NEO CONSULTING

PRELIMINARY SITE INVESTIGATION

N10057

IdealCorp

PROPOSED DEVELOPMENT AT:

124 New England Highway,

Lochinvar NSW 2321

23rd October 2024

Report Distribution

Preliminary Site Investigation

Address: 124 New England Highway, Lochinvar NSW 2321

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Table of Contents

Appendices

Appendix A – Figures and Site Photographic Log

Appendix B – QA/QC Discussion

Appendix C – Laboratory Results and Chain of Custody (NATA)

Appendix D – Property Report and Relevant Information

Appendix E – Test Pit Logs

Executive Summary

NEO Consulting were appointed by IdealCorp (the client) to undertake a Preliminary Site Investigation (PSI) for the property located at No. 124 New England Highway, Lochinvar NSW 2321 (the site). The site is legally identified as Lots 1, 2 & 3/-/DP1052148 and has an area of approximately 2,878m^2. The site is currently zoned as R1 - General Residential.

NEO Consulting understands that the proposed development for the site includes:

1- Demolition of onsite dwelling within southern portion of the site; and
2- Construction of a childcare centre within southern portion of the site.

The objective of this PSI was to provide a preliminary assessment of potentially contaminating activities which may have impacted the site. The scope of work undertaken includes:

- A site inspection to identify potential sources of contamination;
- Soil sampling to identify any contaminants (if present);
- Historical investigations relating to the site (if any);
- Local Council records and planning certificates;
- NSW Environment Protection Authority (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; and
- Acid Sulphate Soils (ASS) data maps

A site investigation was undertaken on the 14th October 2024 by qualified environmental consultants. During the site inspection, a soil investigation program was undertaken with a judgemental approach within the site to identify areas of contamination. Four (4) soil samples were obtained from the topsoil (0-0.15m). The samples were submitted to a National Association of Testing Authorities, Australia (NATA) accredited laboratory for analysis of Chemicals of Potential Concern (CoPC) that may have impacted the site during historical or present activities.

Historical aerial images indicate that the site contained a building structure and a few sheds in the southwestern portion. The remainder area of the site was free of structures. The original structure was demolished and replaced with the current residential dwelling in the 2000s along with construction of the sheds and an aviary structure within northern portion. The site has remained in its current state since at least 2010.

The soil underlying the site consists of dark brown silty sandy clay topsoil to a depth of approximately 0.4 m, followed by natural brown silty clay beyond that depth. No visible Potential Asbestos-Containing Material (PACM) was observed, and no hydrocarbon staining, or odour was detected in any of the excavated test pits. Coarse gravel imported as fill material was used for the driveway, extending from the road to the shed at the rear of the site.

Analytical results indicated that all analytes were below the laboratory limit of reporting (LOR) and/or the NEPM 2013 Health and Ecological Assessment Criteria for Residential (A) developments, except for asbestos (AF/FA) detected in one sample (BH1). The presence of Asbestos is likely linked to the demolition of the original building structure in the southwestern portion of the site and requires further delineation.

Considering the site's history, analytical results, and the age of development in the northern portion (2000s), the likelihood of contamination in this area is very low. However, the southern portion of the site requires further investigation. Data gaps remain, including the extent of asbestos contamination in the southwestern portion and the condition of soils beneath the on-site structure in this area. Therefore, post-demolition soil sampling should be conducted from areas beneath onsite structures and hardstands to address these data gaps.

A Remedial Action Plan (RAP) should be prepared to delineate and manage the Asbestos contamination. The RAP should outline the steps for post-demolition sampling, data gap investigation, and remediation strategy and goals in order to make the site suitable for future proposed development.

In compliance with NEPM Schedule B1, which refers to the WA Department of Health (DoH) Asbestos Contaminated Sites in WA Guidelines, post-demolition sampling should be conducted at a rate twice that specified in Table 2 of NSW EPA, *Contaminated Land Guidelines*, *Sampling Design Part 1 – Application* (2022). Test holes should be evenly distributed across the targeted area, with additional sampling occurring every 5 to 10 meters for building footprints or demolished structure footprints, especially those dating back to pre-1987.

Based on the site investigation and analytical results, NEO Consulting finds that the site can be made suitable for the proposed subdivision and development for Residential (A) land use, provided the recommendations within **Section 14** are undertaken.

1. Introduction

1.1 Background

NEO Consulting were appointed by IdealCorp (the client) to undertake a Preliminary Site Investigation (PSI) for the property located at No. 124 New England Highway, Lochinvar NSW 2321 (the site). The site is legally identified as Lots 1, 2 & 3/-/DP1052148 and has an area of approximately 2,878m^2. The site is currently zoned as R1 - General Residential.

A site inspection was undertaken on 14th October 2024 by qualified environmental consultants. Reporting, photographs and sampling were conducted on this day and with reference to the relevant regulatory criterial **(2. Scope of Work**). Further information of the inspection is described in **4. Site Condition**.

NEO Consulting understands that the proposed development for the site includes:

1- Demolition of onsite dwelling within southern portion of the site; and
2- Construction of a childcare centre within southern portion of the site.

1.2 Objectives

This report provides a preliminary assessment of current and/or historical potentially contaminating activities that may have impacted the soils and will determine if the site is suitable for the proposed development.

1.3 Trigger for Assessment

The trigger for assessment is to support a Development Application (DA) that will be submitted to Maitland City Council.

1.4 Regulatory Framework

This PSI has been prepared in general accordance with the following regulatory framework:

- State Environmental Planning Policy (Resilience and Hazard) 2021;
- National Environment Protection Measures (NEPM), 2013;
- NSW Environmental Protection Authority, *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- NSW Environmental Protection Authority, *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines,* 2020;
- Protection of the Environment and Operation Act 1997
- Protection of the Environment Operations (Waste) Regulations, 2005;
- Maitland Local Environmental Plan (2011); and
- Maitland Development Control Plan (2011).

2. Scope of Work

To meet the requirements in Section 1.3 of this report, the following scope of works were included:

- A site inspection to identify potential sources of contamination on site;
- Soil sampling to identify any contaminants (if present);
- Historical investigations relating to the site (if any);
- Review of current and historical Certificates of Title and Local Council records and planning certificates and NSW EPA Contaminated Land Records and NSW POEO Register;
- Review of local geological and hydrogeological information, including an evaluation of the NSW Groundwater registered groundwater bore database;
- Review of Acid Sulphate Soil data maps;
- Development of a Conceptual Site Model (CSM) to identify the connections between potential sources of contamination and exposure pathways, human and/or ecological receptors; and
- Recommendations for additional investigations (if any), based on the identified data gaps and findings of this report.

3. Site Details

Table 1. Site Details

Address	No. 124 New England Highway, Lochinvar NSW 2321
Deposited plan	Lots 1, 2 & 3/-/DP1052148
Zoning	R1 - General Residential
Locality map	Figure 1, Appendix A
Site Boundary	Figure 2, Appendix A
Area	2,878m^2
LGA	Maitland City Council
Site Coordinates	-32.700392, 151.448167
GDA 94	354537.42mE, : 6380853.95mS, 56H

Table 2. Surrounding land-use

Direction from site	Land-use
North	Residential Property
East	Residential Property
South	New England Highway
West	Residential Property

4. Site Condition

A site inspection was undertaken on 14th October 2024 by NEO Consulting. During the site inspection, the following observations were noted (photographs in **Appendix A**):

- The site contained a residential dwelling at the front and two sheds at the rear.
- The dwelling was a single-storey, fibrocement-clad building.
- One shed had fibrocement-clad walls, while the other had metal-clad walls.
- The front and rear portions of the site were covered with lawn.
- Coarse gravel, used as fill material, was imported for the driveway, which extended from the road to the shed at the rear of the site.
- The soil underlying the site consisted of dark brown silty sandy clay topsoil to a depth of approximately 0.4 m, followed by natural brown silty clay below that depth.
- No visible Potential Asbestos-Containing Material (PACM) was observed, and no hydrocarbon staining, or odour was detected in any of the excavated test pits.
- The site had a sloping gradient from west to east.

The nearest human receptors include adjoining residential properties, and environmental receptor includes Lochinvar Creek located ~170m south of the site.

5. Site History

5.1 History of Site

Historical aerial images indicate that the site contained a building structure and a few sheds in the southwestern portion. The remainder area of the site was free of structures. The original structure was demolished and replaced with the current residential dwelling in the 2000s along with construction of the sheds and an aviary structure within northern portion. The site has remained in its current state since at least 2010.

A summary of available historical aerial imagery is contained below, and the images referenced can be seen in **Appendix A**.

Table 3. Historical aerial images of the site and surrounding area.

Year	Description
1971	The site contained a building structure and a few sheds within the southwestern portion. The surrounding area comprised rural residential properties and vacant lands.
1976	The site and surrounding area remained unchanged.
1991	The site and surrounding area remained unchanged.
1994	The site and surrounding area remained unchanged.
2001	The site and surrounding area remained unchanged.
2010	The building structure on the site had been replaced with a new one. Two sheds were constructed in the eastern portion of the site, along with an aviary in the northeastern portion. The site condition remained largely unchanged after these updates. The surrounding area had improved with increased residential development.

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, the Planning Certificate was not available.

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 and 500m radius of the site.

5.4 Protection of the Environment Operation 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 and 500m radius of the site.

5.5 SafeWork NSW Hazardous Goods

A search was not undertaken with SafeWork NSW for historical dangerous goods stored onsite. No evidence of underground storage of chemicals was encountered during the site inspection.

5.6 Product Spill and Loss History

The visual site inspection did not identify evidence of surface and subsurface stating within the site.

5.7 PFAS Investigation Program

The NSW Government PFAS Investigation Program map indicates the site is not currently listed or located within 1km of a listed site for PFAS contamination investigation and management programs.

6. Environmental Setting

6.1 Geology

Data obtained from the minview.geoscience.nsw.gov.au indicates that the site is underlain by Lochinvar Formation. This formation regionally consists of basalt, siltstone and sandstone.

6.2 Soil Landscape

A review of the regional maps by the NSW Department of Planning, Industry and Environment indicates the site is generally located within the Lochinvar soil landscape. This soil landscape covers undulating rises around the village of Lochinvar; Elevation ranging from 20 – 80 m; Local relief is around 20 m, with slope gradients of 4 – 6%; Average slope lengths are 800 – 1,000 m. Drainage lines occur at 400 – 800 m intervals.

The main soils are Non-calcic Brown Soils on the gentle slopes with Brown Podzolic Soils on the steeper areas. There are Yellow Solodic Soils on the mid to lower slopes of the steeper hills and in some drainage lines.

6.3 Groundwater

A groundwater bore search was conducted on 22nd October 2024. No Bore was found within 1km radius of the site.

It was beyond the scope of works to study the groundwater flow direction. However, based on the regional topography, groundwater is expected to flow south towards Lochinvar Creek located ~170m south of the site.

6.4 Topography

The site has a sloping gradient from west (41.30m AHD) to east (39.35m AHD). The regional topography surrounding the site has a gentle sloping (<5%) towards south.

6.5 Site Drainage

Site drainage is likely consistent with the local topography. Stormwater probably flows south via the municipal stormwater system and reaches Lochinvar Creek located ~170m south of the site.

6.6 Acid Sulphate Soils

To determine whether there is a potential for ASS to be present at the site, information was reviewed utilising the NSW Department of Planning, Industry and Environment eSPADE map viewer. The ASS risk maps show the chance of acid sulphate soil occurrence. This search indicated that there is "no known occurrence" of ASS underlying the soil at 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 (**Table 4**).

Table 4. Potential Areas and Contaminants of Concern

AEC	Potentially Contaminating / Hazardous Activity	CoPC	Likelihood of Site Impact	Comments
Entire site	Site activities Onsite Carparking	TRH, BTEX, PAH, OCP/OPP, PCBs, Metals, Asbestos	Low	No staining was observed within the site.
Southwestern portion	Hazardous materials from weathering and demolition of original onsite structure in this area	Asbestos	High	PSI confirmed presence of ACM (AF/FA) within this area.
Onsite structures	Hazardous materials	ACM, Lead (paint and/or dust), PCBs, SMF	Low	Considering the age of current structures (2000s) presence of CoPCs within the fabric of onsite buildings is unlikely.

Abbreviations: Total Recoverable Hydrocarbons (TRH), Benzene Toluene Ethylbenzene and Xylene (BTEX), Polycyclic Aromatic Hydrocarbon (PAH), Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs), Polychlorinated Biphenyls (PCBs), Asbestos Containing Materials (ACM), Hazardous Materials Survey (HMS), Ozone Depleting Substances (ODS), Synthetic Mineral Fibres (SMF), polychlorinated biphenyls (PCBs), Metals including Arsenic (AS), Cadmium (CD), Chromium (CR), Copper (CU), Lead (PB), Nickel (NI), Zinc (ZN) and Mercury (HG).

8. Conceptual Site Model

A Conceptual Site Model (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 CoPC;
- 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 site conditions.

Table 5. Conceptual Site Model

Potential Sources and Mechanism of Contamination	Potential Receptor	Potential Exposure Pathway	Complete connection	Risk	Justification/ Control Measures
Site activities (Top down) Onsite Carparking (Top down) Hazardous materials from weathering and demolition of original onsite structure (Top down)	Future site occupant, construction workers, general public, surrounding sensitive receptors	Dermal contact, inhalation/ ingestion of particulates.	Complete (current)	Low	Exposure to potentially contaminated soils is possible due to unsealed surfaces. If present, impacted soils are to be disposed of off-site in accordance with an unexpected finds protocol.
			Complete (Future)	Low	
	Natural soils	Migration of contamination from fill layer.	Complete (current)	Low	If contamination is present in the fill layer, migration to the natural layer is likely to be limited. If present, impacted soils are to be disposed of off-site.
			Complete (Future)	Low	
	Lochinvar Creek (~170m S)	Migration of impacted groundwater and surface water run-off.	Incomplete (current)	Low	The local topography surrounding the site falls toward Lochinvar Creek (~170m S). It is possible surface waters from the site reach this waterway.

			Incomplete (future)	Low	If present, contaminated soils and groundwater are likely to be remediated.
	Underlying aquifer	Leaching and migration of contaminants through groundwater infiltration.	Incomplete (current)	Low	leachability of contaminants is possible.
			Incomplete (future)	Low	If present, contaminated soil and/or groundwater is likely to be remediated.

9. Assessment Criteria

The following assessment criteria were adopted for the investigation.

9.1 NEPM Health Investigation Level A (HIL-A) – Residential

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 sub-criteria. The sub-criteria appropriate to the site is HIL A – residential with garden/accessible soils.

Table 6. HIL-A

Assessment Criteria	Residential Soil HIL-A, mg/kg
HCB	10
Heptachlor	6
Chlordane	50
Aldrin & Dieldrin	6
Endrin	10
DDD+DDE+DDT	240
Endosulfan	270
Methoxychlor	300
Mirex	10
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
Carcinogenic PAHs (as BaP TEQ)	3
Total PAH (18)	300
Total PCBs	1

9.2 NEPM Health Screening Level A (HSL-A) – Residential

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 sub-criteria. The sub-criteria appropriate to the site is HSL A – residential with garden/accessible soils. NL = Not Limiting.

Table 7. HSL-A

Assessment Criteria	Residential Soil HSL-A for Vapour Intrusion, 0-<1m depth, Clay, mg/kg	Residential Soil HSL-A for Vapour Intrusion, 1-<2m depth, Clay, mg/kg
Benzene	0.7	1
Toluene	480	NL
Ethylbenzene	NL	NL
Xylenes	110	310
Naphthalene	5	NL
TRH C_6-C_{10} - BTEX (F1)	50	90
TRH >C_{10}-C_{16} - N (F2)	280	NL

9.3 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

Assessment Criteria	Urban Residential and Public Open Space, mg/kg
Arsenic, As	100
Lead, Pb	1100
DDT	640
Naphthalene	370

9.4 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

Assessment Criteria	Residential and Public Open Spaces, Fine-Grained Soil, mg/kg
Benzene	65
Toluene	105
Ethylbenzene	125
Xylenes	45
BaPyr (BaP)	0.7
TRH C_6-C_{10}	180
TRH >C_{10}-C_{16}	120
TRH >C_{16}-C_{34} (F3)	1,300
TRH >C_{34}-C_{40} (F4)	5,600

9.5 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

Assessment Criteria	Residential, Parkland and Public Open Space, Fine-Grained Soil, mg/kg
TRH C_6-C_{10}	800
TRH >C_{10}-C_{16}	1000
TRH >C_{16}-C_{34} (F3)	3,500
TRH >C_{34}-C_{40} (F4)	10,000

9.6 NEPM Health Screening Level A (HSL-A) – Residential for Asbestos

The assessed soil must not contain Asbestos Containing Materials (ACM) in the excess of 0.01%w/w and Asbestos Fines (AF) and Fibrous Asbestos (FA) in excess of 0.001%w/w. Moreover, surface soil within the site must be free of visible ACM, Asbestos Fines (AF) and Fibrous Asbestos (FA).

Table 11. HSL-A for asbestos

Assessment Criteria	Health Screening Level (%w/w) Residential (A)
ACM	0.01%
FA and AF (friable asbestos)	0.001%
All forms of asbestos	No visible asbestos for surface soils

10. Sampling and Analysis Plan

10.1 Sampling Rationale

Table 12. Sampling Rationale

Sampling Criteria	Chosen Approach	Justification
Sampling Pattern	Judgemental sampling pattern within accessible areas	This pattern was selected due to the area of the site, access to underlying soil, the AEC and CoPC as well as the potential heterogeneity of any contamination.
Sampling Density	Four (4) soil samples from four (4) locations.	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
Sampling Depths	0-0.15m	These depths were selected in compliment with sampling density and to target depths of potential contaminants.

10.2 Field Sampling Methodology

Sampling was undertaken using test pit excavation. Test pits were excavated with a shovel to a depth of ~0.6m bgl. The samples were collected using clean nitril gloves and placed into laboratory 250m sample jars.

Screening / Sieving was conducted on Topsoil material to assess the possible presence of ACM with reference to the relevant guidelines (WA DoH, 2009) and (NEPC, 2013). A subsample was collected in 500ml zip-lock bag from sieved material for analysis of Asbestos from BH1 and BH3 which were located near onsite buildings.

The equipment was decontaminated with detergent and deionised water between samplings. Samples were stored on ice in an esky while on-site and in transit to a NATA accredited laboratory for the analysis of the CoPC under Chain of Custody (COC) documentation.

Borehole and test pit logs are provided in **Appendix E**.

Table 13. Sample details

Sample ID	Depth (m)	Sample Description	Matrix	PID (ppm)
BH1	0-0.15	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine-grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible ACM was observed, no hydrocarbon staining, or odour was detected.	Topsoil	<1.0
BH2	0-0.15	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine-grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible ACM was observed, no hydrocarbon staining, or odour was detected.	Topsoil	<1.0
BH3	0-0.15	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine-grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible ACM was observed, no hydrocarbon staining, or odour was detected.	Topsoil	<1.0
BH4	0-0.15	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine-grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible ACM was observed, no hydrocarbon staining, or odour was detected.	Topsoil	<1.0

Table 14. Laboratory Testing Program

Sample	Analyses
BH1, BH2, BH3 and BH4	TRH, BTEX, PAH, OCP, OPP, PCBs, Metals and Asbestos

11. Analytical Results

11.1 Soil Analytical Results

Analytical results indicated that all analytes were below the laboratory limit of reporting (LOR) and/or the NEPM 2013 Health and Ecological Assessment Criteria for Residential (A) developments, except for asbestos (AF/FA) detected in one sample (BH1). The presence of Asbestos is likely linked to the demolition of the original building structure in the southwestern portion of the site and requires further delineation.

Soil analytical results are provided in the laboratory reports in **Appendix C**.

11.2 QA/QC Results

SGS laboratory report SE272464 R0 indicates all Data Quality Objectives were met with the exception of the following:

- Matrix Spike:
  - Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES: Two items—recovery failed to meet acceptance criteria due to matrix interference.
  - Total Recoverable Hydrocarbons (TRH) in Soil: Two items—recovery failed to meet acceptance criteria due to sample heterogeneity.

Overall, the QA/QC results indicate a good quality data set.

12. Data Gaps

- The presence and extent of hazardous materials within onsite structures; Considering the age of current structures (2000s) presence of CoPCs within the fabric of onsite buildings is unlikely;
- The conditions of soil beneath onsite structures and hardstands within southwestern portion of the site. Considering the proposed demolition post-demolition sampling is required within this area.
- Extent of Asbestos contamination within southwestern portion of the site. Additional Sampling is required.

13. Conclusion

Historical aerial images indicate that the site contained a building structure and a few sheds in the southwestern portion. The remainder area of the site was free of structures. The original structure was demolished and replaced with the current residential dwelling in the 2000s along with construction of the sheds and an aviary structure within northern portion. The site has remained in its current state since at least 2010.

The soil underlying the site consists of dark brown silty sandy clay topsoil to a depth of approximately 0.4 m, followed by natural brown silty clay beyond that depth. No visible Potential Asbestos-Containing Material (PACM) was observed, and no hydrocarbon staining, or odour was detected in any of the excavated test pits. Coarse gravel imported as fill material was used for the driveway, extending from the road to the shed at the rear of the site.

Analytical results indicated that all analytes were below the laboratory limit of reporting (LOR) and/or the NEPM 2013 Health and Ecological Assessment Criteria for Residential (A) developments, except for asbestos (AF/FA) detected in one sample (BH1). The presence of Asbestos is likely linked to the demolition of the original building structure in the southwestern portion of the site and requires further delineation.

Considering the site's history, analytical results, and the age of development in the northern portion (2000s), the likelihood of contamination in this area is very low. However, the southern portion of the site requires further investigation. Data gaps remain, including the extent of asbestos contamination in the southwestern portion and the condition of soils beneath the on-site structure in this area. Therefore, post-demolition soil sampling should be conducted from areas beneath onsite structures and hardstands to address these data gaps.

A Remedial Action Plan (RAP) should be prepared to delineate and manage the Asbestos contamination within southwestern portion of the site. The RAP should outline the steps for post-demolition sampling, data gap investigation, and remediation strategy and goals in order to make the site suitable for future proposed development.

In compliance with NEPM Schedule B1, which refers to the WA Department of Health (DoH) Asbestos Contaminated Sites in WA Guidelines, post-demolition sampling should be conducted at a rate twice that specified in Table 2 of NSW EPA, *Contaminated Land Guidelines*, *Sampling Design Part 1 – Application* (2022). Test holes should be evenly distributed across the targeted area, with additional sampling occurring every 5 to 10 meters for building footprints or demolished structure footprints, especially those dating back to pre-1987.

Based on the site investigation and analytical results, NEO Consulting finds that the site can be made suitable for the proposed subdivision and development for Residential (A) land use, provided the recommendations within **Section 14** are undertaken.

14. Recommendations

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

- A Remedial Action Plan (RAP) should be prepared to delineate and manage the Asbestos contamination within southwestern portion of the site. The RAP should outline the steps for post-demolition sampling, data gap investigation, and remediation strategy in order to make the site suitable for future proposed development.
- The demolition of structures and excavation activity on site be undertaken in accordance with relevant Australian Standards, SafeWork NSW codes of practice and any other applicable requirements;
- Any soils requiring excavation an offsite disposal must be classified in accordance with "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA (2014);
- Any imported soil materials used for backfilling/levelling should be certified VENM. If the imported soil is not certified, it will require validation to confirm its suitability for Residential (A) land use;
- 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; and
- Site Validation Report (SVR) to document remediation of soil with Asbestos detected, validation of remaining soil after building demolition and remediation to ensure suitability for Residential (A) land use.

References

Statutory Requirements

- National Environment Protection Council Act 1994;
- Protection of the Environment and Operation Act 1997;
- The Contaminated Land Management Act 1997;
- Work Health and Safety Act, 2011.

Regulatory Framework

- State Environmental Planning Policy (Resilience and Hazard) 2021;
- NSW EPA, *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act*, 1997;
- NSW EPA, *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation, 2014*;
- NSW EPA, *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines,* 2020;
- NSW EPA, *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (3rd Edition);
- NSW EPA, *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NEPC, National Environment Protection (Assessment of Site Contamination) Measures (NEPM), 2013;
- HEPA, PFAS National Environmental Management Plan, Version 2.0, 2020;
- Protection of the Environment Operations (Waste) Regulations, 2005;
- SafeWork NSW, *Managing Asbestos in or On Soil*, 2014; and
- Work Health and Safety Regulation, 2011.

Limitations

The findings of this report are based on the Scope of Work outlined in Section 2. NEO Consulting 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 NEO Consulting personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, NEO Consulting assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of NEO Consulting, 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. NEO Consulting 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.

NEO Consulting 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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Nick Caltabiano

Project Manager

NEO CONSULTING

APPENDIX A

Figures and Photographic Log

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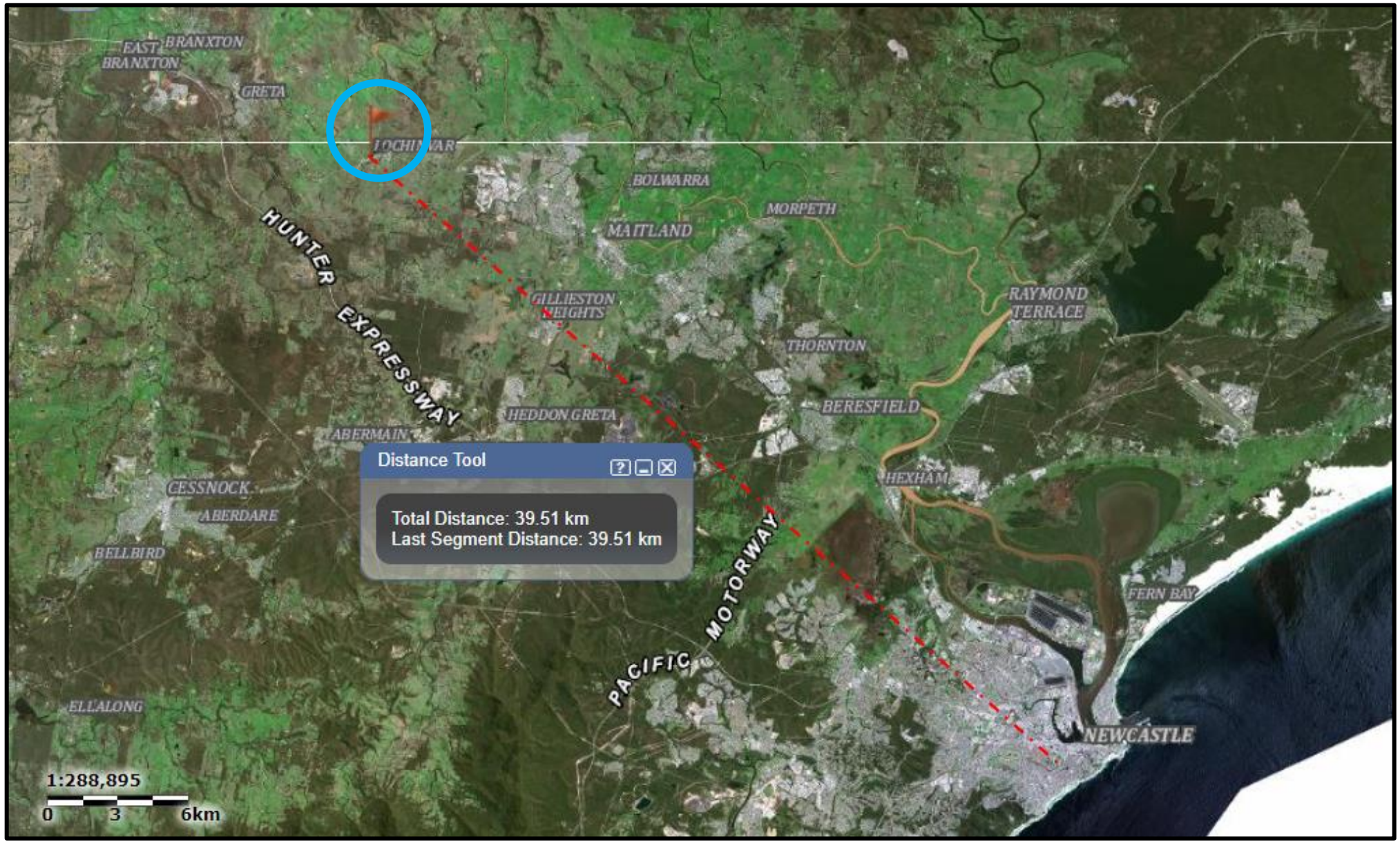
N

Figure 1. The site is located approximately 39km northwest of Newcastle CBD.



Site location

Source: Six Maps

Figure 1	Locality Map
Project	124 New England Highway, Lochinvar NSW 2321

N

Figure 2. The approximate area of the property is 2,878m^2. Four (4) soil samples were obtained from the site.

Soil Sample Locations

Source: Nearmap

Figure 2	Site Area
Project	124 New England Highway, Lochinvar NSW 2321

N

Figure 3. Aerial image of the site and surrounding area 1971. The site contained a building structure and a few sheds within the southwestern portion. The surrounding area comprised rural residential properties and vacant lands.

Source: NSW Historical Imagery

Figure 3	Aerial Image 1971
Project	124 New England Highway, Lochinvar NSW 2321

N

Figure 4. Aerial image of the site and surrounding area 1976. The site and surrounding area remained unchanged.

Source: NSW Historical Imagery

Figure 4	Aerial Image 1976
Project	124 New England Highway, Lochinvar NSW 2321

N

Figure 5. Aerial image of the site and surrounding area 1991. The site and surrounding area remained unchanged.

Figure 5	Aerial Image 1991
Project	124 New England Highway, Lochinvar NSW 2321

Source: NSW Historical Imagery

N

Figure 6. Aerial image of the site and surrounding area 1994. The site and surrounding area remained unchanged.

Figure 6	Aerial Image 1994
Project	124 New England Highway, Lochinvar NSW 2321

Source: NSW Historical Imagery

N

Figure 7. Aerial image of the site and surrounding area 2001. The site and surrounding area remained unchanged.

Figure 7	Aerial Image 2001
Project	124 New England Highway, Lochinvar NSW 2321

Source: NSW Historical Imagery

Figure 8. Aerial image of the site and surrounding area 2010. The building structure on the site had been replaced with a new one. Two sheds were constructed in the eastern portion of the site, along with an aviary in the northeastern portion. The site condition remained largely unchanged after these updates. The surrounding area had improved with increased residential development.

Figure 8	Aerial Image 2010
Project	124 New England Highway, Lochinvar NSW 2321

Source: NSW Historical Imagery

Figure 9. Front view of the dwelling within the site.

Figure 10. The sheds within the rear of the site.

Figure 11. Lawn area within southeastern portion of the site.

Figure 12. Gravel and grass groundcover within rear of the site.

Figure 13. BH1 test pit excavation.

Figure 14. BH3 test pit excavation.

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APPENDIX B

QA/QC Discussion

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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. DQOs

Step 1: State the problem	NEO Consulting have identified the following risks to human and environmental receptors: - The proposed development for the site includes demolition of onsite dwelling within southwestern portion of the site and construction of a childcare centre within southern portion of the site. The intended future use of the site is considered a sensitive human health risk setting.
Step 2: Identify the decision/goal of the study	NEO Consulting 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 report? - 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	NEO Consulting 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, NEO Consulting integrate 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;

	- 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	For judgemental soil sampling the data must meet the following qualifiers; - Acceptable recovery on all surrogate spikes used in laboratory analyses; - Acceptable analytical method to ensure detection limit appropriate for all analytes; If these conditions are not met, then chemical analysis will require re-testing for all samples with fresh aliquot.
Step 7: Optimise the design for obtaining data	Judgemental 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

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APPENDIX C

Laboratory Results and Chain of Custody (NATA)

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Table 15. Total Recoverable Hydrocarbon (TRH) analytical results. Values are presented as mg/kg. NL = Not Limiting.

Assessment Criteria		TRH C_6-C_{10}	TRH C_6-C_{10} - BTEX (F1)	TRH >C_{10}-C_{16}	TRH >C_{10}-C_{16} - N (F2)	TRH >C_{16}-C_{34} (F3)	TRH >C_{34}-C_{40} (F4)
NEPM 2013 Residential Soil HSL-A for Vapour Intrusion, 0-<1m depth, Clay, mg/kg			50		280		
NEPM 2013 Residential Soil HSL-A for Vapour Intrusion, 1-<2m depth, Clay, mg/kg			90		NL		
NEPM 2013 Soil Generic ESL for Urban, Residential and Public Open Spaces, fine-grained soil, mg/kg		180		120		1300	5600
NEPM 2013 Management Limits for Residential, Parkland and Public Open Space, 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
BH1	0-0.15	<25	<25	<25	<25	<90	<120
BH2	0-0.15	<25	<25	<25	<25	<90	<120
BH3	0-0.15	<25	<25	<25	<25	<90	<120
BH4	0-0.15	<25	<25	<25	<25	<90	<120

Table 16. Benzene, Toluene, Ethylbenzene and Xylene (BTEX) analytical results. Values are presented as mg/kg. NL = Not Limiting.

Assessment Criteria		Benzene	Toluene	Ethylbenzene	Xylenes
NEPM 2013 Residential Soil HSL-A for Vapour Intrusion, 0-<1m depth, Clay, mg/kg		0.7	480	NL	110
NEPM 2013 Soil ESL for Urban, Residential and Public Open Spaces, fine-grained soil, mg/kg		65	105	125	45
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg
BH1	0-0.15	<0.1	<0.1	<0.1	<0.3
BH2	0-0.15	<0.1	<0.1	<0.1	<0.3
BH3	0-0.15	<0.1	<0.1	<0.1	<0.3
BH4	0-0.15	<0.1	<0.1	<0.1	<0.3

Table 17. Polycyclic Aromatic Hydrocarbon (PAH) and Polychlorinated biphenyl (PCBs) analytical results. Not Analysed (N.A.)

Assessment Criteria		Naphthalene	Benzo(a)pyrene	Carcinogenic PAH (as BaP TEQ)	Total PAH (18)	Total PCBs
NEPM 2013 Residential Soil HSL-A for Vapour Intrusion, 0-<1m depth, Clay, mg/kg		5				
NEPM 2013 Soil Generic EIL for Urban Residential and Public Open Space, mg/kg		170				
Soil ESL for Urban, Residential and Public Open Spaces, fine-grained soil, mg/kg			0.7			
NEPM 2013 Residential Soil HIL-A, mg/kg			1.00 TEF	3	300	1
Sample	Depth (m)	mg/kg	mg/kg	TEQ (mg/kg)	mg/kg	mg/kg
BH1	0-0.15	<0.1	<0.1	<0.3	<0.8	<1
BH2	0-0.15	<0.1	<0.1	<0.3	<0.8	<1
BH3	0-0.15	<0.1	<0.1	<0.3	<0.8	<1
BH4	0-0.15	<0.1	<0.1	<0.3	<0.8	<1

Table 18. Heavy Metal analytical results. Values are presented as mg/kg.

Assessment Criteria		Arsenic, As	Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Nickel, Ni	Zinc, Zn	Mercury, Hg
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				1100			
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1	0-0.15	**4**	<0.3	**19**	**13**	**97**	**8.2**	**160**	**0.37**
BH2	0-0.15	<1	<0.3	**5.2**	**1.5**	**1**	**4.4**	**11**	<0.05
BH3	0-0.15	**4**	<0.3	**22**	**6.5**	**13**	**6.9**	**62**	<0.05
BH4	0-0.15	**2**	<0.3	**19**	**3.3**	**8**	**4.6**	**7.3**	<0.05

Table 19. Pesticides analytical results. Values are presented as mg/kg. Not Analysed (N.A.)

Assessment Criteria		HCB	Heptachlor	Chlordane	Aldrin & Dieldrin	Endrin	DDT	DDD+DDE +DDT	Endosulfan	Methoxychlor	Mirex
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	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1	0-0.15	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH2	0-0.15	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH3	0-0.15	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH4	0-0.15	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1

Table 20. Asbestos analytical results. Not Analysed (N.A.)

Asbestos HSL-A		Detection	ACM 0.01	AF/FA 0.001
Sample	Depth (m)	Yes/No	%w/w	%w/w
BH1	0-0.15	**Yes**	<0.01%	**0.002**
BH2	0-0.15	N.A.	N.A.	N.A.
BH3	0-0.15	No	<0.01%	<0.001%
BH4	0-0.15	N.A.	N.A.	N.A.

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	**N10057**
Order Number	**N10057**
Samples	4

LABORATORY DETAILS

Manager	Shane McDermott
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	**SE272464 R0**
Date Received	14/10/2024
Date Reported	21/10/2024

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.
Sample #1: Asbestos found in approx 5x3x2mm cement sheet fragment.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

Ly Kim HA
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Yusuf KUTHPUDIN
Asbestos Analyst

Ying Ying ZHANG
Laboratory Technician

VOC's in Soil [AN433] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	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
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	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
Benzo(a)pyrene	mg/kg	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
Dibenzo(ah)anthracene	mg/kg	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
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	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
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	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
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	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
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	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
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	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
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	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
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	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
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Arsenic, As	mg/kg	1	4	<1	4	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	19	5.2	22	19
Copper, Cu	mg/kg	0.5	13	1.5	6.5	3.3
Lead, Pb	mg/kg	1	97	1	13	8
Nickel, Ni	mg/kg	0.5	8.2	4.4	6.9	4.6
Zinc, Zn	mg/kg	2	160	11	62	7.3

Mercury in Soil [AN312] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
Mercury	mg/kg	0.05	**0.37**	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH2 SOIL - 14/10/2024 SE272464.002	BH3 SOIL - 14/10/2024 SE272464.003	BH4 SOIL - 14/10/2024 SE272464.004
% Moisture	%w/w	1	**17.3**	**6.7**	**18.7**	**14.2**

Fibre Identification in soil [AS4964/AN602] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH3 SOIL - 14/10/2024 SE272464.003
Date Analysed*	No unit	-	21/10/2024 00:00	21/10/2024 00:00
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH3 SOIL - 14/10/2024 SE272464.003
Date Analysed*	No unit	-	21/10/2024 00:00	21/10/2024 00:00
Total Sample Weight*	g	1	**731**	**640**
Bonded ACM in >7mm Sample*	g	0.001	<0.001	<0.001
AF/FA in >2mm to <7mm Sample*	g	0.00001	**0.0163**	<0.00001
AF/FA in <2mm Sample*	g	0.00001	<0.00001	<0.00001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.002**	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.002**	<0.001
Fibre Type*	No unit	-	Chrysotile	NAD

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 AAS 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). Total PAH calculated from individual analyte detections at or above the limit of reporting.
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/AS4964	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/AS4964	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	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/AS4964	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.

AN605	This technique gravimetrically determines the mass of Bonded Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight. Any fibrous asbestos (FA) found in this fraction will be added to the 2-7mm fraction and its mass recorded there.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free/respirable fibres which are only observed by standard trace analysis as per AN602.
AN605	Bonded asbestos containing material (Bonded ACM) comprises asbestos-containing-material which is sound in condition. Fibrous asbestos (FA) comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. Asbestos fines (AF) includes free fibres, small fibre bundles and also small fragments of bonded ACM that passes through a 7mm sieve - which implies that the bonded ACM fragments have a substantial degree of damage which increases the potential for fibre release.
AN-605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009 and NEPM 1999 (2013) schedule B1 section 4..

FOOTNOTES

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

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.

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STATEMENT OF QA/QC PERFORMANCE

SE272464 R0

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	**N10057**
Order Number	**N10057**
Samples	4

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
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SGS Reference	**SE272464 R0**
Date Received	14 Oct 2024
Date Reported	21 Oct 2024

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items
	TRH (Total Recoverable Hydrocarbons) in Soil	2 items

SAMPLE SUMMARY

Sample counts by matrix	4 Soil	Type of documentation received	COC
Date documentation received	14/10/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	6.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE272464 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Fibre Identification in soil

Method: ME-(AU)-[ENV]AS4964/AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326776	14 Oct 2024	14 Oct 2024	14 Oct 2025	15 Oct 2024	14 Oct 2025	21 Oct 2024
BH3	SE272464.003	LB326776	14 Oct 2024	14 Oct 2024	14 Oct 2025	15 Oct 2024	14 Oct 2025	21 Oct 2024

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326776	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	21 Oct 2024
BH3	SE272464.003	LB326776	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	21 Oct 2024

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326716	14 Oct 2024	14 Oct 2024	11 Nov 2024	15 Oct 2024	11 Nov 2024	18 Oct 2024
BH2	SE272464.002	LB326716	14 Oct 2024	14 Oct 2024	11 Nov 2024	15 Oct 2024	11 Nov 2024	18 Oct 2024
BH3	SE272464.003	LB326716	14 Oct 2024	14 Oct 2024	11 Nov 2024	15 Oct 2024	11 Nov 2024	18 Oct 2024
BH4	SE272464.004	LB326716	14 Oct 2024	14 Oct 2024	11 Nov 2024	15 Oct 2024	11 Nov 2024	18 Oct 2024

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326704	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	20 Oct 2024	17 Oct 2024
BH2	SE272464.002	LB326704	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	20 Oct 2024	17 Oct 2024
BH3	SE272464.003	LB326704	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	20 Oct 2024	17 Oct 2024
BH4	SE272464.004	LB326704	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	20 Oct 2024	17 Oct 2024

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH2	SE272464.002	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH3	SE272464.003	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH4	SE272464.004	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH2	SE272464.002	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH3	SE272464.003	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH4	SE272464.004	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH2	SE272464.002	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH3	SE272464.003	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024
BH4	SE272464.004	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	21 Oct 2024

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH2	SE272464.002	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH3	SE272464.003	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024
BH4	SE272464.004	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	17 Oct 2024

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326710	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	18 Oct 2024
BH2	SE272464.002	LB326710	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	18 Oct 2024
BH3	SE272464.003	LB326710	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	18 Oct 2024
BH4	SE272464.004	LB326710	14 Oct 2024	14 Oct 2024	12 Apr 2025	15 Oct 2024	12 Apr 2025	18 Oct 2024

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	18 Oct 2024
BH2	SE272464.002	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	18 Oct 2024
BH3	SE272464.003	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	18 Oct 2024
BH4	SE272464.004	LB326692	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	24 Nov 2024	18 Oct 2024

HOLDING TIME SUMMARY

SE272464 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

VOC's in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH2	SE272464.002	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH3	SE272464.003	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH4	SE272464.004	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE272464.001	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH2	SE272464.002	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH3	SE272464.003	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024
BH4	SE272464.004	LB326698	14 Oct 2024	14 Oct 2024	28 Oct 2024	15 Oct 2024	28 Oct 2024	18 Oct 2024

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1	SE272464.001	%	60 - 130%	103
	BH2	SE272464.002	%	60 - 130%	94
	BH3	SE272464.003	%	60 - 130%	106
	BH4	SE272464.004	%	60 - 130%	99

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1	SE272464.001	%	60 - 130%	93
	BH2	SE272464.002	%	60 - 130%	101
	BH3	SE272464.003	%	60 - 130%	87
	BH4	SE272464.004	%	60 - 130%	88
d14-p-terphenyl (Surrogate)	BH1	SE272464.001	%	60 - 130%	97
	BH2	SE272464.002	%	60 - 130%	108
	BH3	SE272464.003	%	60 - 130%	95
	BH4	SE272464.004	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1	SE272464.001	%	70 - 130%	93
	BH2	SE272464.002	%	70 - 130%	101
	BH3	SE272464.003	%	70 - 130%	87
	BH4	SE272464.004	%	70 - 130%	88
d14-p-terphenyl (Surrogate)	BH1	SE272464.001	%	70 - 130%	97
	BH2	SE272464.002	%	70 - 130%	108
	BH3	SE272464.003	%	70 - 130%	95
	BH4	SE272464.004	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	BH1	SE272464.001	%	70 - 130%	112
	BH2	SE272464.002	%	70 - 130%	124
	BH3	SE272464.003	%	70 - 130%	107
	BH4	SE272464.004	%	70 - 130%	107

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	BH1	SE272464.001	%	60 - 130%	104
	BH2	SE272464.002	%	60 - 130%	95
	BH3	SE272464.003	%	60 - 130%	106
	BH4	SE272464.004	%	60 - 130%	99

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1	SE272464.001	%	60 - 130%	91
	BH2	SE272464.002	%	60 - 130%	100
	BH3	SE272464.003	%	60 - 130%	101
	BH4	SE272464.004	%	60 - 130%	101
d4-1,2-dichloroethane (Surrogate)	BH1	SE272464.001	%	60 - 130%	76
	BH2	SE272464.002	%	60 - 130%	78
	BH3	SE272464.003	%	60 - 130%	85
	BH4	SE272464.004	%	60 - 130%	81
d8-toluene (Surrogate)	BH1	SE272464.001	%	60 - 130%	98
	BH2	SE272464.002	%	60 - 130%	97
	BH3	SE272464.003	%	60 - 130%	109
	BH4	SE272464.004	%	60 - 130%	104

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1	SE272464.001	%	60 - 130%	91
	BH2	SE272464.002	%	60 - 130%	100
	BH3	SE272464.003	%	60 - 130%	101
	BH4	SE272464.004	%	60 - 130%	101
d4-1,2-dichloroethane (Surrogate)	BH1	SE272464.001	%	60 - 130%	76
	BH2	SE272464.002	%	60 - 130%	78
	BH3	SE272464.003	%	60 - 130%	85
	BH4	SE272464.004	%	60 - 130%	81

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH1	SE272464.001	%	60 - 130%	98
	BH2	SE272464.002	%	60 - 130%	97
	BH3	SE272464.003	%	60 - 130%	109
	BH4	SE272464.004	%	60 - 130%	104

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB326716.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB326692.001		Alpha BHC	mg/kg	0.1	<0.1
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Lindane (gamma BHC)	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		Endrin aldehyde	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endrin ketone	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB326692.001		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	97
		d14-p-terphenyl (Surrogate)	%	-	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB326692.001	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(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB326692.001		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
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	95
		2-fluorobiphenyl (Surrogate)	%	-	97
		d14-p-terphenyl (Surrogate)	%	-	99

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB326692.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	TCMX (Surrogate)	%	-	98

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result
LB326710.001		Arsenic, As	mg/kg	1	<1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result
LB326692.001		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-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB326698.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	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
	Polycyclic VOCs	Naphthalene (VOC)*	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	98
		d8-toluene (Surrogate)	%	-	106
		Bromofluorobenzene (Surrogate)	%	-	104
	Totals	Total BTEX*	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB326698.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	98

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326716.014	Mercury	mg/kg	0.05	0.032913819	0.0324390534	183	0
SE272459.003	LB326716.024	Mercury	mg/kg	0.05	0.002373573	90.0019856972	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326704.011	% Moisture	%w/w	1	14.01673640	14.5374449339	37	4
SE272459.003	LB326704.021	% Moisture	%w/w	1	11.86974789	912.337011033(	38	4

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014		Alpha BHC	mg/kg	0.1	0	0	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	0	0	200	0
			Beta BHC	mg/kg	0.1	0	0	200	0
			Lindane (gamma BHC)	mg/kg	0.1	0	0	200	0
			Delta BHC	mg/kg	0.1	0	0	200	0
			Heptachlor	mg/kg	0.1	0	0	200	0
			Aldrin	mg/kg	0.1	0	0	200	0
			Isodrin	mg/kg	0.1	0	0	200	0
			Heptachlor epoxide	mg/kg	0.1	0	0	200	0
			Gamma Chlordane	mg/kg	0.1	0	0	200	0
			Alpha Chlordane	mg/kg	0.1	0	0	200	0
			Alpha Endosulfan	mg/kg	0.2	0	0	200	0
			o,p'-DDE*	mg/kg	0.1	0	0	200	0
			p,p'-DDE	mg/kg	0.1	0	0	200	0
			Dieldrin	mg/kg	0.2	0	0	200	0
			Endrin	mg/kg	0.2	0	0	200	0
			Beta Endosulfan	mg/kg	0.2	0	0	200	0
			o,p'-DDD*	mg/kg	0.1	0	0	200	0
			p,p'-DDD	mg/kg	0.1	0	0	200	0
			Endrin aldehyde	mg/kg	0.1	0	0	200	0
			Endosulfan sulphate	mg/kg	0.1	0	0	200	0
			o,p'-DDT*	mg/kg	0.1	0	0	200	0
			p,p'-DDT	mg/kg	0.1	0	0	200	0
			Endrin ketone	mg/kg	0.1	0	0	200	0
			Methoxychlor	mg/kg	0.1	0	0	200	0
			Mirex	mg/kg	0.1	0	0	200	0
			trans-Nonachlor	mg/kg	0.1	0	0	200	0
			Total CLP OC Pesticides	mg/kg	1	0	0	200	0
			Total OC VIC EPA	mg/kg	1	0	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.176208122	20.1597339262	30	10
SE272459.003	LB326692.024		Alpha BHC	mg/kg	0.1	0	0	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	0	0	200	0
			Beta BHC	mg/kg	0.1	0	0	200	0
			Lindane (gamma BHC)	mg/kg	0.1	0	0	200	0
			Delta BHC	mg/kg	0.1	0	0	200	0
			Heptachlor	mg/kg	0.1	0	0	200	0
			Aldrin	mg/kg	0.1	0	0	200	0
			Isodrin	mg/kg	0.1	0	0	200	0
			Heptachlor epoxide	mg/kg	0.1	0	0	200	0
			Gamma Chlordane	mg/kg	0.1	0	0	200	0
			Alpha Chlordane	mg/kg	0.1	0	0	200	0
			Alpha Endosulfan	mg/kg	0.2	0	0	200	0
			o,p'-DDE*	mg/kg	0.1	0	0	200	0
			p,p'-DDE	mg/kg	0.1	0	0	200	0
			Dieldrin	mg/kg	0.2	0	0	200	0
			Endrin	mg/kg	0.2	0	0	200	0
			Beta Endosulfan	mg/kg	0.2	0	0	200	0
			o,p'-DDD*	mg/kg	0.1	0	0	200	0
			p,p'-DDD	mg/kg	0.1	0	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272459.003	LB326692.024		Endrin aldehyde	mg/kg	0.1	0	0	200	0
			Endosulfan sulphate	mg/kg	0.1	0	0	200	0
			o,p'-DDT*	mg/kg	0.1	0	0	200	0
			p,p'-DDT	mg/kg	0.1	0	0	200	0
			Endrin ketone	mg/kg	0.1	0	0	200	0
			Methoxychlor	mg/kg	0.1	0	0	200	0
			Mirex	mg/kg	0.1	0	0	200	0
			trans-Nonachlor	mg/kg	0.1	0	0	200	0
			Total CLP OC Pesticides	mg/kg	1	0	0	200	0
			Total OC VIC EPA	mg/kg	1	0	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.177179138	0.186424822	0	30	5

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014		Azinphos-methyl (Guthion)	mg/kg	0.2	0.002630385	0.011498589	7 200	0
			Bromophos Ethyl	mg/kg	0.2	0.000768011	3 0.000379136	3 200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	0.001767692	0 0.006309663	5 200	0
			Diazinon (Dimpylate)	mg/kg	0.5	0	0	200	0
			Dichlorvos	mg/kg	0.5	0	0	200	0
			Dimethoate	mg/kg	0.5	0	0	200	0
			Ethion	mg/kg	0.2	0.006362590	0 0.008537731	1 200	0
			Fenitrothion	mg/kg	0.2	0	0.004865720	0 200	0
			Malathion	mg/kg	0.2	0.011584264	8 0.001055347	2 200	0
			Methidathion	mg/kg	0.5	0.000735105	1 0.000356707	0 200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	0	0	200	0
			Total OP Pesticides*	mg/kg	1.7	0	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.476204221	9 0.472356771	1 30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.512878003	4 0.497996142	9 30	3
SE272459.003	LB326692.024		Azinphos-methyl (Guthion)	mg/kg	0.2	0.002846881	3 0.002437120	8 200	0
			Bromophos Ethyl	mg/kg	0.2	0	0	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	0.002189430	4 0.002725788	0 200	0
			Diazinon (Dimpylate)	mg/kg	0.5	0.007206451	3 0	200	0
			Dichlorvos	mg/kg	0.5	0	0	200	0
			Dimethoate	mg/kg	0.5	0.000642839	5 0	200	0
			Ethion	mg/kg	0.2	0	0	200	0
			Fenitrothion	mg/kg	0.2	0.003497574	1 0.002580063	5 200	0
			Malathion	mg/kg	0.2	0.013049444	7 0.012681447	3 200	0
			Methidathion	mg/kg	0.5	0	0.000942048	1 200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	0	0	200	0
			Total OP Pesticides*	mg/kg	1.7	0	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.476917936	2 0.454564032	6 30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.515952722	0 0.497958684	6 30	4

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014	Naphthalene	mg/kg	0.1	0.007512472	0 0.004922205	8 200	0
		2-methylnaphthalene	mg/kg	0.1	0.024539202	1 0.013781156	4 200	0
		1-methylnaphthalene	mg/kg	0.1	0.023101163	1 0.016180156	1 200	0
		Acenaphthylene	mg/kg	0.1	0.003661450	9 0.005055931	9 200	0
		Acenaphthene	mg/kg	0.1	0	0.000692038	1 200	0
		Fluorene	mg/kg	0.1	0.001775883	6 0.005361364	3 200	0
		Phenanthrene	mg/kg	0.1	0.032370689	4 0.037762617	0 200	0
		Anthracene	mg/kg	0.1	0.006890718	6 0.008019671	1 200	0
		Fluoranthene	mg/kg	0.1	0.023157539	2 0.031762443	3 200	0
		Pyrene	mg/kg	0.1	0.026330247	8 0.038204654	2 200	0
		Benzo(a)anthracene	mg/kg	0.1	0.012807792	5 0.018342379	9 200	0
		Chrysene	mg/kg	0.1	0.039589771	0 0.028654272	0 200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.023525447	4 0.034392317	1 200	0
		Benzo(k)fluoranthene	mg/kg	0.1	0.010440628	4 0.013585111	1 200	0
		Benzo(a)pyrene	mg/kg	0.1	0.015592617	1 0.022975985	0 200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.012447018	9 0.018553628	6 200	0
		Dibenzo(ah)anthracene	mg/kg	0.1	0	0.002525303	3 200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014		Benzo(ghi)perylene	mg/kg	0.1	0.021465137	60.0349507693	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	0	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	0.121	0.121	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	0.242	0.242	134	0
			Total PAH (18)	mg/kg	0.8	0	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.557582088	20.5672726512	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.476204221	90.4723567711	30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.512878003	40.4979961429	30	3
SE272459.003	LB326692.024		Naphthalene	mg/kg	0.1	0.000163890	32.6533828362	200	0
			2-methylnaphthalene	mg/kg	0.1	0	0	200	0
			1-methylnaphthalene	mg/kg	0.1	0.000599836	30.0005562228	200	0
			Acenaphthylene	mg/kg	0.1	0	0	200	0
			Acenaphthene	mg/kg	0.1	0	0.0002101869	200	0
			Fluorene	mg/kg	0.1	0.000241606	10.0001995401	200	0
			Phenanthrene	mg/kg	0.1	0.000762304	50.0008839360	200	0
			Anthracene	mg/kg	0.1	0.000746348	80.0005782829	200	0
			Fluoranthene	mg/kg	0.1	0.000116501	80.0002167638	200	0
			Pyrene	mg/kg	0.1	0	0.0002324310	200	0
			Benzo(a)anthracene	mg/kg	0.1	0.004788643	50.0043801027	200	0
			Chrysene	mg/kg	0.1	0.005020964	50.0046245848	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.0002823728	0	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	0.0002018304	0	200	0
			Benzo(a)pyrene	mg/kg	0.1	0	0	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	5.250266984	26.3281705075	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	1.0517389250	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	4.982196530	10.0003226190	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	0	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	0.121	0.121	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	0.242	0.242	134	0
			Total PAH (18)	mg/kg	0.8	0	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.585767063	70.5789523411	30	1
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.476917936	20.4545640326	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.515952722	20.4979586846	30	4

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014		Arochlor 1016	mg/kg	0.2	0	0	200	0
			Arochlor 1221	mg/kg	0.2	0	0	200	0
			Arochlor 1232	mg/kg	0.2	0	0	200	0
			Arochlor 1242	mg/kg	0.2	0	0	200	0
			Arochlor 1248	mg/kg	0.2	0	0	200	0
			Arochlor 1254	mg/kg	0.2	0	0	200	0
			Arochlor 1260	mg/kg	0.2	0	0	200	0
			Arochlor 1262	mg/kg	0.2	0	0	200	0
			Arochlor 1268	mg/kg	0.2	0	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	0	0	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0.172436974	70.1557196468	30	10
SE272459.003	LB326692.024		Arochlor 1016	mg/kg	0.2	0	0	200	0
			Arochlor 1221	mg/kg	0.2	0	0	200	0
			Arochlor 1232	mg/kg	0.2	0	0	200	0
			Arochlor 1242	mg/kg	0.2	0	0	200	0
			Arochlor 1248	mg/kg	0.2	0	0	200	0
			Arochlor 1254	mg/kg	0.2	0	0	200	0
			Arochlor 1260	mg/kg	0.2	0	0	200	0
			Arochlor 1262	mg/kg	0.2	0	0	200	0
			Arochlor 1268	mg/kg	0.2	0	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	0	0	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0.173328764	30.1826845973	30	5

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326710.014	Arsenic, As	mg/kg	1	4.8818116549	5.02416	50	3
		Cadmium, Cd	mg/kg	0.3	0.0648239001	0.0338786956	200	0
		Chromium, Cr	mg/kg	0.5	8.59297993698	8.1152117391	36	6
		Copper, Cu	mg/kg	0.5	25.156916357	20.276652173	32	21
		Nickel, Ni	mg/kg	0.5	11.974785608	12.216556521	34	2
		Lead, Pb	mg/kg	1	15.794152606	15.654991304	36	1
		Zinc, Zn	mg/kg	2	77.402596625	51.992956521	33	22
SE272459.003	LB326710.024	Arsenic, As	mg/kg	1	6.02938213696	6.0171388211	47	0
		Cadmium, Cd	mg/kg	0.3	-0.014183551	80.007380162	200	0
		Chromium, Cr	mg/kg	0.5	14.507028336	34.045371951	34	3
		Copper, Cu	mg/kg	0.5	12.113668345	85.652863617	34	25
		Nickel, Ni	mg/kg	0.5	3.449348302	53.327530813	45	4
		Lead, Pb	mg/kg	1	14.120869698	92.087322560	38	16
		Zinc, Zn	mg/kg	2	16.411284555	38.274205121	42	11

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326692.014		TRH C10-C14	mg/kg	20	2.934003721	3.5171976832	200	0
			TRH C15-C28	mg/kg	45	20.99960665	431.449631738	139	31
			TRH C29-C36	mg/kg	45	42.530620897	203.67176602	92	79
			TRH C37-C40	mg/kg	100	13.852624934	39.558341164	200	0
			TRH C10-C36 Total	mg/kg	110	0	65.121397766	163	40
			TRH >C10-C40 Total (F bands)	mg/kg	210	0	36.612281333	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	3.071355723	43.798635670	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	52.796244609	136.61228133	125	41
			TRH >C34-C40 (F4)	mg/kg	120	24.163283187	67.353660116	200	0
SE272459.003	LB326692.024		TRH C10-C14	mg/kg	20	1.629290058	31.803856850	200	0
			TRH C15-C28	mg/kg	45	3.211581365	03.426432801	200	0
			TRH C29-C36	mg/kg	45	9.294562654	48.072595110	200	0
			TRH C37-C40	mg/kg	100	0.447607158	80.344657512	200	0
			TRH C10-C36 Total	mg/kg	110	0	0	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	0	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	1.696431132	21.935900962	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	11.205845222	80.400152336	200	0
			TRH >C34-C40 (F4)	mg/kg	120	1.678526845	81.300298796	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326698.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	0	0	200	0
			Toluene	mg/kg	0.1	0.011137170	40.009772485	200	0
			Ethylbenzene	mg/kg	0.1	0.003169899	90.000678412	200	0
			m/p-xylene	mg/kg	0.2	0.004133084	60.003362938	200	0
			o-xylene	mg/kg	0.1	0.003637035	60.001038280	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	0.011478452	30.003092935	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.866056271	06.665203177	50	3
			d8-toluene (Surrogate)	mg/kg	-	10.74901053	189.73871747	50	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	11.099750541	99.712694943	50	13
		Totals	Total BTEX*	mg/kg	0.6	0	0	200	0
			Total Xylenes*	mg/kg	0.3	0.007770120	20.004401219	200	0
SE272459.003	LB326698.024	Monocyclic Aromatic	Benzene	mg/kg	0.1	0	0	200	0
			Toluene	mg/kg	0.1	0.008260494	20.008127873	200	0
			Ethylbenzene	mg/kg	0.1	0.000286544	10.000229655	200	0
			m/p-xylene	mg/kg	0.2	0.000762436	70.000788500	200	0
			o-xylene	mg/kg	0.1	0.000304340	70.000271377	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.918197120	28.116277648	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.108000403	49.669874021	50	6
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.644563040	09.325415088	50	8
		Totals	Total BTEX*	mg/kg	0.6	0	0	200	0
			Total Xylenes*	mg/kg	0.3	0.001066777	40.001059877	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Volatile Petroleum Hydrocarbons in Soil — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE272451.001	LB326698.014		TRH C6-C10	mg/kg	25	2.14191130671	.0326807091	200	0
			TRH C6-C9	mg/kg	20	1.07371227140	.3117822377	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.86605627106	.6652031777	50	3
			d8-toluene (Surrogate)	mg/kg	-	10.74901053189	.7387174470	50	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	11.09975054189	.7126949438	50	13
		VPH F Bands	Benzene (F0)	mg/kg	0.1	0	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	2.14191130671	.0326807091	200	0
SE272459.003	LB326698.024		TRH C6-C10	mg/kg	25	0.72587510020	.7951156788	200	0
			TRH C6-C9	mg/kg	20	0.07836847850	.1506245548	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.91819712028	.1162776484	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.10800040349	.6698740216	50	6
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.64456304009	.3254150885	50	8
		VPH F Bands	Benzene (F0)	mg/kg	0.1	0	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	0.72587510020	.7951156788	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326716.002	Mercury	mg/kg	0.05	0.18	0.2	80 - 120	92

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326692.002		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	79
		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	77
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	77
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	68
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	81
		p,p'-DDT	mg/kg	0.1	0.1	0.2	60 - 140	69
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	92

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326692.002		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	88
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	91
		Dichlorvos	mg/kg	0.5	1.3	2	60 - 140	67
		Ethion	mg/kg	0.2	1.8	2	60 - 140	91
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	91
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326692.002		Naphthalene	mg/kg	0.1	3.8	4	60 - 140	94
		Acenaphthylene	mg/kg	0.1	4.0	4	60 - 140	100
		Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	97
		Phenanthrene	mg/kg	0.1	4.3	4	60 - 140	108
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	109
		Fluoranthene	mg/kg	0.1	4.1	4	60 - 140	102
		Pyrene	mg/kg	0.1	4.4	4	60 - 140	110
		Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	121
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	70 - 130	88
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	91
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	96

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326692.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	97

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326710.002	Arsenic, As	mg/kg	1	330	318.22	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	4.5	4.81	70 - 130	93
	Chromium, Cr	mg/kg	0.5	37	38.31	80 - 120	98
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	106
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	102
	Lead, Pb	mg/kg	1	94	89.9	80 - 120	104
	Zinc, Zn	mg/kg	2	280	273	80 - 120	104

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326692.002		TRH C10-C14	mg/kg	20	47	40	60 - 140	116
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	104
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	91
	TRH F Bands	TRH >C10-C16	mg/kg	25	45	40	60 - 140	113
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	97
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	95

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326698.002	Monocyclic	Benzene	mg/kg	0.1	4.8	5	60 - 140	96
	Aromatic	Toluene	mg/kg	0.1	5.7	5	60 - 140	113
		Ethylbenzene	mg/kg	0.1	4.8	5	60 - 140	96
		m/p-xylene	mg/kg	0.2	9.8	10	60 - 140	98
		o-xylene	mg/kg	0.1	5.1	5	60 - 140	103

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB326698.002		TRH C6-C10	mg/kg	25	69	92.5	60 - 140	75
		TRH C6-C9	mg/kg	20	54	80	60 - 140	67
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	39	62.5	60 - 140	62

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326716.004	Mercury	mg/kg	0.05	0.22	0.02017550817	0.2	98

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004		Alpha BHC	mg/kg	0.1	<0.1	0	-	-
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	-	-
			Beta BHC	mg/kg	0.1	<0.1	0	-	-
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	0	-	-
			Delta BHC	mg/kg	0.1	0.2	0	0.2	96
			Heptachlor	mg/kg	0.1	0.2	0	0.2	96
			Aldrin	mg/kg	0.1	0.2	0	0.2	94
			Isodrin	mg/kg	0.1	<0.1	0	-	-
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	0	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	0	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	-	-
			o,p'-DDE*	mg/kg	0.1	<0.1	0	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	0	-	-
			Dieldrin	mg/kg	0.2	<0.2	0	0.2	89
			Endrin	mg/kg	0.2	<0.2	0	0.2	85
			Beta Endosulfan	mg/kg	0.2	<0.2	0	-	-
			o,p'-DDD*	mg/kg	0.1	<0.1	0	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	0	-	-
			Endrin aldehyde	mg/kg	0.1	<0.1	0	-	-
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	-	-
			o,p'-DDT*	mg/kg	0.1	<0.1	0	-	-
			p,p'-DDT	mg/kg	0.1	0.2	0	0.2	91
			Endrin ketone	mg/kg	0.1	<0.1	0	-	-
			Methoxychlor	mg/kg	0.1	<0.1	0	-	-
			Mirex	mg/kg	0.1	<0.1	0	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	0	-	-
			Total CLP OC Pesticides	mg/kg	1	1	0	-	-
			Total OC VIC EPA	mg/kg	1	1	0	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.16525948881	-	113

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0.00212283459	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	0.00060124897	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	0	2	93
			Diazinon (Dimpylate)	mg/kg	0.5	1.9	0.01630689341	2	95
			Dichlorvos	mg/kg	0.5	1.8	0	2	88
			Dimethoate	mg/kg	0.5	<0.5	0.01236015597	-	-
			Ethion	mg/kg	0.2	2.1	0	2	103
			Fenitrothion	mg/kg	0.2	<0.2	0.00050659976	-	-
			Malathion	mg/kg	0.2	<0.2	0.00179600823	-	-
			Methidathion	mg/kg	0.5	<0.5	0.00321181108	-	-
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0.00048244059	-	-
			Total OP Pesticides*	mg/kg	1.7	7.6	0	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.46600256221	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.40901524888	-	74

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004	Naphthalene	mg/kg	0.1	5.5	0.72501267394	4	119
		2-methylnaphthalene	mg/kg	0.1	0.9	0.41315460040	-	-
		1-methylnaphthalene	mg/kg	0.1	0.9	0.39699154814	-	-
		Acenaphthylene	mg/kg	0.1	3.6	0.06652507572	4	88
		Acenaphthene	mg/kg	0.1	4.1	0.39688478296	4	93
		Fluorene	mg/kg	0.1	0.4	0.25840455067	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004		Phenanthrene	mg/kg	0.1	5.0	1.18350271002	4	95
			Anthracene	mg/kg	0.1	3.7	0.45425247854	4	80
			Fluoranthene	mg/kg	0.1	4.4	1.61890085543	4	70
			Pyrene	mg/kg	0.1	4.6	1.65166470878	4	73
			Benzo(a)anthracene	mg/kg	0.1	0.4	0.45566449734	-	-
			Chrysene	mg/kg	0.1	0.4	0.49199594944	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.4	0.49593967914	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.18141741640	-	-
			Benzo(a)pyrene	mg/kg	0.1	5.0	0.36710360094	4	115
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.2	0.18381256259	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.04520753007	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.2	0.20892946257	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	5.1	0.50579627061	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	5.1	0.55579627061	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	5.2	0.60579627061	-	-
			Total PAH (18)	mg/kg	0.8	40	9.48363207736	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.48522249467	-	91
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.46600256221	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.40901524888	-	74

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004		Arochlor 1016	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1260	mg/kg	0.2	0.4	0	0.4	110
			Arochlor 1262	mg/kg	0.2	<0.2	0	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	0	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	0	-	-
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0.16117898054	-	110

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326710.004		Arsenic, As	mg/kg	1	48	1.79043582295	50	93
			Cadmium, Cd	mg/kg	0.3	42	0.01983734614	50	84
			Chromium, Cr	mg/kg	0.5	50	5.69424101074	50	88
			Copper, Cu	mg/kg	0.5	95	52.4397938662	50	86
			Nickel, Ni	mg/kg	0.5	79	44.6266474871	50	70 ④
			Lead, Pb	mg/kg	1	48	5.59367027912	50	85
			Zinc, Zn	mg/kg	2	79	44.1666978567	50	69 ④

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326692.004		TRH C10-C14	mg/kg	20	150	15.3091922891	40	78
			TRH C15-C28	mg/kg	45	160	46.2603528224	40	35 ⑨
			TRH C29-C36	mg/kg	45	180	42.8012660749	40	103
			TRH C37-C40	mg/kg	100	110	90.3374002865	-	-
			TRH C10-C36 Total	mg/kg	110	490	404.3708111865	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	570	485.6625001059	-	-
		TRH F	TRH >C10-C16	mg/kg	25	140	13.1816544170	40	69
		Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	140	12.2274050287	-	-
			TRH >C16-C34 (F3)	mg/kg	90	240	226.8043581461	40	28 ⑨
			TRH >C34-C40 (F4)	mg/kg	120	190	45.6764875427	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326698.004	Monocyclic	Benzene	mg/kg	0.1	4.8	0.03186178520	5	95
		Aromatic	Toluene	mg/kg	0.1	4.8	0.08464757650	5	93
			Ethylbenzene	mg/kg	0.1	5.0	0.47309579648	5	90
			m/p-xylene	mg/kg	0.2	9.9	1.70818716542	10	82

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326698.004	Monocyclic	o-xylene	mg/kg	0.1	4.9	0.31695795328	5	92
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	0.7	0.95424938828	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.2	8.56223044836	-	82
			d8-toluene (Surrogate)	mg/kg	-	8.5	11.2127986176(	-	85
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.8	13.7961476334(	-	78
		Totals	Total BTEX*	mg/kg	0.6	29	2.49824091518	-	-
			Total Xylenes*	mg/kg	0.3	15	2.02514511870	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE272442.020	LB326698.004		TRH C6-C10	mg/kg	25	99	32.1835778483(	92.5	72
			TRH C6-C9	mg/kg	20	76	19.6462022466(	80	70
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.2	8.56223044836	-	82
			d8-toluene (Surrogate)	mg/kg	-	8.5	11.2127986176(	-	85
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.8	13.7961476334(	-	78
		VPH F	Benzene (F0)	mg/kg	0.1	3.7	0.03186178520	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	75	29.6853369331(	62.5	73

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

id samples expressed on a dry weight basis.

criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found he
ps://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service .
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
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Project	**N10057**
Order Number	**N10057**
Samples	2

LABORATORY DETAILS

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SGS Reference	**SE272464 R0**
Date Received	14 Oct 2024
Date Reported	21 Oct 2024

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.
Sample #1: Asbestos found in approx 5x3x2mm cement sheet fragment.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin

SIGNATORIES

Yusuf KUTHPUDIN
Asbestos Analyst

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Date Analysed	Fibre Identification	Est.%w/w*
SE272464.001	BH1	Soil	731g Clay, Sand, Soil, Rocks	14 Oct 2024	21 Oct 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE272464.003	BH3	Soil	640g Clay, Sand, Soil, Rocks	14 Oct 2024	21 Oct 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 15/10/2024

PARAMETER	UOM	LOR	BH1 SOIL - 14/10/2024 SE272464.001	BH3 SOIL - 14/10/2024 SE272464.003
Date Analysed*	No unit	-	21/10/2024 00:00	21/10/2024 00:00
Total Sample Weight*	g	1	**731**	**640**
Bonded ACM in >7mm Sample*	g	0.001	<0.001	<0.001
AF/FA in >2mm to <7mm Sample*	g	0.00001	**0.0163**	<0.00001
AF/FA in <2mm Sample*	g	0.00001	<0.00001	<0.00001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.002**	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.002**	<0.001
Fibre Type*	No unit	-	Chrysotile	NAD

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	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/AS4964	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	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/AS4964	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.
AN605	This technique gravimetrically determines the mass of Bonded Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight. Any fibrous asbestos (FA) found in this fraction will be added to the 2-7mm fraction and its mass recorded there.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free/respirable fibres which are only observed by standard trace analysis as per AN602.
AN605	Bonded asbestos containing material (Bonded ACM) comprises asbestos-containing-material which is sound in condition. Fibrous asbestos (FA) comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. Asbestos fines (AF) includes free fibres, small fibre bundles and also small fragments of bonded ACM that passes through a 7mm sieve - which implies that the bonded ACM fragments have a substantial degree of damage which increases the potential for fibre release.
AN-605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009 and NEPM 1999 (2013) schedule B1 section 4..

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service.
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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.

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source: Sydney.pdf page: 3 SGS Ref: SE272464_COC

CHAIN OF CUSTODY & ANALYSIS REQUEST

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SGS EHS Sydney COC
SE272464

Company Name:	Neo Consulting Pty Ltd	Project Name/No:	N10057
Address:	186 Riverstone Parade	Purchase Order No:	**QUOTE NUMER: 1655473**
	Riverstone NSW 2765	Results Required Date:	Next Day/3 day/**Standard**
		Telephone:	0416680375 Fax:
Contact Name:	Nick Caltabiano	Email Results and invoices to :	nick@neoconsulting.com.au, admin@neoconsulting.com.au
Quotation No:			oskar@neoconsulting.com.au, sarah@neoconsulting.com.au, ehsan@neoconsulting.com.au, isabella@neoconsulting.com.au

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate) Soil Sample	Water Sample	Other_Cartridge__	NO. OF CONTAINERS	ANALYSIS REQUESTED REST	Asbestos NEPM	Additional Report Formats / Notes/Guidelines/LOR/ Special instructions
1	BH1	14/10/2024	x			2	X	X	
2	BH2	14/10/2024	x			1	X		
3	BH3	14/10/2024	x			2	X	X	
4	BH4	14/10/2024	x			1	X		

Additional Report Formats:
- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines ---------
- ☐ Others _____

Relinquished By: Jacob King	Date/Time: **14/10/2024 3pm**	Received By:	Date/Time: 14.10.24 2:35
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: Yes / No	Temperature: 6.8 °C	Sample Security Sealed: Yes / No	Hazards: *e.g. may contain Asbestos*
Comments / Subcontracting details:			

SAMPLE RECEIPT ADVICE

SE272464

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	**N10057**
Order Number	**N10057**
Samples	4

LABORATORY DETAILS

Manager	Shane McDermott
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
Samples Received	Mon 14/10/2024
Report Due	Mon 21/10/2024
SGS Reference	**SE272464**

SUBMISSION DETAILS

This is to confirm that 4 samples were received on Monday 14/10/2024. Results are expected to be ready by COB Monday 21/10/2024. Please quote SGS reference SE272464 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	4 Soil	Type of documentation received	COC
Date documentation received	14/10/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	6.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE272464

CLIENT DETAILS

Client NEO CONSULTING PTY LTD

Project N10057

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1	30	14	26	11	7	10	11	7
002	BH2	30	14	26	11	7	10	11	7
003	BH3	30	14	26	11	7	10	11	7
004	BH4	30	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE272464

CLIENT DETAILS

Client NEO CONSULTING PTY LTD

Project N10057

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content
001	BH1	3	10	1	1
002	BH2	-	-	1	1
003	BH3	3	10	1	1
004	BH4	-	-	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

NEO CONSULTING

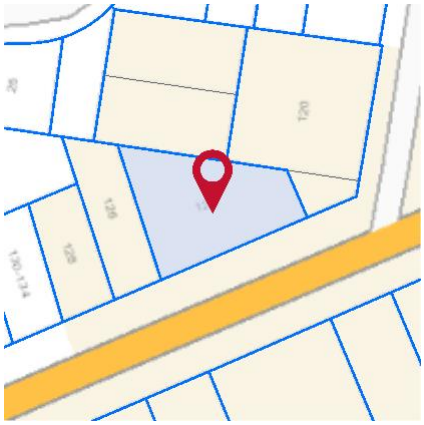
APPENDIX D

Property Report and Relevant Information

NEO CONSULTING

Property Report

124 NEW ENGLAND HIGHWAY LOCHINVAR 2321



Property Details

Address:	124 NEW ENGLAND HIGHWAY LOCHINVAR 2321
Lot/Section /Plan No:	1/-/DP1052148
Council:	MAITLAND CITY 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	Maitland Local Environmental Plan 2011 (pub. 16-12-2011)
Land Zoning	R1 - General Residential: (pub. 21-4-2023)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	450 m²
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Acid Sulfate Soils	Class 5
Urban Release Area	Urban Release Area
Greenfield Housing Code Area	Complying Development Code: https://www.planningportal.nsw.gov.au/greenfield-housing-code Building type: 1-2 storey homes, residential alterations and additions Development consent authority: Council or accredited certifier Note: Applications which meet all relevant requirements in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 may be approved within 20 days. Exclusions may apply. https://legislation.nsw.gov.au/#/view/EPI/2008/572/full

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

Property Report

124 NEW ENGLAND HIGHWAY LOCHINVAR 2321

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 (Biodiversity and Conservation) 2021: Allowable Clearing Area (pub. 21-10-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Greenfield Housing Code Area (pub. 6-5-2018)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing) 2021: Land Application (pub. 26-11-2021)
- State Environmental Planning Policy (Industry and Employment) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Planning Systems) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Primary Production) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application (pub. 2 -12-2021)
- State Environmental Planning Policy (Resources and Energy) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Sustainable Buildings) 2022: Land Application (pub. 29-8-2022)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)

Other matters affecting the property

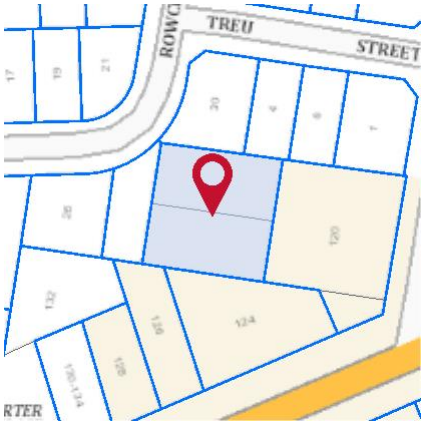
Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

1.5 m Buffer around Classified Roads	Classified Road Adjacent
Housing and Productivity Contribution	Lower Hunter - Base HPC
Local Aboriginal Land Council	MINDARIBBA
Regional Plan Boundary	Hunter

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

Property Report

NEW ENGLAND HIGHWAY LOCHINVAR 2321



Property Details

Address:	NEW ENGLAND HIGHWAY LOCHINVAR 2321
Lot/Section /Plan No:	2/-/DP1052148 3/-/DP1052148
Council:	MAITLAND CITY 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	Maitland Local Environmental Plan 2011 (pub. 16-12-2011)
Land Zoning	R1 - General Residential: (pub. 21-4-2023)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	450 m²
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Acid Sulfate Soils	Class 5
Urban Release Area	Urban Release Area
Greenfield Housing Code Area	Complying Development Code: https://www.planningportal.nsw.gov.au/greenfield-housing-code Building type: 1-2 storey homes, residential alterations and additions Development consent authority: Council or accredited certifier Note: Applications which meet all relevant requirements in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 may be approved within 20 days. Exclusions may apply. https://legislation.nsw.gov.au/#/view/EPI/2008/572/full

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

Property Report

NEW ENGLAND HIGHWAY LOCHINVAR 2321

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 (Biodiversity and Conservation) 2021: Allowable Clearing Area (pub. 21-10-2022)
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- State Environmental Planning Policy (Housing) 2021: Land Application (pub. 26-11-2021)
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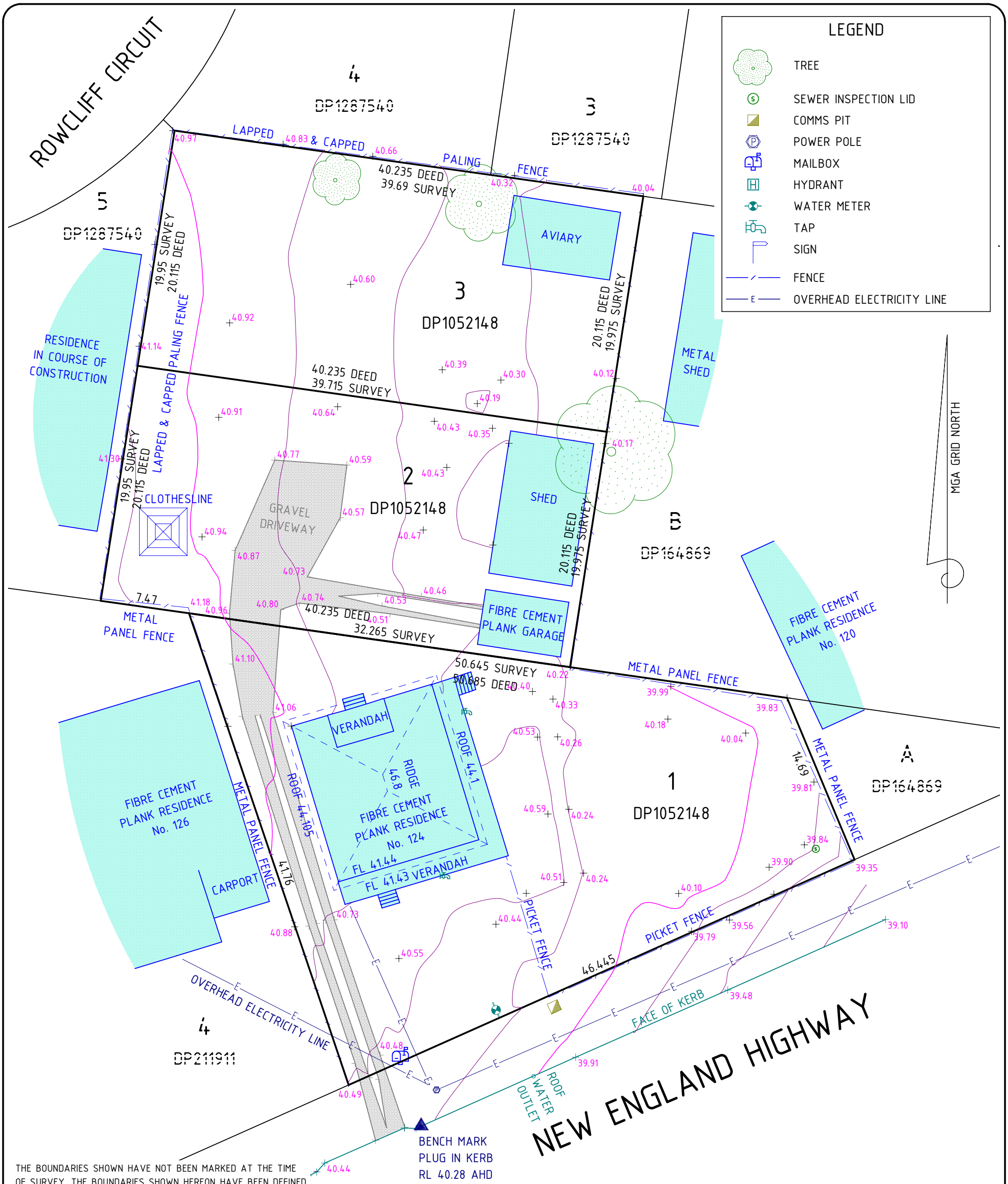
- State Environmental Planning Policy (Planning Systems) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Primary Production) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application (pub. 2 -12-2021)
- State Environmental Planning Policy (Resources and Energy) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Sustainable Buildings) 2022: Land Application (pub. 29-8-2022)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)

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

Bushfire Prone Land	Vegetation Buffer
Housing and Productivity Contribution	Lower Hunter - Base HPC
Local Aboriginal Land Council	MINDARIBBA
Regional Plan Boundary	Hunter

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)



THE BOUNDARIES SHOWN HAVE NOT BEEN MARKED AT THE TIME OF SURVEY. THE BOUNDARIES SHOWN HEREON HAVE BEEN DEFINED FROM PLANS AVAILABLE FROM NSW LAND REGISTRY SERVICES AND OLD SURVEY MARKS FOUND. IN SOME AREAS DISCREPANCIES EXIST BETWEEN THOSE PLANS, SURVEY MARKS FOUND AND OCCUPATIONS AND AS SUCH THE BOUNDARIES ARE OPEN TO DIFFERING INTERPETATIONS.
ALL DETAIL SHOWN IS IN AN APPROXIMATE RELATIONSHIP TO THE BOUNDARIES.

SERVICES SHOWN HAVE BEEN LOCATED BY FIELD SURVEY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT SERVICE AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF ANY OTHER UNDERGROUND SERVICES.

THE TITLE TO THE SUBJECT PROPERTY IS LIMITED IN NATURE WHEREBY THE BOUNDARIES HAVE NOT BEEN INVESTIGATED BY NSW LAND REGISTRY SERVICES AND THE AGE AND NATURE OF OCCUPATIONS MAY AFFECT THE POSITION OF THE BOUNDARIES SHOWN ON THIS PLAN. THEREFORE SUBSEQUENT REGISTERED SURVEYS AND PROPERTY OCCUPATION MAY AFFECT THE BOUNDARY DEFINITION SHOWN ON THIS PLAN. ANY DIFFERENCES CAUSED TO THE BOUNDARY DEFINITION SHOWN IS BEYOND THE CONTROL OF THIS SURVEY. IT IS RECOMMENDED A SURVEY PLAN OF DELIMITATION BE UNDERTAKEN AND REGISTERED AT NSW LAND REGISTRY SERVICES TO CONFIRM THEIR LOCATION.

0 3 6 9 12 15 30

1:300 (A3)

ORIGIN OF LEVELS
PM 16270 @ RL 40.917
BY SCIMS 15/07/2024

David Cant
SURVEYORS
Unit 3 479 High Street, PO Box 418 Maitland 2320
Email land@davidcantsurveyors.com.au
Ph (02) 4934 5011

PLAN SHOWING DETAIL & LEVELS OVER LOTS 1 - 3 DP1052148, 124 NEW ENGLAND HIGHWAY, LOCHINVAR.

Client Hoover Group

Ref.	24-151 Lochinvar
Date	16/07/2024
Scale	1:300 (A3)
Datum	AHD
Contour Interval	0.25

APPENDIX E

Bore and Test pit logs

NEO CONSULTING

NEO Consulting

186 Riverstone Parade, Riverstone NSW 2765, Australia

Phone: 61 455 485 502

Geotechnical Log - Testpit

BH01

UTM	: 56H	**Excavator**	: Shovel	**Job Number**	: N10057
Easting (m)	: 354,537.43	**Excavator Supplier**	:	**Client**	: NA
Northing (m)	: 6,380,853.95	**Logged By**	: Jacob King	**Project**	: 124 New England Highway, Lochinvar NSW 2321
Ground Elevation	: Not Surveyed	**Reviewed By**	: Ehsan Zare	**Location**	: 124 New England Highway, Lochinvar NSW 2321
Total Depth	: 0.5 m BGL	**Date**	: 14/10/2024	**Loc Comment**	:

Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Samples	Well Diagram	PID
	Topsoil		CI	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible acm was observed, no hydrocarbon staining or odor was detected.	M			
0.4	Natural		CI	Natural Silty CLAY CI: firm, medium plasticity, brown, inorganic, moist.				
				BH01 Terminated at 0.5m				
1								
2								
3								
4								
5								
6								
7								

NEO Consulting

186 Riverstone Parade, Riverstone NSW 2765, Australia

Phone: 61 455 485 502

Geotechnical Log - Testpit

BH02

UTM	: 56H	**Excavator**	: Shovel	**Job Number**	: N10057
Easting (m)	: 354,560.66	**Excavator Supplier**	:	**Client**	: NA
Northing (m)	: 6,380,864.30	**Logged By**	: Jacob King	**Project**	: 124 New England Highway, Lochinvar NSW 2321
Ground Elevation	: Not Surveyed	**Reviewed By**	: Ehsan Zare	**Location**	: 124 New England Highway, Lochinvar NSW 2321
Total Depth	: 0.5 m BGL	**Date**	: 14/10/2024	**Loc Comment**	:

Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Samples	Well Diagram	PID
	Topsoil		Cl	Topsoil Sandy to silty CLAY Cl: soft, medium plasticity, dark brown, fine grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible acm was observed, no hydrocarbon staining or odor was detected.	M			
0.4	Natural		Cl	Natural Silty CLAY Cl: firm, medium plasticity, brown, inorganic, moist.				
				BH02 Terminated at 0.5m				
1								
2								
3								
4								
5								
6								
7								

NEO Consulting

186 Riverstone Parade, Riverstone NSW 2765, Australia

Phone: 61 455 485 502

Geotechnical Log - Testpit

BH03

UTM	: 56H	**Excavator**	: Shovel	**Job Number**	: N10057
Easting (m)	: 354,539.31	**Excavator Supplier**	:	**Client**	: NA
Northing (m)	: 6,380,879.76	**Logged By**	: Jacob King	**Project**	: 124 New England Highway, Lochinvar NSW 2321
Ground Elevation	: Not Surveyed	**Reviewed By**	: Ehsan Zare	**Location**	: 124 New England Highway, Lochinvar NSW 2321
Total Depth	: 0.5 m BGL	**Date**	: 14/10/2024	**Loc Comment**	:

Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Samples	Well Diagram	PID
	Topsoil		CI	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible acm was observed, no hydrocarbon staining or odor was detected.	M			
0.4	Natural		CI	Natural Silty CLAY CI: firm, medium plasticity, brown, inorganic, moist.				
				BH03 Terminated at 0.5m				
1								
2								
3								
4								
5								
6								
7								

NEO Consulting

186 Riverstone Parade, Riverstone NSW 2765, Australia

Phone: 61 455 485 502

Geotechnical Log - Testpit

BH04

UTM	: 56H	**Excavator**	: Shovel	**Job Number**	: N10057
Easting (m)	: 354,540.91	**Excavator Supplier**	:	**Client**	: NA
Northing (m)	: 6,380,908.07	**Logged By**	: Jacob King	**Project**	: 124 New England Highway, Lochinvar NSW 2321
Ground Elevation	: Not Surveyed	**Reviewed By**	: Ehsan Zare	**Location**	: 124 New England Highway, Lochinvar NSW 2321
Total Depth	: 0.5 m BGL	**Date**	: 14/10/2024	**Loc Comment**	:

Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Samples	Well Diagram	PID
	Topsoil		CI	Topsoil Sandy to silty CLAY CI: soft, medium plasticity, dark brown, fine grained sand, trace fine sized gravel, organic, moist, plant rootlets, no visible acm was observed, no hydrocarbon staining or odor was detected.	M			
0.4	Natural		CI	Natural Silty CLAY CI: firm, medium plasticity, brown, inorganic, moist.				
				BH04 Terminated at 0.5m				
1								
2								
3								
4								
5								
6								
7								