 GIL Fresh Waters, µg/L
Monocyclic Aromatic Hydrocarbons			
Benzene	▼	▼	▼
Toluene	▼	-	-
Ethylbenzene	▼	-	-
Xylenes	▼	-	▼
Polycyclic Aromatic Hydrocarbons			
Naphthalene	-	▼	▼
Benzo(a)pyrene	▼	-	-
Metals			
Arsenic, As	▼	-	▼
Cadmium, Cd	▼	▲	▲
Chromium, Cr	▼	▲	▲
Copper, Cu	▼	▲	▲
Lead, Pb	▼	▼	▼
Nickel, Ni	▼	▲	▲
Zinc, Zn	-	▲	▲
Mercury	▼	▼	▼

14. Data Quality Indicators (DQIs)

Table 22.1 Field Data Quality Indicators

Completeness	The DSI ensured that all critical locations for soil were sampled, and samples were collected within the Systematic formation at the appropriate depths during a single visit to the site. This plan also aligns with Standard Operating Practices (SOP), to produce valid and reproducible data. GCA's qualified environmental consultants are experience and ensure compliance and completion of all sample recording, labelling and COC procedures.
Comparability	The DSI aligns with SOP to produce qualitative data. GCA's qualified environmental consultants sampled uniformly to ensure that each individual sample collection contained sufficient soil (g) to produce a dataset that is reflective of the environmental conditions of the site at time of collection. All samples were handled and stored in a manner that maximised the preservation of all potential CoPC within the soil samples. Climatic and physical conditions at the time of sample collection were considered and recorded.
Representativeness	The DSI aligns with SOP to produce a qualitative dataset that is representative of soil on site. GCA's qualified environmental consultants ensured sample collection, handling, storage and transfer was appropriate for soil. Additionally, samples reflect environmental conditions at time of collection and samples are homogenised to maximise detection during laboratory analysis.
Precision	The DSI aligns with SOP to produce qualitative data that measures the variability of results. The primary technique for evaluating field precision is by collection of duplicate samples, to measure the difference in response between two (2) different samples from the sample location. GCA's qualified environmental consultants collected one (1) duplicate sample along with the 13 samples collected for this site.
Accuracy	The DSI aligns with SOP to produce qualitative data that measures bias within the results. GCA's qualified environmental consultants ensured all COC procedures were carried out appropriately to minimise incidents of cross contamination or incorrect handling and storage of samples.

Table 22.2 Laboratory Data Quality Indicators

Completeness	The allocated NATA accredited laboratory produce reliable and thorough datasets. All samples were analysed for CoPC using an appropriate and standardised extraction method and analytical instrument. Samples were received, extracted and injected within specified holding times. The laboratory qualified environmental organic chemists ensured completion of COC procedures, wet chemistry, data integration and calculation.
Comparability	Analytical procedures within the NATA accredited laboratory were specialised and standardised for soil samples. The qualified environmental organic chemists determined the appropriate extraction methods and analytical instruments used based on response factor and ability to target CoPC. Spikes and surrogates were chosen based on appropriateness to avoid coelution with contaminants indigenous to the samples and across varying retention times to map response factor. The chosen spikes and surrogates were used for all samples and analysis was completed within the same batch to account for analytical instrument calibration (in addition system blanks support instrument calibration baseline results).
Representativeness	The NATA accredited laboratory procedures ensured the data is representative of the site by using appropriate extraction and analytical instrument methods. The qualified environmental organic chemists followed COC procedures; ensured that extraction methods were specialised for each potential contaminant and standardised across all samples; and used analytical instruments suitable for the sample type, targeted CoPC, extraction method, instrument sensitivity, response factor and detection limit.
Precision	Quantitative measures undertaken by the NATA accredited laboratory include field and laboratory duplicates. The qualified environmental organic chemists produced a field duplicate analysis that measured the precision of field sampling and maps the potential heterogeneity of contamination across a field sampling location. The laboratory duplicate procedure included two (2) laboratory sub-samples for extraction and analysis from the one (1) field sample in the collection container (250mL jar). The two (2) laboratory sub-samples map the potential heterogeneity of contamination that can occur within the one (1) field samples collection.
Accuracy	Quantitative measures undertaken by the NATA accredited laboratory's qualified environmental organic chemists include the analysis of field, rinsate and method blanks; spike and surrogate analysis to measure response factor and retention time; laboratory control samples; appropriateness of analytical method; and timing and completion of analysis.

15. Conclusion

Based on the site investigation and analytical results, GCA considers the potential for significant contamination of the underlying natural soils onsite to be low. Laboratory analysis confirmed minimal indications of; TRH, BTEX, OCP/OPP, PAH, Asbestos or Heavy Metals contamination within the soil and groundwater of the site.

However, elevated level of carcinogenic PAHs (as BaP TEQ) was detected above the assessment criteria (HIL-A) of 3mg/kg within the topsoil/fill layer in samples; BH1.1 (9.6mg/kg) and BH4 (5.1mg/kg). It is worth noting that HILs relevant to BaP and carcinogenic PAHs assessed on the basis of BaP TEQ. Elevated levels of BaP in relatively immobile sources, such as bitumen fragments, do not represent a significant health risk (NEPM 2011, Guideline on health-based investigation levels-B7- Page10). GCA confirm that elevated levels of carcinogenic PAHs are associated with the bitumen fragments of the ground surface directly above BH1 and BH4.

In addition, the analytical results indicate Heavy Metal values including Cadmium, Chromium, Copper, Nickel and Zinc although bellow GIL for drinking water guidelines but exceeded the GIL for Marine and Fresh Water guidelines for some or all the water samples.

Since the dissolved heavy metal concentrations are typical of background levels present in the geology within the Sydney basin. The observed exceedances are probably due to existing background levels associated with the site conditions and geology. Moreover, the subject site does not adjoin an area of high ecological value, such as a sensitive and protected wetland. Therefore, the risk of these elevated values of Heavy Metal concentration is insignificant.

Therefore, GCA finds that the site is suitable for the proposed development and land use, providing the recommendations within **Section 16, Recommendations** of this report are undertaken during the Construction Certificate (CC) stage.

16. Recommendations

Based on the information collected and available during this investigation, the following recommendations have been made:

- All structures onsite should have a Hazardous Materials Survey (HMS) conducted by a qualified occupational hygienist and/or environmental consultant for the site prior to any demolition or renovation works in accordance with relevant Australian Standards, SafeWork NSW codes of practice and any other applicable requirements;
- An Asbestos Clearance Certificate is required to be completed once all existing buildings and structures have been demolished;
- Any soils requiring removal from the site, as part of future site works, should be classified in accordance with the "Waste Classification Guidelines, Part 1: Classifying Waste" NSW EPA (2014);
- The demolition of any structures and excavation activity on site be undertaken in accordance with relevant Australian Standards, SafeWork NSW codes of practice and any other applicable requirements; and
- A site specific 'Unexpected Finds Protocol' is to be made available for reference for all occupants and/or site workers in the event unanticipated contamination is discovered, including asbestos.

References

- National Environmental Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council, 2013;
- National Environment Protection Measures (NEPM), *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013*;
- National Environment Protection Measures (NEPM), *Schedule B2 – Guideline on Site Characterisation,* 2013;
- National Environmental Protection Measures (NEPM), Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- National Environment Protection Measures (NEPM), Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- National Environment Protection Measures (NEPM), Schedule B7– Guideline on health-based investigation levels – Assessment of Site Contamination, 2011;
- National Environment Protection Measures (NEPM), *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- NSW Environmental Protection Authority (EPA), *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (3rd Edition);
- NSW Environmental Protection Authority (EPA), *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW Environmental Protection Authority (EPA), *Sampling Design Guidelines*, 1995;
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- NSW Department of Environment and Conservation, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- NSW Environmental Protection Authority, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- Protection of the Environment and Operation Act, 1997;
- Protection of the Environment Operations (Waste) Regulations, 2005;
- The Contaminated Land Management Act, 1997;
- NSW Environmental Protection Authority (EPA), *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;
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- Work Health and Safety Regulation, 2011;
- Liverpool Local Environmental Plan, 2008;
- Protection of the Environment Operations Act (POEO) Public Register, https://www.epa.nsw.gov.au/licensing-and-regulation/public-registers, accessed on 30th August 2021.
- NSW EPA- Contaminated land register, https://apps.epa.nsw.gov.au/prclmapp/sitedetails.aspx, accessed on 30th August 2021.
- Topography – map.com, https://en-au.topographic-map.com/, accessed on 30th August 2021.
- WaterNSW, https://realtimedata.waternsw.com.au/, accessed on 30th August 2021.

Limitations

The findings of this report are based on the scope of work outlined in Section 2. GCA performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, express or implied are made.

The results of this assessment are based upon the information documented and presented in this report. All conclusions and recommendations regarding the site are the professional opinions of GCA personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, GCA assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of GCA, or developments resulting from situations outside the scope of this project.

The results of this assessment are based on the site conditions identified at the time of the site inspection and validation sampling. GCA will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, assessment criteria or the availability of additional information, subsequent to the issue date of this report.

GCA is not engaged in environmental consulting and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes.

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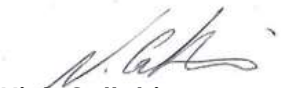

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APPENDIX A

Figures and Site Photographic Log

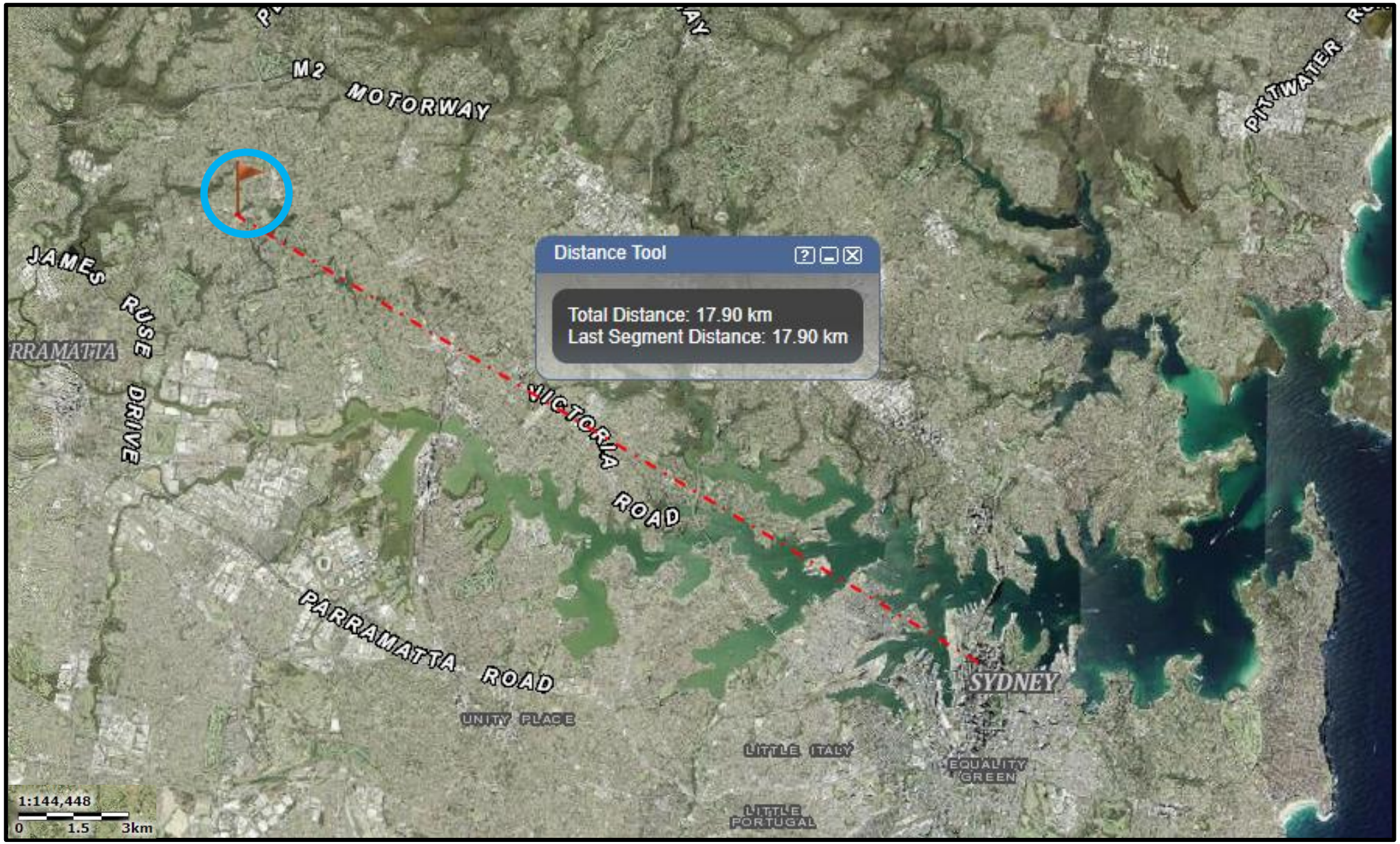

Figure 1. The site is located approximately 17.90km to the north-west of Sydney's CBD.

Source: Six Maps 2021

Figure 1	Locality Map
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

Figure 2. The approximate area of the site is 6,476m^2.

Source: Nearmaps 2021

Figure 2	Site Area
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

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SOIL SAMPLES

- 21 primary soil samples from 14 borehole locations (1-2 samples per borehole)
- 5 duplicates soil samples
- Total number of soil samples = **26**

Groundwater monitoring well

- 4 Groundwater monitoring wells
- Total number of water samples = **4**

Borehole Locations

Well Locations

Source: Nearmaps 2021

Figure 3	Sample Locations
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

Figure 4. Soil and water sample ID and depth.

Borehole ID	Soil Sample ID	Depth (m)	Borehole ID	Soil Sample ID	Depth (m)	Borehole ID	Soil Sample ID	Depth (m)
BH1 MW1	BH1.1	0.3	BH6	BH6	0.5	BH12 MW4	BH12.1	0.4
	BH1.2	1.0	BH7	BH7.1	0.4		BH12.2	1.5
BH2	BH2	0.5		BH7.2	0.7	BH13	BH13	0.5
BH3	BH3.1	0.4	BH8	BH8	0.4	BH14	BH14.1	0.3
	BH3.2	1.2	BH9 MW3	BH9.1	0.3		BH14.2	0.8
BH4	BH4	0.5		BH9.2	1.0	BH1.2	D1	1.0
BH5 MW2	BH5.1	0.5	BH10	BH10	0.5	BH5.2	D2	1.2
	BH5.2	1.2	BH11	BH11	0.5	BH9.1	D3	0.3
Water Sample	**Depth to Water (m)**	**Total Well Depth (m)**	**Water Sample**	**Depth to Water (m)**	**Total Well Depth (m)**	BH10	D4	0.5
MW1	5.38	7.61	MW3	3.79	6.53			
MW2	5.53	8.35	MW4	3.27	8.81	BH12.2	D5	1.5

Figure 4	Sample ID
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

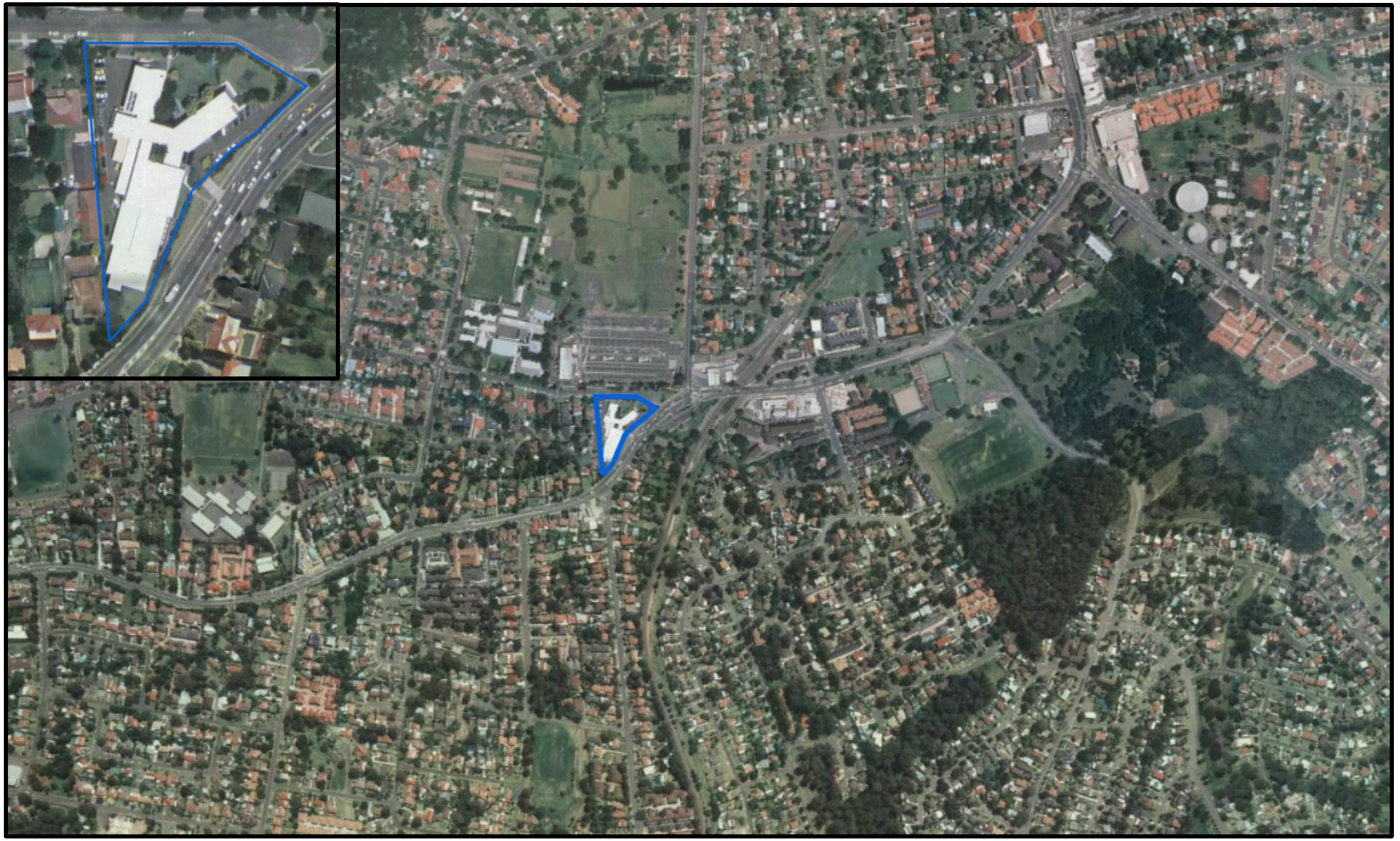

Figure 5. Aerial image of the site and surrounding area in the year 2000. The site contained a commercial building and low vegetative cover. The surrounding area was consisted of low-density residential and commercial properties with overall low to moderate vegetation.

Source: Metromap 2021

Figure 5	Aerial Image 2000
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

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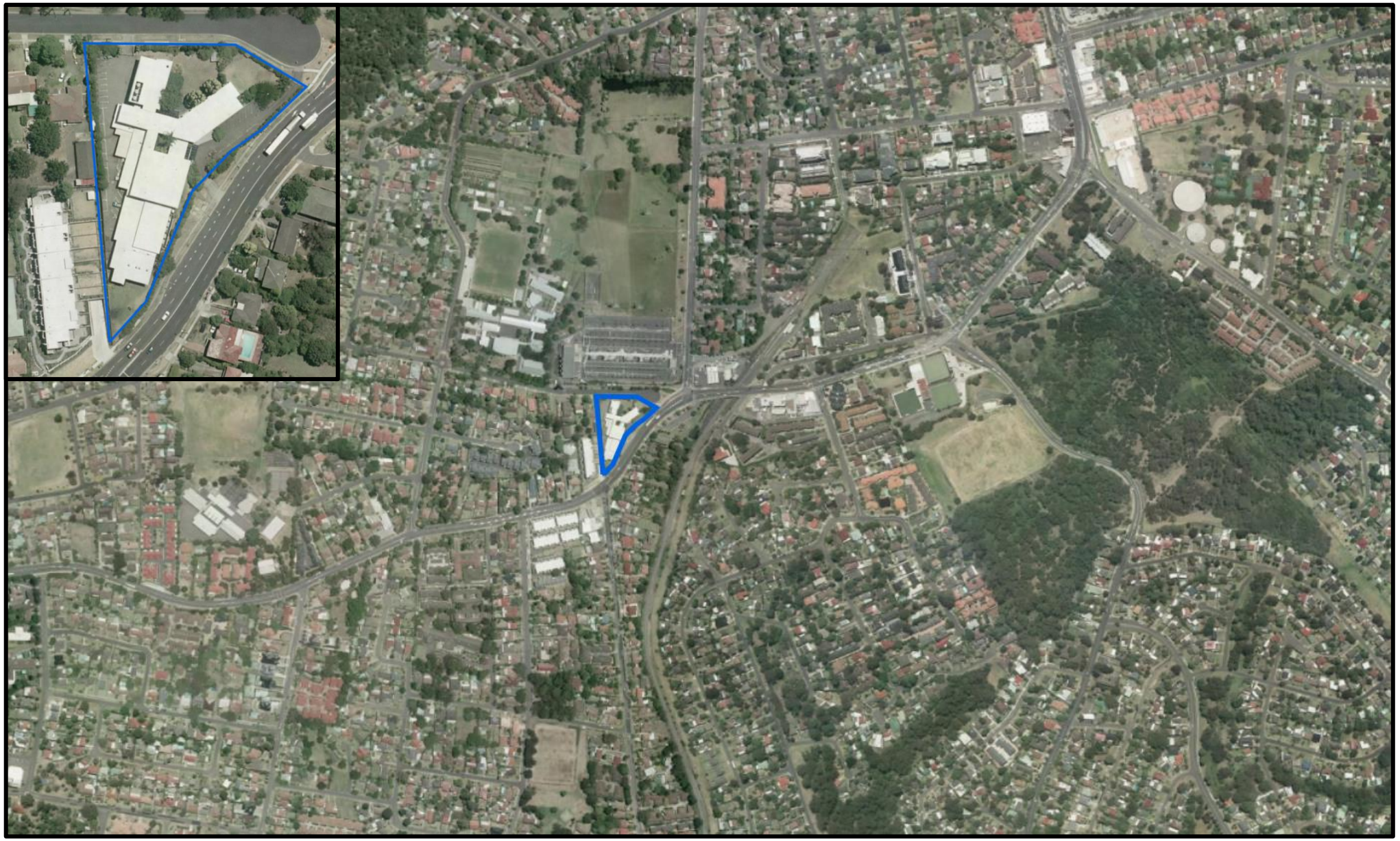
Figure 6. Aerial image of the site and surrounding area in the year 2009. The site contained the same commercial building. The vegetation around the site was improved. The surrounding area had improved in medium density residential buildings, specially to the west and south of the site.



Source: Metromap 2021

Figure 6	Aerial Image 2009
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

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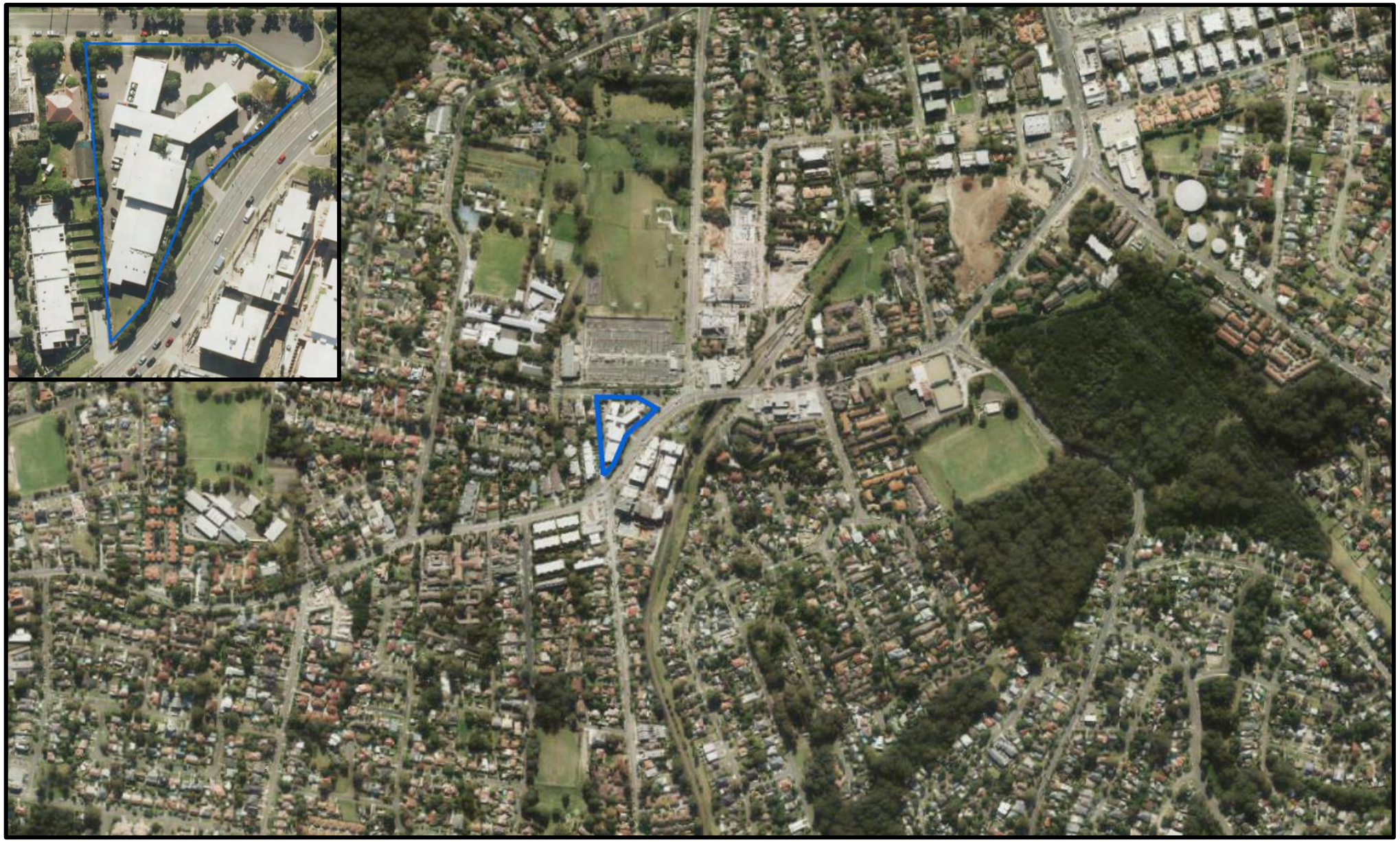
Figure 7. Aerial image of the site and surrounding area in the year 2016. The site had little or no change from 2009. The surrounding area had improved in medium density residential buildings to the east of the site.



Source: Metromap 2021

Figure 7	Aerial Image 2016
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

Figure 8. Aerial image of the site and surrounding area in 2021. The site had remained largely unchanged from 2009 and 2016. The surrounding area had improved further in medium density residential buildings to the north and east of the site.

Source: Metromap 2021

Figure 8	Aerial Images: 2021
Project	241 - 245 Pennant Hills Road, Carlingford NSW 2118

Figure 9. The main entrance driveway of the site viewed from Pennant Hills Road.

Figure 10. The eastern entrance to the office area within the site.

Figure 11. The grass area within the southern end of the site. Samples BH6 and 7 were collected within this area.

Figure 12. The driveway along the western boundary of the site. Samples BH1 to 5 were collected within this area.

Figure 13. The northern entrance gate of the site on Felton Road.

Figure 14. Neighbouring property to the west of the site on No. 6 Felton Road.

Figure 15. The northern entrance to the office area within the site. Sample BH14 was collected within this area.

Figure 16. The parking area within the northern end of the site. Samples BH11 to 13 were collected within this area.

Figure 17. Drilling of BH10. The soil is silty clay and dry.

Figure 18. Drilling of BH11. The soil is sandy silt and dry.

Figure 19. An example of groundwater monitoring wells (MW3) installed within the site.

APPENDIX B

Laboratory Results and Chain of Custody

Table 22. BTEX and TRH values indicating upper limit of reporting for Residential Health Screening Level A for soil vapour intrusion and direct contact, Ecological Screening Level for direct contact and Management Limits for Residential for fine-grained soil. Values are presented as mg/kg. NL = Not Limiting. F1 = subtract the sum of BTEX concentrations from the C_6-C_{10} aliphatic hydrocarbon fraction. F2 = subtract Naphthalene from the> C_{10}-C_{16} aliphatic hydrocarbon fraction.

NEPM Assessment Criteria		Benzene	Toluene	Ethylbenzene	Xylenes	TRH C6-C10	TRH C6-C10 - BTEX (F1)	TRH >C10-C16	TRH >C10-C16 - N (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, **Silt**, mg/kg		**0.6**	**390**	**NL**	**95**		**40**		**230**		
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 1-<2m depth, **Silt**, mg/kg		**0.7**	**NL**	**NL**	**210**		**65**		**NL**		
NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg		**100**	**14 000**	**4500**	**12 000**	**4400**		**3300**		**4500**	**6300**
NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **fine-grained soil**, mg/kg		**65**	**105**	**125**	**45**	**180**		**120**		**1300**	**5600**
NEPM 2013 **Management Limits** for Residential, Parkland and Public Open Space for **fine-grained soil**, mg/kg						**800**		**1000**		**3500**	**10 000**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	**210**	<120
BH1.2	1.0	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH2	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH3.1	0.4	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH3.2	1.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH4	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	**110**	<120
BH5.1	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH5.2	1.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH6	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH7.1	0.4	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH7.2	0.7	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH8	0.4	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH9.1	0.3	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH9.2	1.0	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH10	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH11	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH12.1	0.4	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH12.2	1.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120

BH13	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH14.1	0.3	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
BH14.2	0.8	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	**34**	<120
D1	1.0	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
D2	1.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
D3	0.3	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
D4	0.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120
D5	1.5	<0.1	<0.1	<0.1	<0.3	<25	<25	<25	<25	<90	<120

Table 23. PAH Values. The NEPM Health Investigation Levels (Residential A) for Polycyclic Aromatic Hydrocarbons (PAH). The carcinogenic PAHs (Benzo(a)anthracene (BaAnt); Benzo(a)pyrene (BaPyr); Benzo(b+j) fluoranthene (BbjFl); Benzo(k)fluoranthene (BkFl); Benzo(g,h,i)perylene (BghiPer); Chrysene (Chr); and Dibenz(a,h)anthracene (DBahAnt)) potency is calculated relative to Benzo(a)pyrene to produce a Toxicity Equivalent Factor (TEF). The Toxicity Equivalent Quotient (TEQ) is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its Benzo(a)pyrene (B(a)P) TEF. Total PAH includes Naphthalene (N), 2-methylnaphthalene (2-MN), 1-methylnaphthalene (1-MN), Acenaphthylene (Acy), Acenaphthene (Ace), Fluorene (F), Phenanthrene (P), Anthracene (Ant), Fluoranthene (Fl), Pyrene (Pyr) and the carcinogenic PAHs. Values are presented as mg/kg.

NEPM Assessment Criteria		Naphthalene	BaAnt	Chr	BbjFl	BkFl	BaPyr (B(a)P)	Ipyr	DBahAnt	BghiPer	Carcinogenic PAHs (as BaP TEQ)	Total PAH (18)
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, **Silt**, mg/kg		**4**										
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 1-<2m depth, **Silt**, mg/kg		**NL**										
NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg		**1400**										
NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **fine-grained soil**, mg/kg							**0.7**					
NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg		**170**										
NEPM 2013 Residential Soil **HIL-A**, mg/kg			0.10 TEQ	0.01 TEQ	0.10 TEQ	0.10 TEQ	1.00 TEQ	0.1 TEQ	1.00 TEQ	0.10 TEQ	**3**	**300**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	TEQ (mg/kg)	mg/kg
BH1.1	0.3	**0.2**	**5.0**	**4.5**	**5.3**	**2.4**	**5.2**	**0.5**	**3.1**	**2.9**	**9.6**	**65**
BH1.2	1.0	<0.1	**0.3**	**0.2**	**0.3**	**0.2**	**0.3**	<0.1	**0.2**	**0.2**	**0.6**	**3.9**
BH2	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH3.1	0.4	<0.1	**0.1**	**0.1**	**0.1**	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.2**	**1.6**
BH3.2	1.2	<0.1	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**	<0.1	**0.2**	**0.1**	**0.4**	**2.5**
BH4	0.5	<0.1	**3.0**	**2.9**	**3.1**	**1.4**	**2.8**	**0.3**	**1.5**	**1.5**	**5.1**	**41**
BH5.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH5.2	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH6	0.5	<0.1	<0.1	**0.1**	**0.1**	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.2**	**1.0**
BH7.1	0.4	<0.1	**0.1**	**0.1**	**0.2**	<0.1	**0.2**	<0.1	<0.1	<0.1	**0.2**	**1.6**
BH7.2	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH8	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8

BH9.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH9.2	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH10	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH11	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH12.1	0.4	<0.1	**0.1**	**0.1**	**0.1**	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.2**	**1.5**
BH12.2	1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH13	0.5	<0.1	**0.1**	**0.1**	**0.2**	**0.1**	**0.2**	<0.1	**0.1**	**0.1**	**0.3**	**1.7**
BH14.1	0.3	<0.1	<0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.2	<0.8
BH14.2	0.8	<0.1	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**	**0.1**	<0.1	**0.1**	**0.3**	**1.8**
D1	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
D2	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
D3	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
D4	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
D5	1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8

Table 24. Heavy Metal values. Residential Health Investigation Level A limits and Ecological Investigation Level for metals in soil samples. Values are presented as mg/kg. NL = Not Limiting.

NEPM Assessment Criteria		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
NEPM 2013 Residential Soil **HIL-A**, mg/kg		**100**	**20**	**100**	**6000**	**300**	**400**	**7400**	**40**
NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg		**100**		**460***	**220***	**1100**	**170***	**450***	
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	**6**	<0.3	**14**	**24**	**120**	**6.6**	**84**	**0.08**
BH1.2	1.0	**3**	<0.3	**11**	**36**	**35**	**7.1**	**47**	<0.05
BH2	0.5	**8**	<0.3	**16**	**13**	**27**	**3.3**	**15**	<0.05
BH3.1	0.4	**7**	<0.3	**15**	**23**	**200**	**7.1**	**56**	<0.05
BH3.2	1.2	**7**	<0.3	**13**	**31**	**170**	**6.6**	**59**	<0.05
BH4	0.5	**6**	<0.3	**14**	**17**	**140**	**7.5**	**76**	<0.05
BH5.1	0.5	**4**	<0.3	**14**	**16**	**20**	**4.6**	**16**	<0.05
BH5.2	1.2	**4**	<0.3	**16**	**23**	**23**	**2.6**	**17**	<0.05
BH6	0.5	**5**	<0.3	**13**	**18**	**68**	**5.5**	**55**	**0.07**
BH7.1	0.4	**6**	<0.3	**12**	**25**	**35**	**5.3**	**41**	<0.05
BH7.2	0.7	**4**	<0.3	**18**	**11**	**19**	**4.5**	**12**	<0.05
BH8	0.4	**3**	<0.3	**8.4**	**15**	**23**	**4.0**	**30**	<0.05
BH9.1	0.3	**6**	<0.3	**18**	**26**	**27**	**19**	**25**	<0.05
BH9.2	1.0	**6**	<0.3	**15**	**20**	**28**	**4.8**	**17**	<0.05
BH10	0.5	**5**	<0.3	**17**	**31**	**22**	**11**	**19**	<0.05
BH11	0.5	**4**	<0.3	**14**	**17**	**24**	**6.2**	**20**	<0.05
BH12.1	0.4	**5**	<0.3	**16**	**17**	**39**	**4.2**	**34**	<0.05
BH12.2	1.5	**2**	<0.3	**6.4**	**24**	**16**	**4.1**	**26**	<0.05
BH13	0.5	**4**	<0.3	**12**	**28**	**51**	**6.5**	**66**	**0.10**
BH14.1	0.3	**5**	<0.3	**18**	**30**	**63**	**9.9**	**62**	**0.10**
BH14.2	0.8	**5**	<0.3	**14**	**30**	**59**	**8.1**	**61**	**0.07**
D1	1.0	**2**	<0.3	**7.4**	**29**	**31**	**5.7**	**30**	<0.05
D2	1.2	**4**	<0.3	**14**	**16**	**19**	**1.3**	**10**	<0.05
D3	0.3	**5**	<0.3	**15**	**25**	**42**	**7.6**	**23**	<0.05
D4	0.5	**5**	<0.3	**17**	**24**	**20**	**3.8**	**15**	<0.05
D5	1.5	**2**	<0.3	**5.7**	**22**	**14**	**4.0**	**24**	<0.05

*Calculated based on estimated CEC of 10 cmol(+)/kg, pH of 6.5 and Clay content of 15%

Table 25. Pesticides values. Health Investigation Levels and Ecological Investigation Levels for Organochlorine Pesticides for Residential A limits. Values are presented as mg/kg.

NEPM Assessment Criteria		HCB	Heptachlor	Chlordane	Aldrin & Dieldrin	Endrin	DDT	DDT+DDE +DDT	Endosulfan	Methoxychlor	Mirex	Total CLP OC Pesticides	Total OP Pesticides
NEPM 2013 Residential Soil **HIL-A**, mg/kg		**10**	**6**	**50**	**6**	**10**		**240**	**270**	**300**	**10**		
NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg							**180**						
Sample	Sample Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH1.2	1.0	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH2	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH3.1	0.4	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH3.2	1.2	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH4	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH5.1	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH5.2	1.2	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH6	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH7.1	0.4	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH7.2	0.7	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH8	0.4	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH9.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH9.2	1.0	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH10	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH11	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH12.1	0.4	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH12.2	1.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH13	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH14.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
BH14.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
D1	1.0	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
D2	1.2	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
D3	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
D4	0.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7
D5	1.5	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1	<1	<1.7

Table 26. Groundwater analytical results for Total Recoverable Hydrocarbons (TRH), Benzene Toluene Ethylbenzene Xylene (BTEX) and Naphthalene. F1 = subtract the sum of BTEX concentrations from the C_6-C_{10} aliphatic hydrocarbon fraction. F2 = subtract Naphthalene from the> C_{10}-C_{16} aliphatic hydrocarbon fraction. (B(a)P) not analysed (NA).

NEPM Assessment Criteria	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Benzo(a)pyrene	TRH C6-C10 - BTEX (F1)	TRH >C10-C16 - N (F2)
NEPM 2013 GIL Drinking Water, mg/L	0.001	0.8	0.3	0.6	-	0.00001		
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
NEPM 2013 GIL Marine Waters, µg/L	500C	-	-	-	50C	-		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
NEPM 2013 GIL Fresh Waters, µg/L	950	-	-	350 as o-x; 200 as p-x	16	-		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
NEPM 2013 Commercial/Industrial Groundwater **HSL-A** for Vapour Intrusion 2 - <4m **Silt**, mg/L	**5**	NL	NL	NL	NL		NL	NL
NEPM 2013 Commercial/Industrial Groundwater **HSL-A** for Vapour Intrusion 4 - <8m **Silt**, mg/L	**5**	NL	NL	NL	NL		NL	NL
MW1 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	NA	<50	<60
MW2 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	NA	<50	<60
MW3 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	NA	<50	<60
MW4 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	NA	<50	<60
MW1 (mg/L)	<0.0005	<0.0005	<0.0005	<0.0015	<0.0005	NA	<0.05	<0.06
MW2 (mg/L)	<0.0005	<0.0005	<0.0005	<0.0015	<0.0005	NA	<0.05	<0.06
MW3 (mg/L)	<0.0005	<0.0005	<0.0005	<0.0015	<0.0005	NA	<0.05	<0.06
MW4 (mg/L)	<0.0005	<0.0005	<0.0005	<0.0015	<0.0005	NA	<0.05	<0.06

Table 27. Groundwater analytical results for metals

NEPM Assessment Criteria	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
	0.01	0.002	0.05	2	0.01	0.02	-	0.001
NEPM 2013 GIL Drinking Water, mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	-	0.7	4.4	1.3	4.4	7	15	0.1
NEPM 2013 GIL Marine Waters, µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	24 A(III); 13 As(V)	0.2	1	1.4	3.4	11	8	0.06
NEPM 2013 GIL Fresh Waters, µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW1 (µg/L)	<1	<0.1	**2**	**2**	<1	**9**	**48**	
MW2 (µg/L)	<1	**0.1**	**2**	**10**	<1	**18**	**130**	
MW3 (µg/L)	**1**	**0.3**	<1	**2**	<1	**13**	**66**	
MW4 (µg/L)	<1	<0.1	**5**	**4**	<1	**12**	**38**	
MW1 (mg/L)	<0.001	<0.0001	0.002	0.002	<0.001	0.009	0.048	<0.0001
MW2 (mg/L)	<0.001	0.0001	0.002	0.010	<0.001	0.018	0.130	<0.0001
MW3 (mg/L)	0.001	0.0003	<0.001	0.002	<0.001	0.013	0.066	<0.0001
MW4 (mg/L)	<0.001	<0.0001	0.005	0.004	<0.001	0.012	0.038	<0.0001

Table 28. Groundwater analytical results for pesticides

NEPM Assessment Criteria	Heptachlor	Aldrin plus Dieldrin	Endrin	DDT	Methoxychlor	Dichlorvos	Dimethoate	Diazinon (Dimpylate)
NEPM 2013 GIL Drinking Water, mg/L	0.01 mg/L	0.0003 mg/L	- mg/L	0.009 mg/L	0.3 mg/L	0.005 mg/L	0.007 mg/L	0.004 mg/L
NEPM 2013 GIL Marine Waters, µg/L	- µg/L	- µg/L	0.004 µg/L	- µg/L	- µg/L	- µg/L	- µg/L	- µg/L
NEPM 2013 GIL Fresh Waters, µg/L	- µg/L	- µg/L	0.01 µg/L	0.006 µg/L	- µg/L	- µg/L	0.15 µg/L	0.01 µg/L
MW1 (µg/L)	<0.1	<0.2	<0.1	<0.2	<0.1	<0.5	<0.5	<0.5
MW2 (µg/L)	<0.1	<0.2	<0.1	<0.2	<0.1	<0.5	<0.5	<0.5
MW3 (µg/L)	<0.1	<0.2	<0.1	<0.2	<0.1	<0.5	<0.5	<0.5
MW4 (µg/L)	<0.1	<0.2	<0.1	<0.2	<0.1	<0.5	<0.5	<0.5
MW1 (mg/L)	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005
MW2 (mg/L)	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005
MW3 (mg/L)	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005
MW4 (mg/L)	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005

NEPM Assessment Criteria	Fenitrothion	Malathion	Chlorpyrifos (Chlorpyrifos Ethyl)	Parathion-ethyl (Parathion)	Methidathion	Ethion	Azinphos-methyl
NEPM 2013 GIL Drinking Water, mg/L	0.007 mg/L	0.07 mg/L	0.01 mg/L	0.02 mg/L	0.006 mg/L	0.004 mg/L	0.03 mg/L
NEPM 2013 GIL Marine Waters, µg/L	- µg/L	- µg/L	0.009 µg/L	- µg/L	- µg/L	- µg/L	- µg/L
NEPM 2013 GIL Fresh Waters, µg/L	0.2 µg/L	0.05 µg/L	0.01 µg/L	0.004 µg/L	- µg/L	- µg/L	- µg/L
MW1 (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2
MW2 (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2
MW3 (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2
MW4 (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2
MW1 (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002
MW2 (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002
MW3 (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002
MW4 (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

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SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: NEO Consulting Pty Ltd
Address: 186 Riverstone Parade, Riverstone, NSW, 2765

Contact Name: Nick Caltabiano
Luke Brevu

Project Name/No: N 5482 - Soil
Purchase Order No:
Results Required By: Next day / 3 days / (Standard) (Circle One)
Telephone: Nick mobile: 0416 680 375 Luke mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Heavy metals	OCP/OPP	PAH	Asbestos
BH1.1	20/8/21	1		✓		1	✓	✓	✓	✓	✓	✓
BH1.2	"	2		✓		1	✓	✓	✓	✓	✓	✓
BH2	"	3		✓		1	✓	✓	✓	✓	✓	✓
BH3.1	"	4		✓		1	✓	✓	✓	✓	✓	✓
BH3.2	"	5		✓		1	✓	✓	✓	✓	✓	✓
BH4	"	6		✓		1	✓	✓	✓	✓	✓	✓
BH5.1	"	7		✓		1	✓	✓	✓	✓	✓	✓
BH5.2	"	8		✓		1	✓	✓	✓	✓	✓	✓
BH6	"	9		✓		1	✓	✓	✓	✓	✓	✓

SGS EHS Sydney COC
SE222853

Relinquished By:	Date/Time:	Received By: George Zhi	Date/Time 23/8/21 @ 4pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) / No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:

Comments: Email Reports and Invoices to all emails =>
① Nick@neoconsulting.com.au ② Luke@neoconsulting.com.au ③ admin@neoconsulting.com.au ④ Oskar@neoconsulting.com.au ⑤ sarah@neoconsulting.com.au ⑥ Ehsan@neoconsulting.com.au

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 2 of 3

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: NEO Consulting Pty Ltd
Address: 186 Riverstone Parade, Riverstone, NSW, 2765
Contact Name: Nick Cattubiano, Luke Brevu

Project Name/No: N5482-Soil
Purchase Order No:
Results Required By: Next day / 3 days / Standard (Circle One)
Telephone: Nick Mobile: 0416 680 375 Luke Mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Heavy metals	OCP/OPP	PAH	Asbestos
BH 7.1		10		✓		1	✓	✓	✓	✓	✓	✓
BH 7.2		11		✓		1	✓	✓	✓	✓	✓	✓
BH 8		12		✓		1	✓	✓	✓	✓	✓	✓
BH 9.1		13		✓		1	✓	✓	✓	✓	✓	✓
BH 9.2		14		✓		1	✓	✓	✓	✓	✓	✓
BH 10		15		✓		1	✓	✓	✓	✓	✓	✓
BH 11		16		✓		1	✓	✓	✓	✓	✓	✓
BH12.1		17		✓		1	✓	✓	✓	✓	✓	✓
BH12.2		18		✓		1	✓	✓	✓	✓	✓	✓

Relinquished By:	Date/Time:	Received By: George Zhi	Date/Time: 23/8/21 @ 4pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) / No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments: Email Reports and Invoices to all emails => ① nick@neoconsulting.com.au ② luke@neoconsulting.com.au ③ admin@neoconsulting.com.au ④ Oskar@neoconsulting.com.au ⑤ sarah@neconsulting.com.au ⑥ Ehsan@neoconsulting.com.au		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 3 of 3

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: NEO Consulting Pty Ltd
Address: 186 Riverstone Parade, Riverstone, NSW, 2765
Contact Name: Nick Catalbiano, Luke Brevu

Project Name/No: N 5482-Soil
Purchase Order No:
Results Required By: Next day / 3 days / Standard (Circle one)
Telephone: Nick mobile: 0416 680 375 Luke's mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Heavy metals	ocp/opp	PAH	Asbestos
BH13		19		✓		1	✓	✓	✓	✓	✓	✓
BH14.1		20		✓		1	✓	✓	✓	✓	✓	✓
BH14.2		21		✓		1	✓	✓	✓	✓	✓	✓
D1		22		✓		1	✓	✓	✓	✓	✓	✓
D2		23		✓		1	✓	✓	✓	✓	✓	✓
D3		24		✓		1	✓	✓	✓	✓	✓	✓
D4		25		✓		1	✓	✓	✓	✓	✓	✓
D5		26		✓		1	✓	✓	✓	✓	✓	✓

Relinquished By:	Date/Time:	Received By: George Zhi	Date/Time 23/8/21@4pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) / No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:

Comments: Email Reports and Invoices to all emails =>
① nick@neoconsulting.com.au
② luke@neoconsulting.com.au
③ admin@neoconsulting.com.au
④ Oskar@neoconsulting.com.au
⑤ sarah@neconsulting.com.au
⑥ Ehsan@neoconsulting.com.au

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5482-Soil**
Order Number	**N5482**
Samples	26

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE222853 R0**
Date Received	23/8/2021
Date Reported	30/8/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

Huong CRAWFORD
Production Manager

Ly Kim HA
Organic Section Head

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

VOC's in Soil [AN433] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**150**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	**68**	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**210**	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	**220**	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**84**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**110**	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	**45**	**140**
TRH C29-C36	mg/kg	45	<45	<45	<45	**45**	**74**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	**54**
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	**54**
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	**150**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	**220**
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**69**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	**47**	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	**34**	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	**34**	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	**120**	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45	<45
TRH C29-C36	mg/kg	45	<45
TRH C37-C40	mg/kg	100	<100
TRH >C10-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Naphthalene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	**1.0**	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	**1.1**	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**7.9**	**0.3**	<0.1	**0.2**	**0.2**
Anthracene	mg/kg	0.1	**2.9**	**0.1**	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**11**	**0.9**	<0.1	**0.4**	**0.5**
Pyrene	mg/kg	0.1	**11**	**0.9**	<0.1	**0.4**	**0.5**
Benzo(a)anthracene	mg/kg	0.1	**5.0**	**0.3**	<0.1	**0.1**	**0.2**
Chrysene	mg/kg	0.1	**4.5**	**0.2**	<0.1	**0.1**	**0.2**
Benzo(b&j)fluoranthene	mg/kg	0.1	**5.3**	**0.3**	<0.1	**0.1**	**0.2**
Benzo(k)fluoranthene	mg/kg	0.1	**2.4**	**0.2**	<0.1	<0.1	**0.1**
Benzo(a)pyrene	mg/kg	0.1	**5.2**	**0.3**	<0.1	**0.1**	**0.2**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.5**	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	**3.1**	**0.2**	<0.1	<0.1	**0.2**
Benzo(ghi)perylene	mg/kg	0.1	**2.9**	**0.2**	<0.1	<0.1	**0.1**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**9.6**	**0.6**	<0.2	<0.2	**0.4**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**9.6**	**0.6**	<0.3	<0.3	**0.4**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**9.6**	**0.6**	<0.2	**0.2**	**0.4**
Total PAH (18)	mg/kg	0.8	**65**	**3.9**	<0.8	**1.6**	**2.5**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**65**	**3.9**	<0.8	**1.6**	**2.5**

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	**0.8**	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	**0.4**	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**6.9**	<0.1	<0.1	<0.1	**0.1**
Anthracene	mg/kg	0.1	**2.2**	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**7.5**	**0.1**	<0.1	**0.3**	**0.4**
Pyrene	mg/kg	0.1	**7.3**	**0.1**	<0.1	**0.3**	**0.4**
Benzo(a)anthracene	mg/kg	0.1	**3.0**	<0.1	<0.1	<0.1	**0.1**
Chrysene	mg/kg	0.1	**2.9**	<0.1	<0.1	**0.1**	**0.1**
Benzo(b&j)fluoranthene	mg/kg	0.1	**3.1**	<0.1	<0.1	**0.1**	**0.2**
Benzo(k)fluoranthene	mg/kg	0.1	**1.4**	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**2.8**	<0.1	<0.1	**0.1**	**0.2**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	**1.5**	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**1.5**	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**5.1**	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**5.1**	<0.3	<0.3	<0.3	**0.3**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**5.1**	<0.2	<0.2	**0.2**	**0.2**
Total PAH (18)	mg/kg	0.8	**41**	<0.8	<0.8	**1.0**	**1.6**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**41**	<0.8	<0.8	**1.0**	**1.6**

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	**0.2**	<0.1	**0.1**	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.3**	**0.4**	<0.1	**0.3**	**0.2**
Pyrene	mg/kg	0.1	**0.2**	**0.4**	<0.1	**0.3**	**0.2**
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1
Chrysene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.2**	**0.1**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.2**	**0.1**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	**0.3**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	**0.3**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	**0.2**	<0.2	**0.3**	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	**1.5**	<0.8	**1.7**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	**1.5**	<0.8	**1.7**	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.4**	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.2**	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.3**	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.3**	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	**1.8**	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**1.8**	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Naphthalene	mg/kg	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1
Pyrene	mg/kg	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1
Chrysene	mg/kg	0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1
Lindane	mg/kg	0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1
Aldrin	mg/kg	0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2
Endrin	mg/kg	0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1
Isodrin	mg/kg	0.1	<0.1
Mirex	mg/kg	0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1

OP Pesticides in Soil [AN420] Tested: 25/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

OP Pesticides in Soil [AN420] Tested: 25/8/2021 (continued)

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Dichlorvos	mg/kg	0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2
Malathion	mg/kg	0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2
Methidathion	mg/kg	0.5	<0.5
Ethion	mg/kg	0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 26/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Arsenic, As	mg/kg	1	6	3	8	7	7
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	11	16	15	13
Copper, Cu	mg/kg	0.5	24	36	13	23	31
Lead, Pb	mg/kg	1	120	35	27	200	170
Nickel, Ni	mg/kg	0.5	6.6	7.1	3.3	7.1	6.6
Zinc, Zn	mg/kg	2	84	47	15	56	59

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Arsenic, As	mg/kg	1	6	4	4	5	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	14	16	13	12
Copper, Cu	mg/kg	0.5	17	16	23	18	25
Lead, Pb	mg/kg	1	140	20	23	68	35
Nickel, Ni	mg/kg	0.5	7.5	4.6	2.6	5.5	5.3
Zinc, Zn	mg/kg	2	76	16	17	55	41

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Arsenic, As	mg/kg	1	4	3	6	6	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	18	8.4	18	15	17
Copper, Cu	mg/kg	0.5	11	15	26	20	31
Lead, Pb	mg/kg	1	19	23	27	28	22
Nickel, Ni	mg/kg	0.5	4.5	4.0	19	4.8	11
Zinc, Zn	mg/kg	2	12	30	25	17	19

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Arsenic, As	mg/kg	1	4	5	2	4	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	16	6.4	12	18
Copper, Cu	mg/kg	0.5	17	17	24	28	30
Lead, Pb	mg/kg	1	24	39	16	51	63
Nickel, Ni	mg/kg	0.5	6.2	4.2	4.1	6.5	9.9
Zinc, Zn	mg/kg	2	20	34	26	66	62

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 26/8/2021

(continued)

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Arsenic, As	mg/kg	1	5	2	4	5	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	7.4	14	15	17
Copper, Cu	mg/kg	0.5	30	29	16	25	24
Lead, Pb	mg/kg	1	59	31	19	42	20
Nickel, Ni	mg/kg	0.5	8.1	5.7	1.3	7.6	3.8
Zinc, Zn	mg/kg	2	61	30	10	23	15

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Arsenic, As	mg/kg	1	2
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	5.7
Copper, Cu	mg/kg	0.5	22
Lead, Pb	mg/kg	1	14
Nickel, Ni	mg/kg	0.5	4.0
Zinc, Zn	mg/kg	2	24

Mercury in Soil [AN312] Tested: 26/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Mercury	mg/kg	0.05	**0.08**	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	**0.07**	<0.05

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	**0.10**	**0.10**

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Mercury	mg/kg	0.05	**0.07**	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 26/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
% Moisture	%w/w	1	16.6	13.6	20.5	18.0	12.9

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
% Moisture	%w/w	1	20.0	17.1	19.0	20.2	18.5

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
% Moisture	%w/w	1	22.4	6.7	23.7	18.2	23.0

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
% Moisture	%w/w	1	15.5	18.5	8.0	7.5	23.3

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
% Moisture	%w/w	1	22.2	9.8	18.5	22.5	22.8

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
% Moisture	%w/w	1	8.0

Fibre Identification in soil [AN602] Tested: 27/8/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 20/8/2021 SE222853.001	BH1.2 SOIL - 20/8/2021 SE222853.002	BH2 SOIL - 20/8/2021 SE222853.003	BH3.1 SOIL - 20/8/2021 SE222853.004	BH3.2 SOIL - 20/8/2021 SE222853.005
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH4 SOIL - 20/8/2021 SE222853.006	BH5.1 SOIL - 20/8/2021 SE222853.007	BH5.2 SOIL - 20/8/2021 SE222853.008	BH6 SOIL - 20/8/2021 SE222853.009	BH7.1 SOIL - 20/8/2021 SE222853.010
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH7.2 SOIL - 20/8/2021 SE222853.011	BH8 SOIL - 20/8/2021 SE222853.012	BH9.1 SOIL - 20/8/2021 SE222853.013	BH9.2 SOIL - 20/8/2021 SE222853.014	BH10 SOIL - 20/8/2021 SE222853.015
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH11 SOIL - 20/8/2021 SE222853.016	BH12.1 SOIL - 20/8/2021 SE222853.017	BH12.2 SOIL - 20/8/2021 SE222853.018	BH13 SOIL - 20/8/2021 SE222853.019	BH14.1 SOIL - 20/8/2021 SE222853.020
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH14.2 SOIL - 20/8/2021 SE222853.021	D1 SOIL - 20/8/2021 SE222853.022	D2 SOIL - 20/8/2021 SE222853.023	D3 SOIL - 20/8/2021 SE222853.024	D4 SOIL - 20/8/2021 SE222853.025
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	D5 SOIL - 20/8/2021 SE222853.026
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 1 of 1

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: NEO Consulting Pty Ltd
Address: 186 Riverstone Parade, Riverstone, NSW, 2765

Contact Name: Nick Caltabiano
Luke Brevu

Project Name/No: NS482 -W
Purchase Order No:
Results Required By: Next day / (3 days) / Standard (Circle one) => 30974
Telephone: Nick's mobile: 0416 680 375 Luke's mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Dissolved Metals
MW1	30-08-21	1	✓			5	✓	✓	✓
MW2	"	2	✓			5	✓	✓	✓
MW3	"	3	✓			5	✓	✓	✓
MW4	"	4	✓			5	✓	✓	✓

SGS EHS Sydney COC
SE223153

Relinquished By:	Date/Time:	Received By: George Zhu	Date/Time 1/9/21@4:45pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:

Comments: Email Reports and Invoices to all emails =>
① nick@neoconsulting.com.au
② luke@neoconsulting.com.au
③ admin@neoconsulting.com.au
④ Oskar@neoconsulting.com.au
⑤ sarah@neoconsulting.com.au
⑥ Ehsan@neoconsulting.com.au

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5482-W**
Order Number	**N5482-W**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE223153 R0**
Date Received	1/9/2021
Date Reported	6/9/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

VOCs in Water [AN433] Tested: 3/9/2021

PARAMETER	UOM	LOR	MW1 WATER - 30/8/2021 SE223153.001	MW2 WATER - 30/8/2021 SE223153.002	MW3 WATER - 30/8/2021 SE223153.003	MW4 WATER - 30/8/2021 SE223153.004
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 3/9/2021

PARAMETER	UOM	LOR	MW1 WATER - 30/8/2021 SE223153.001	MW2 WATER - 30/8/2021 SE223153.002	MW3 WATER - 30/8/2021 SE223153.003	MW4 WATER - 30/8/2021 SE223153.004
TRH C6-C9	µg/L	40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 2/9/2021

PARAMETER	UOM	LOR	MW1 WATER - 30/8/2021 SE223153.001	MW2 WATER - 30/8/2021 SE223153.002	MW3 WATER - 30/8/2021 SE223153.003	MW4 WATER - 30/8/2021 SE223153.004
TRH C10-C14	µg/L	50	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60	<60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500
TRH C10-C40	µg/L	320	<320	<320	<320	<320

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 1/9/2021

PARAMETER	UOM	LOR	MW1 WATER - 30/8/2021 SE223153.001	MW2 WATER - 30/8/2021 SE223153.002	MW3 WATER - 30/8/2021 SE223153.003	MW4 WATER - 30/8/2021 SE223153.004
Arsenic, As	µg/L	1	<1	<1	1	<1
Cadmium, Cd	µg/L	0.1	<0.1	0.1	0.3	<0.1
Chromium, Cr	µg/L	1	2	2	<1	5
Copper, Cu	µg/L	1	2	10	2	4
Lead, Pb	µg/L	1	<1	<1	<1	<1
Nickel, Ni	µg/L	1	9	18	13	12
Zinc, Zn	µg/L	5	48	130	66	38

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 2/9/2021

PARAMETER	UOM	LOR	MW1 WATER - 30/8/2021 SE223153.001	MW2 WATER - 30/8/2021 SE223153.002	MW3 WATER - 30/8/2021 SE223153.003	MW4 WATER - 30/8/2021 SE223153.004
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

APPENDIX C

Property Report, Relevant Site Data and Plans

Job No 30311762

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Ehsan Zare	**Caller Id:**	3021080	**Phone:**	0405 016 670
Company:	Not supplied				
Address:	186 Riverstone Parade Riverstone NSW 2765	**Email:**	ehsan@neoconsulting.com.au		

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

User Reference: 241-245 Pennant Hills Road

Working on Behalf of: Private

Enquiry Date:	Start Date:	End Date:
16/08/2021	20/08/2021	20/08/2021

Address:

241-245 Pennant Hills Road
Carlingford NSW 2118

Job Purpose:	Onsite Activities:
Design	Planning & Design

Location of Workplace: Private

Location in Road:

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:

Not supplied

Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.1100.com.au**
- **For more information on safe excavation practices, visit www.1100.com.au**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash # require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
201818380	AARNet Pty Ltd Nsw	1300 275 662	NOTIFIED
201818377	Ausgrid	(02) 4951 0899	NOTIFIED
201818378	Endeavour Energy	(02) 9853 4161	NOTIFIED
201818379	Jemena Gas North	1300 880 906	NOTIFIED
201818375	NBN Co NswAct	1800 687 626	NOTIFIED
201818371	Optus and or Uecomm Nsw	1800 505 777	NOTIFIED
201818373	Sydney Water	13 20 92	NOTIFIED
201818376	Telstra NSW Central	1800 653 935	NOTIFIED
201818374	TPG Telecom (NSW)	1800 786 306	NOTIFIED
201818372	Transport for NSW	(02) 8837 0285	NOTIFIED

END OF UTILITIES LIST

Property Report

241-245 PENNANT HILLS ROAD CARLINGFORD 2118

Property Details

Address:	241-245 PENNANT HILLS ROAD CARLINGFORD 2118		
Lot/Section /Plan No:	1/-/DP805059	2/-/DP805059	5/-/DP805059
	6/-/DP805059		
Council:	CITY OF PARRAMATTA COUNCIL		

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Parramatta (former The Hills) Local Environmental Plan 2012 (pub. 6-12-2019)
Land Zoning	B2 - Local Centre: (pub. 6-12-2019)
	SP2 - Infrastructure: (pub. 6-12-2019)
Height Of Building	9 m
Floor Space Ratio	1:1
Minimum Lot Size	600 m²
	700 m²
Heritage	NA
Land Reservation Acquisition	Classified Road (SP2)
Foreshore Building Line	NA

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

- State Environmental Planning Policy (Affordable Rental Housing) 2009: Land Application (pub. 31-7-2009)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Concurrences and Consents) 2018: Land Application (pub. 21-12-2018)
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017: Land Application (pub. 1-9-2017)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004: Land Application (pub. 31-3-2004)
- State Environmental Planning Policy (Infrastructure) 2007: Land Application (pub. 21-12-2007)
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007: Land Application (pub. 16-2-2007)
- State Environmental Planning Policy (Primary Production and Rural Development) 2019: Land Application (pub. 28-2-2019)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Subject Land (pub. 25-8-2017)
- State Environmental Planning Policy No 19—Bushland in Urban Areas: Land Application (pub. 24-10-1986)
- State Environmental Planning Policy No 21—Caravan Parks: Land Application (pub. 24-4-1992)
- State Environmental Planning Policy No 33—Hazardous and Offensive Development: Land Application (pub. 13-3-1992)
- State Environmental Planning Policy No 36—Manufactured Home Estates: Land Application (pub. 16-7-1993)
- State Environmental Planning Policy No 50—Canal Estate Development: Land Application (pub. 10-11-1997)
- State Environmental Planning Policy No 55—Remediation of Land: Land Application (pub. 28-8-1998)
- State Environmental Planning Policy No 64—Advertising and Signage: Land Application (pub. 16-3-2001)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)
- State Environmental Planning Policy No 70—Affordable Housing (Revised Schemes): Land Application (pub. 31-5-2002)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005: Land Application (pub. 28-6-2016)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

1.5 m Buffer around Classified Roads	Classified Road Adjacent
Local Aboriginal Land Council	METROPOLITAN
Regional Plan Boundary	Greater Sydney

You are working near Transmission Cables. You must contact Ausgrid on (02) 4951 9200 at least two weeks before work commences. See Ausgrid Network Standard NS156.

EP834 - CQ1

6x100 AC
NR
1.1

Ref: D5

EP83413

EP83414

EP83431

EP83432

CARLINGFORD SYSTEM CONTROL CENTRE

PENNANT HILLS RD

Ducts encl 1.1Conc

Brick fence

Kerb

CQ1

CR1

Plastic Cable 1.1Conc

Brick FENCE

To Carlingford S.S

294-302

GMLA0

Transmission - 201818377

INFORMATION ON THIS PLAN ONLY VALID FOR 30 DAYS FROM ISSUE DATE

16 Aug 2021

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1:215

0 — 13 metres

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EP83431	EP83432	EP83441

ISG GRID

Ausgrid

A0 TR_MOCS_std_plot