



# PRELIMINARY SITE INVESTIGATION

N6484

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**MHM Construction Group Pty Ltd**

PROPOSED SUBDIVISION & CHIDCARE DEVELOPMENT AT:

262 Aberglasslyn Road,

Aberglasslyn NSW 2320

Thursday, 1<sup>st</sup> December 2022

**NEO** CONSULTING

## Report Distribution

### Preliminary Site Investigation

Address: 262 Aberglasslyn Road, Aberglasslyn NSW 2320

Report No: N6484

Date: Thursday, 1<sup>st</sup> December 2022

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Version	Prepared by	Reviewed by	Date issue
<b>Draft</b>	Oskar Lamperts Environmental Consultant 	Nick Caltabiano Project Manager 	30 <sup>th</sup> November 2022
<b>FINAL</b>	Oskar Lamperts Environmental Consultant 	Nick Caltabiano Project Manager 	31 <sup>st</sup> November 2022

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Report Revision	Details	Report No.	Date	Amended By
1	FINAL Report	N6484	1 <sup>st</sup> December 2022	Sarah Houlahan

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Issued By:

  
**Nick Caltabiano**

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## Executive Summary

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NEO Consulting were appointed by MHM Construction Group Pty Ltd (the client) to undertake a Preliminary Site Investigation (PSI) for the property at 262 Aberglasslyn Road, Aberglasslyn NSW 2320 (the site). The site is identified as Lot 21/-/DP841959 and has an area of development of approximately 1825.43m<sup>2</sup>. The site is currently zoned as R1 – General Residential.

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

- 1) Demolition of on site structures;
- 2) Excavation and construction of basement level carpark; and
- 3) Construction of childcare facility.

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;
- Review of NSW Environment Protection Authority (EPA) environmental contaminated lands register and 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 inspection was undertaken on the 22<sup>nd</sup> November 2022 by qualified environmental consultants. During the site inspection, a soil investigation program was undertaken with a judgemental approach across the site to identify areas of potential contamination. Four (4) soil samples were obtained from the fill layer (0-0.1mbgl) across the site. 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.

Based on the site investigation and analytical results, NEO Consulting considers the potential for significant contamination of the soil to be low. All analytes were below the NEPM Health and Ecological Assessment Criteria for Residential (A) developments.

The consent authority may be satisfied that the required considerations of CI 4.6 of State Environmental Planning Policy (Resilience and Hazards) 2021 are satisfied for the following reasons:

- 1) Site observations did not indicate significant visible or odorous indications of contamination or contaminating sources;
- 2) Analytical results for all analytes were below the NEPM Health and Ecological Assessment Criteria for Residential (A) sites.

Therefore, NEO Consulting finds that the site is suitable for the proposed childcare facility development (Residential A), providing that the recommendations within **Section 15** of this report are undertaken.

## 1. Introduction

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### 1.1 Background

NEO Consulting were appointed by MHM Construction Group Pty Ltd (the client) to undertake a Preliminary Site Investigation (PSI) for the property at 262 Aberglasslyn Road, Aberglasslyn NSW 2320 (the site). The site is identified as Lot 21/-/DP841959 and has an area of development of approximately 1825.43m<sup>2</sup>. The site is currently zoned as R1 – General Residential.

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

- 1) Demolition of on site structures;
- 2) Excavation and construction of basement level carpark; and
- 3) Construction of childcare facility.

A site inspection was undertaken on 22<sup>nd</sup> November 2022 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**.

### 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 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 EPA, *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- NSW EPA, *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines*, 2020;
- NSW EPA, *Contaminated Land Guidelines, Sampling Design Part 1 – Application*, 2022;
- NSW EPA, *Contaminated Land Guidelines, Sampling Design Part 2 – Interpretation*, 2022;
- Protection of the Environment and Operation Act 1997; and
- Protection of the Environment Operations (Waste) Regulations, 2005.

## 2. Scope of Work

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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;
- Local Council records and planning certificates;
- Review of NSW Environment Protection Authority (EPA) environmental contaminated lands register and Protection of the Environment Operations (POEO) Act public 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

<b>Address</b>	262 Aberglasslyn Road, Aberglasslyn NSW 2320
<b>Deposited plan</b>	Lot 21/-/DP841959
<b>Zoning</b>	R1 – General Residential
<b>Locality map</b>	Figure 1, Appendix A
<b>Site Boundary</b>	Figure 2, Appendix A
<b>Area of Development</b>	1825.43m <sup>2</sup>

**Table 2.** Surrounding land-use

<b>Direction from site</b>	<b>Land-use</b>
North	Residential lots
East	Residential lots
South	Residential lots
West	Aberglasslyn Road

## 4. Site Condition

A site inspection was undertaken on 22<sup>nd</sup> November 2022 by NEO Consulting. During the site inspection, the following observations were noted (photographs in **Appendix A**):

- The site was a residential lot with a brick single storey residential building, a fibro shed and a metal panelled shed;
- The entire site was unsealed and vegetated with healthy grass, shrubs and mature trees;
- No evidence of contamination was identified;
- There was no change in elevation across the site area; and
- No indications of underground storage of petroleum products were identified.

## 5. Site History

### 5.1 History of Site

**Table 3.** Historical Imagery

<b>Year</b>	<b>Description</b>
2010	The site contained a residential dwelling and two sheds. The groundcover was unsealed with grass cover.
2017	No significant change to the site since the previous image. The surrounding area now features more residential lots.
2018	This image highlights that the unsealed area north of the residential dwelling has been used for parking cars historically.
2022	No significant change since the previous image.

### 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 or within 500m 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 or within 500m of the site.

## 5.5 SafeWork NSW Hazardous Goods

A search was not undertaken with SafeWork NSW for historical dangerous goods stored onsite.

## 5.6 Product Spill and Loss History

The visual site inspection did not identify evidence of contamination within the site (e.g. chemical staining, unhealthy vegetation).

## 5.7 Dial Before You Dig

A Dial-Before-You-Dig request suggests the potential for underground services and assets to be impacted or act as a portal to transport contamination offsite.

## 5.8 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

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### 6.1 Geology

Data obtained from the Geological Survey of NSW and the Geoscience Australia Stratigraphic Units Database indicate the site is underlain by an undifferentiated member of the Branxton Formation. This member is regionally characterised by sandstone, siltstone and tillitic conglomerate.

### 6.2 Hydrogeology and Groundwater

A groundwater bore search was conducted on the 23<sup>rd</sup> November 2022 and one (1) boreholes were present within a 500m radius of the site (GW202923, final depth 78m, geological material: weathered sandstone, shale, conglomerate and quartz). It was beyond the scope of works to study the groundwater flow direction. However, based on the regional topography, groundwater is expected to flow north east towards Hunter River.

### 6.3 Site Drainage

Site drainage is likely to be consistent with the local topography. Stormwater is likely collected by pit and pipe drainage flowing into the municipal stormwater system, which likely flows towards Hunter Creek. Additionally, large portions of the site consist of accessible soils, which allow for direct infiltration into the sub-soil.

### 6.4 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	Importation of fill material. Historical on site operations.	Metals, TRH, BTEX, PAH, OCP, OPP, Asbestos	Low	Based on site observations, the presence of imported fill material area is possible.
On site structures	Hazardous materials within on site structures.	Metals, Asbestos, PCBs	Moderate	Based on suspected age and appearance of on site structures, these hazardous materials may be present. A Hazardous Materials Survey (HMS) should be undertaken prior to demolition.

ABBREVIATIONS: ASBESTOS CONTAINING MATERIALS (ACM), BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE (BTEX), POLYCHLORINATED BIPHENYLS (PCBs), POLYCYCLIC AROMATIC HYDROCARBON (PAH), TOTAL RECOVERABLE HYDROCARBONS (TRH), SYNTHETIC MINERAL FIBRES (SMF), HAZARDOUS MATERIALS SURVEY (HMS).

## 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	Potential Receptor	Potential Exposure Pathway	Complete connection	Risk	Justification/ Control Measures
Contaminated soil from importation of uncontrolled fill across the site.  Historical on-site operations.  Hazardous materials within on site structures.	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. Historical on site operations may have given rise to contamination events. Historical structures may give rise to contamination events. If present, impacted soils are to be disposed of off-site.
			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 limited due to presence of cohesive clay layer. If present, impacted soils are to be disposed of off-site.
			Complete (Future)	Low	
Tributary of Hunter River (180m N)		Migration of impacted groundwater and surface water run-off.	Complete (current)	Moderate	The local topography surrounding the site falls toward this tributary. It is likely surface waters from the site reach this waterway during heavy rainfall events. If present, contaminated soils and groundwater are likely to be remediated.
			Complete (future)	Low	



Underlying aquifer	Leaching and migration of contaminants through groundwater infiltration.	Complete (current)	Low	Due to existing unsealed surfaces, leachability of contaminants is possible. If present, contaminated soil and/or groundwater is likely to be remediated.
		Complete (future)	Low	

## 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	HIL-A, mg/kg
TCDF	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

## 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.

**Table 7.** HSL-A

Assessment Criteria	HSL-A for Vapour Intrusion, 0- <1m depth, Clay, mg/kg	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 <sub>6</sub> -C <sub>10</sub> - BTEX (F1)	50	90
TRH >C <sub>10</sub> -C <sub>16</sub> - N (F2)	280	NL

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

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

**Table 8.** Generic EIL

Assessment Criteria	Generic EIL for Urban Residential and Public Open Space, mg/kg
Arsenic, As	100
DDT	180
Naphthalene	170

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

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

**Table 9.** ESL

Assessment Criteria	Soil ESL for Urban Residential and Public Open Space, fine-grained soil, mg/kg
Benzene	65
Toluene	105
Ethylbenzene	125
Xylenes	45
BaPyr (BaP)	0.7
TRH C <sub>6</sub> -C <sub>10</sub>	180
TRH >C <sub>10</sub> -C <sub>16</sub>	120
TRH >C <sub>16</sub> -C <sub>34</sub> (F3)	1,300
TRH >C <sub>34</sub> -C <sub>40</sub> (F4)	5,600

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

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

**Table 10.** Management Limits

Assessment Criteria	Management Limits for Residential, Parkland and Public Open Space, fine-grained soil, mg/kg
TRH C <sub>6</sub> -C <sub>10</sub>	800
TRH >C <sub>10</sub> -C <sub>16</sub>	1000
TRH >C <sub>16</sub> -C <sub>34</sub> (F3)	3500
TRH >C <sub>34</sub> -C <sub>40</sub> (F4)	10000

## 10.6 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 surface soil within the site must be free of visible ACM, Asbestos Fines (AF) and Fibrous Asbestos (FA).

**Table 11.** Management Limits

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 Decision	Chosen Approach	Justification
Sampling Pattern	Judgemental	This pattern was selected due to the area of the site, access to underlying soil and groundwater, the AEC and CoPC as well as the potential heterogeneity of any contamination.
Sampling Density	Four (4) soil samples	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.
Duplicate Samples (total)	No duplicates	No duplicate was taken due to the minimum number of samples taken.
Sampling Depths	Soil samples 0.1 m	These depths were selected in compliment with sampling density and to target depths of potential contaminants.

### 10.2 Field Sampling Methodology

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

The samples were placed on ice in an esky for transport under Chain of Custody (COC) to a NATA accredited laboratory for the analysis of the CoPC.

**Table 13.** Soil sample details

Borehole	Sample	Depth (m)	Soil Type
BH1	BH1	0.1m	Sandy clay
BH2	BH2	0.1m	Sandy clay
BH3	BH3	0.1m	Sandy clay
BH4	BH4	0.1m	Sandy clay

## 11. Data Quality Objectives (DQOs)

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

**Table 14.** Data Quality Objectives

Step 1: State the problem	<p>The following risks to human and environmental receptors have been identified:</p> <p>The proposed development includes the construction of a childcare facility. All stages of development may give rise to contamination events. Additionally, the intended future use of the site is considered a sensitive human health risk setting.</p>
Step 2: Identify the decision/goal of the study	<p>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:</p> <ul style="list-style-type: none"> <li>• Was the sampling, analysis and quality plan designed appropriate to achieve the aim of the PSI?</li> <li>• If present, is on-site contamination capable of migrating off-site?</li> <li>• Are there any unacceptable risks to the future on site or off-site receptors in the soil or groundwater?</li> <li>• Is the site suitable for the proposed development?</li> </ul>
Step 3: Identify the information inputs	<p>NEO Consulting has identified issues of potential environmental concern; Appropriate identification of CoPC;</p> <ul style="list-style-type: none"> <li>• Soil and groundwater sampling and analysis programs across the site;</li> <li>• Appropriate quality assurance/quality control to enable an evaluation of the reliability of the analytical data; and</li> <li>• Screening sampler analytical results against appropriate assessment criteria for the intended land use.</li> </ul>
Step 4: Define the boundaries of the study	<p>The study boundaries are:</p> <ul style="list-style-type: none"> <li>• Lateral boundary: The footprint of the imported fill;</li> <li>• Vertical boundary: The soil interface to the maximum depth reached during soil and groundwater sampling; and</li> <li>• Temporal boundary: Constrained to a single visit to the site.</li> </ul>
Step 5: Develop the analytical approach	<p>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;</p> <ul style="list-style-type: none"> <li>• Any exceedance of the adopted assessment criteria for soil;</li> <li>• Groundwater flow direction confirms contamination likely to be transported offsite;</li> <li>• Professional opinion that further assessment is required; and/or</li> <li>• Adopted RPD for QC data not met.</li> </ul> <p>Further assessment may be required to confirm suitability of the site in the form of; Data Gap investigation, Remediation Action Plan and Site Validation.</p>
Step 6: Specify performance or acceptance criteria	<p>For judgemental soil sampling the data must meet the following qualifiers;</p> <ul style="list-style-type: none"> <li>• Acceptable recovery on all surrogate spikes used in laboratory analyses;</li> <li>• Acceptable analytical method to ensure detection limit appropriate for all analytes;</li> <li>• If these conditions are not met, then chemical analysis will require re-testing for all samples with fresh aliquot.</li> </ul>

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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.

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## 12. Analytical Results

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### 12.1 Soil Analytical Results

Analytical results indicate no exceedances of NEPM Health and Ecological Assessment Criteria for Residential (A) developments.

## 13. Data Gaps

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NEO Consulting have identified the following data gaps:

- Potential hazardous materials within on site structures;
- Condition of groundwater beneath the site considering the proposed excavations.

## 14. Conclusion

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Based on the site investigation and analytical results, NEO Consulting considers that the potential for significant contamination of the soil to be low. All analytes were below the NEPM Health and Ecological Assessment Criteria for Residential (A) developments.

Therefore, NEO Consulting finds that the site is suitable for the proposed development, providing that the recommendations within **Section 15** of this report are undertaken.

## 15. Recommendations

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

- 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, onsite reuse and/or removal must be classified in accordance with "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA (2014); and
- A site specific 'Unexpected Finds Protocol' is to be made available for reference for all occupants and/or site workers in the event unanticipated contamination is discovered.

## References

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### 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, *Contaminated Land Guidelines, Sampling Design Part 1 – Application*, 2022;
- NSW EPA, *Contaminated Land Guidelines, Sampling Design Part 2 – Interpretation*, 2022;
- NSW EPA, *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act*, 1997;
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- NSW EPA, *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme*, 2017 (3<sup>rd</sup> 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;
- *The National Remediation Framework*, CRC Care, 2019;
- CRC Care, *Technical Report No. 10, Health Screening Level for Petroleum Hydrocarbons in Soil and Groundwater, Part 1, Technical Development Document*;
- *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

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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.

## NEO CONSULTING



Prepared by:

Oskar Lamperts

Environmental Consultant



Reviewed by:

Nick Caltabiano

Project Manager





## APPENDIX A

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Figures and Photographic Log

**NEO** CONSULTING

Figure 1. The site is located approximately 32.67km north-west of the Newcastle CBD (Scale bar: 10km).



 Site location

Source: Six Maps 2022

Figure 1	Locality Map
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320



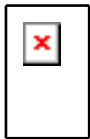
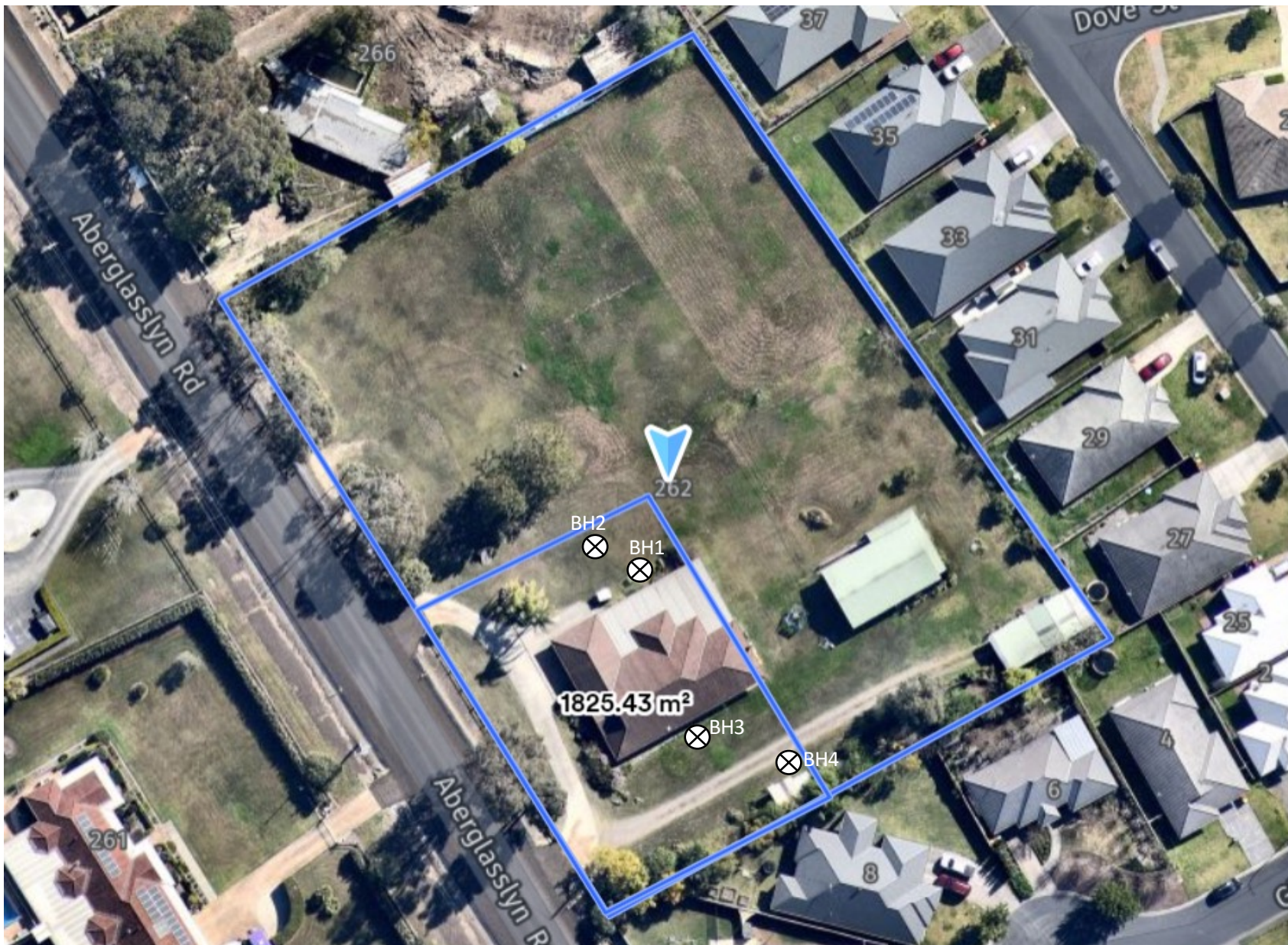


Figure 2. The approximate area of the development area is 1825.43 m<sup>2</sup>. In total, four (4) primary soil samples were obtained from a depth of 0.1 m bgl.

Borehole I.D	Sample Depth
BH1	0.1m
BH2	0.1m
BH3	0.1m
BH4	0.1m



⊗ Soil Sample Location  
Source: Nearmap 2022

Figure 2	Site Area
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320



Figure 3. Aerial image of the site and surrounding area June 2010. The site contained a residential dwelling and two sheds. The groundcover was unsealed with grass cover.

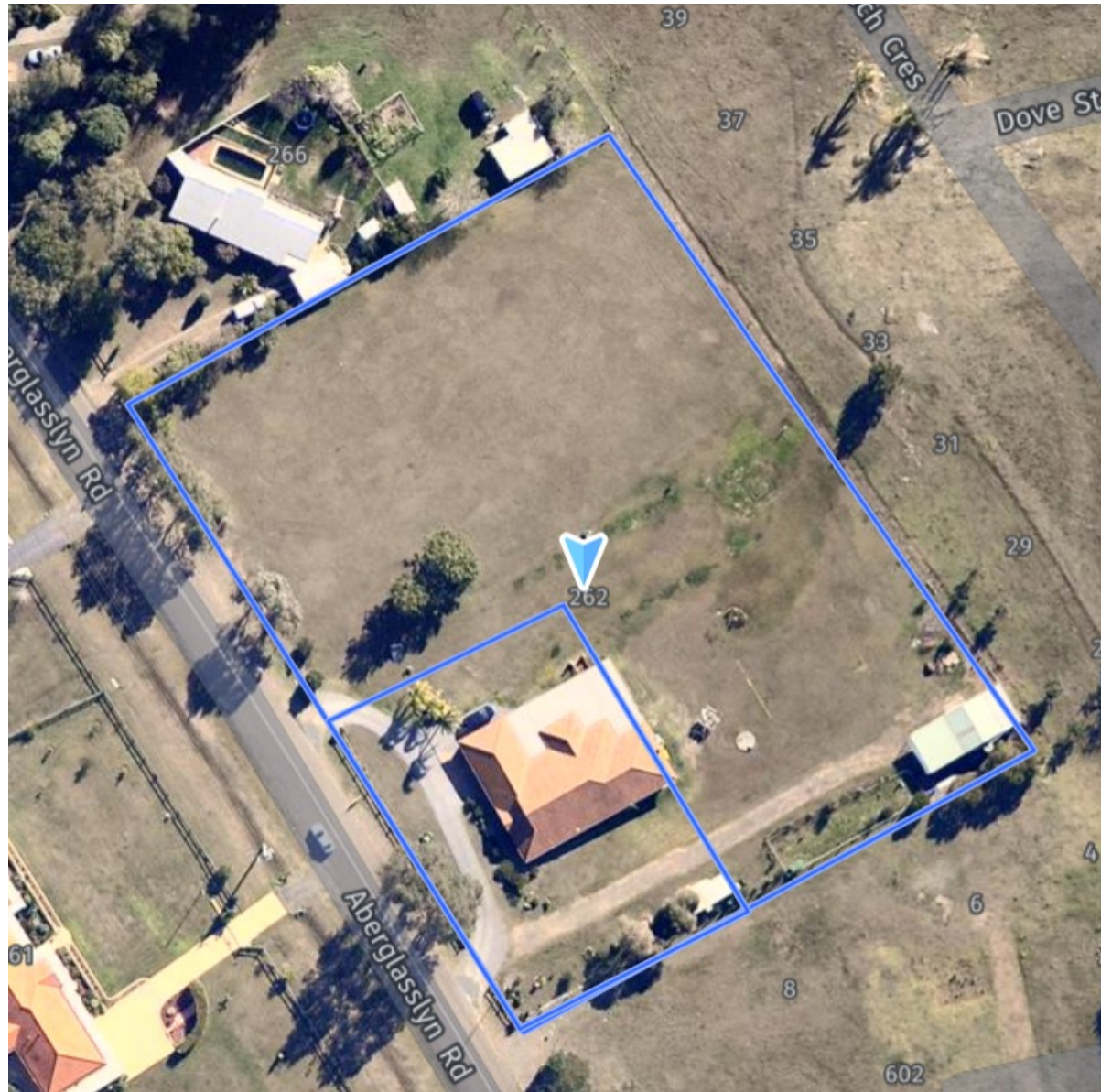


Figure 3	Aerial Image June 2010
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320

Source: Nearmap 2022



Figure 4. Aerial image of the site and surrounding area November 2010. The large shed found directly north-east of the residential dwelling had been constructed since the previous image was taken.



Figure 4	Aerial Image Nov 2010
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320

Source: Nearmap 2022



Figure 5. Aerial image of the site and surrounding area in 2017. No significant change to the site since the previous image. The surrounding area now features more residential lots.

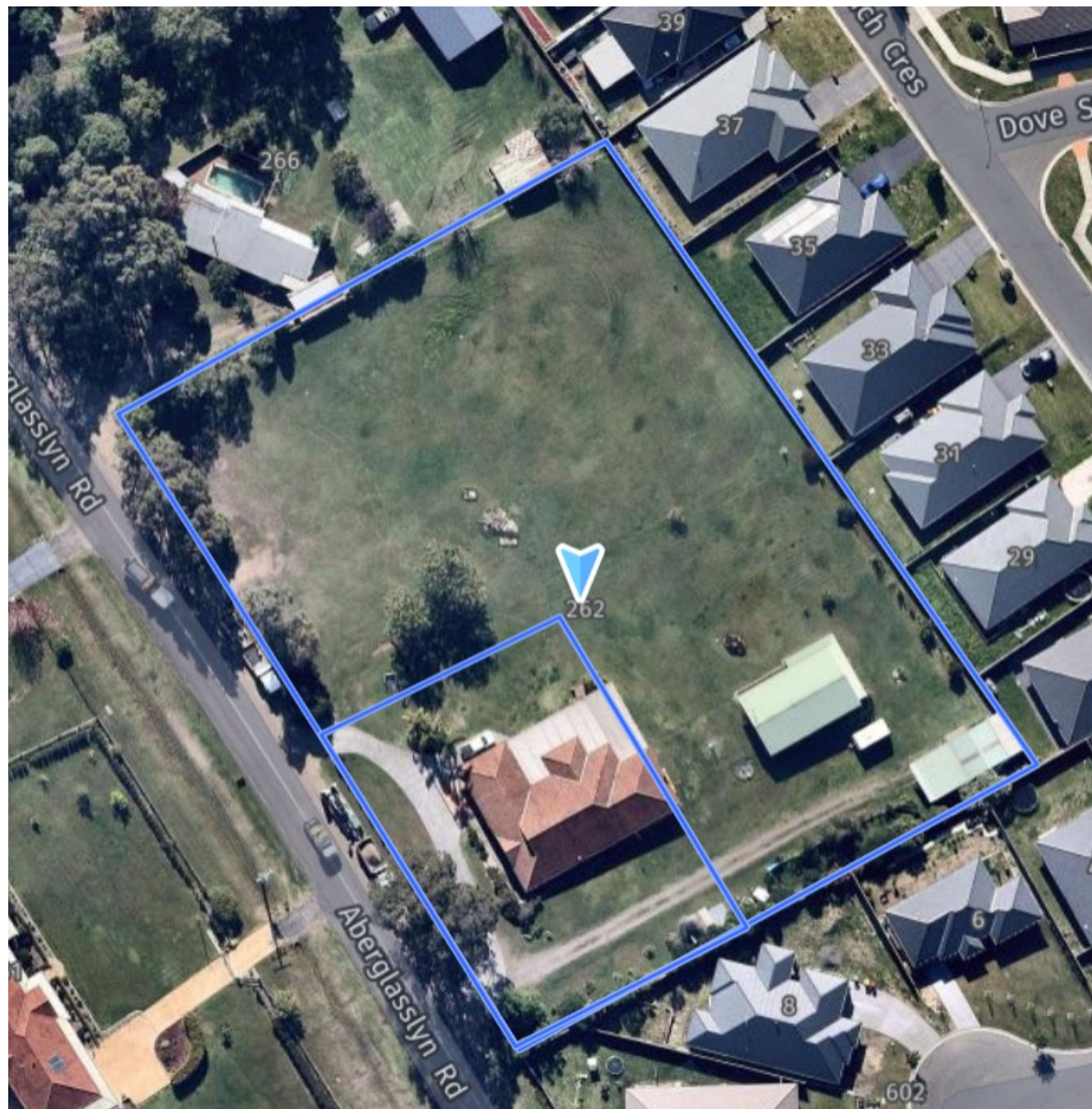


Figure 5	Aerial Images: 2017
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320

Source: Nearmap 2022



Figure 6. Aerial image of the site and surrounding area in 2018. This image highlights that the unsealed area north of the residential dwelling has been used for parking cars historically.

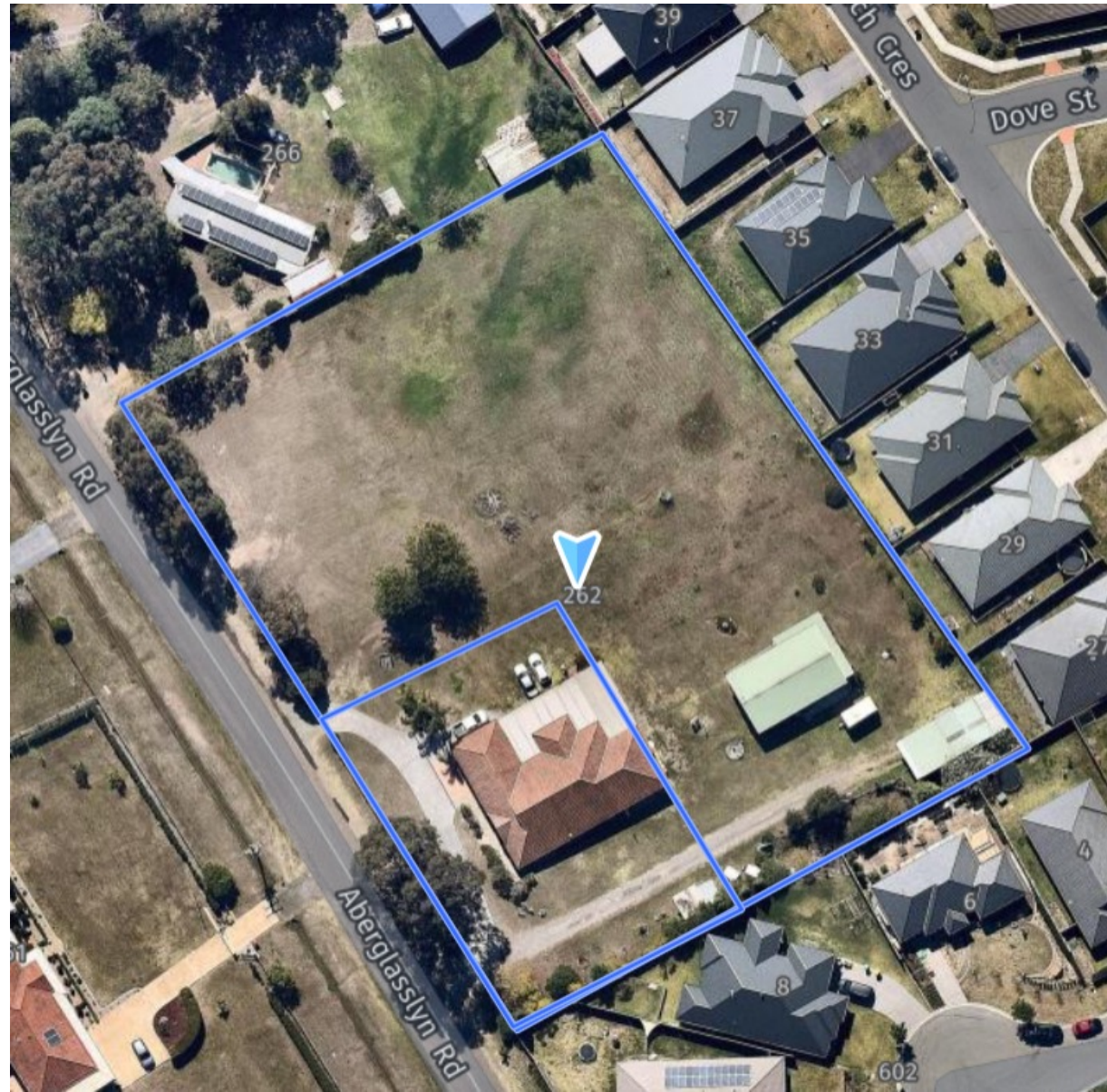


Figure 6

Aerial Images: 2018

Source: Nearmap 2022

Project

262 Aberglasslyn Rd, Aberglasslyn NSW 2320



Figure 7. Aerial image of the site and surrounding area in 2022. No significant change since the previous image.

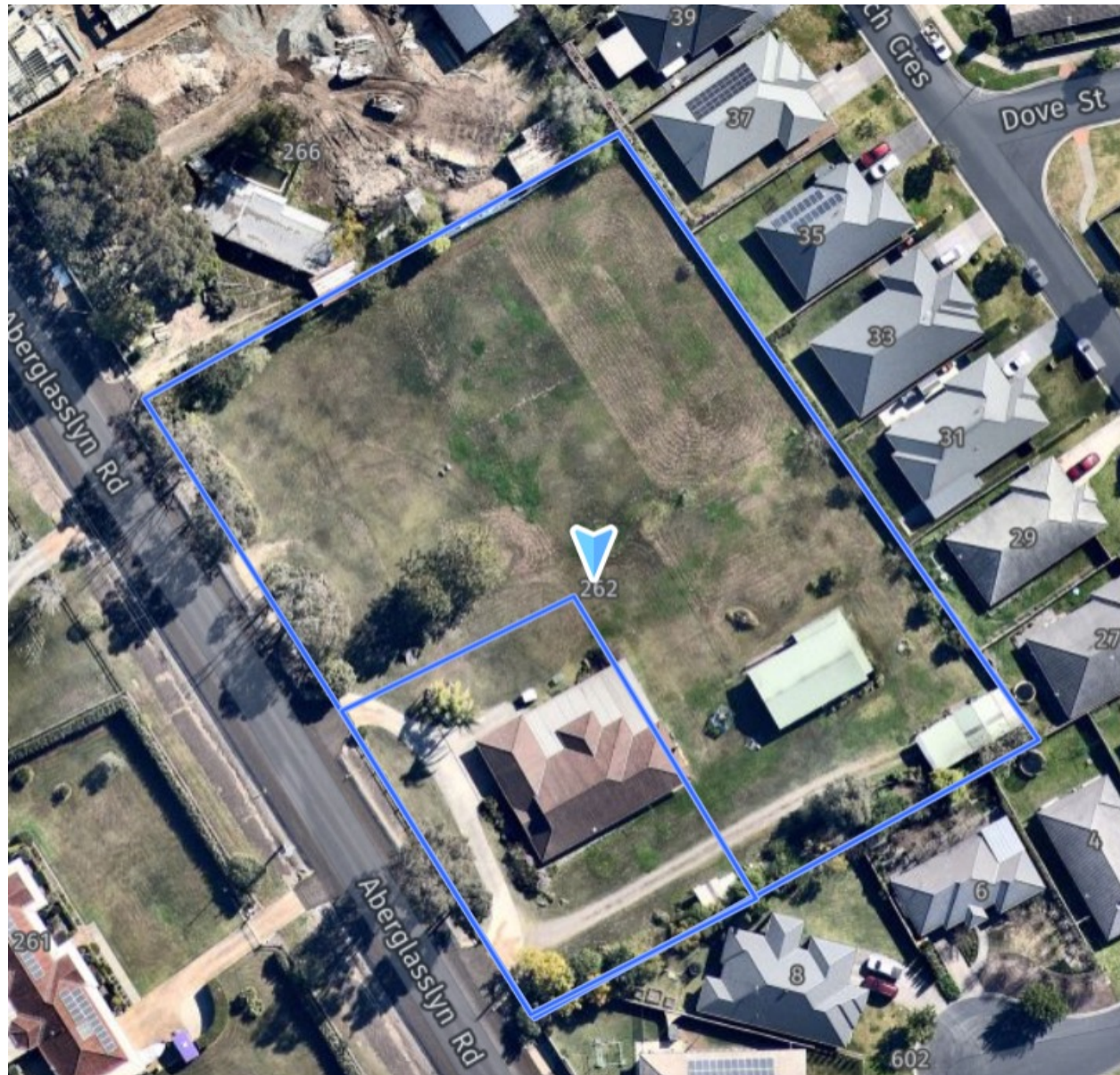


Figure 7	Aerial Images: 2022
Project	262 Aberglasslyn Rd, Aberglasslyn NSW 2320

Source: Nearmap 2022





Figure 8. The brick single storey residential dwelling.



Figure 9. The fibro shed near the southern site border.





Figure 10. The site features a silty clay fill material, underlain by a dense moist clay.



Figure 11. The septic tank and steel paneled shed.





Figure 12. The location of BH1.



Figure 13. The location of BH4.





## APPENDIX B

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Analytical Results and Laboratory Reports

**NEO** CONSULTING

**Table 15.** Total Recoverable Hydrocarbon (TRH) analytical results. Values are presented as mg/kg. NL = Not Limiting. F1 = subtract the sum of BTEX concentrations from the C<sub>6</sub>-C<sub>10</sub> aliphatic hydrocarbon fraction. F2 = subtract Naphthalene from the > C<sub>10</sub>-C<sub>16</sub> aliphatic hydrocarbon fraction.

Assessment Criteria		TRH C <sub>6</sub> -C <sub>10</sub>	TRH C <sub>6</sub> -C <sub>10</sub> - BTEX (F1)	TRH >C <sub>10</sub> -C <sub>16</sub>	TRH >C <sub>10</sub> -C <sub>16</sub> - N (F2)	TRH >C <sub>16</sub> -C <sub>34</sub> (F3)	TRH >C <sub>34</sub> -C <sub>40</sub> (F4)
NEPM 2013 Residential Soil HSL-A for Vapour Intrusion, 0-<1m depth, Clay, mg/kg			50		280		
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	0.1	<25	<25	<25	<25	<90	<120
BH2	0.1	<25	<25	<25	<25	<90	<120
BH3	0.1	<25	<25	<25	<25	<90	<120
BH4	0.1	<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	0.1	<0.1	<0.1	<0.1	<0.3
BH2	0.1	<0.1	<0.1	<0.1	<0.3
BH3	0.1	<0.1	<0.1	<0.1	<0.3
BH4	0.1	<0.1	<0.1	<0.1	<0.3

**Table 17.** Polycyclic Aromatic Hydrocarbon (PAH) analytical results. The carcinogenic PAH (Benzo(a)anthracene (BaAnt); Benzo(a)pyrene (BaPyr or BaP); Benzo(b+j) fluoranthene (BbjFl); Benzo(k)fluoranthene (BkFl); Benzo(g,h,i)perylene (BghiPer); Chrysene (Chr); and Dibenz(a,h)anthracene (DBahAnt)) potency is calculated relative to Benzo(a)pyrene to produce a Toxicity Equivalent Factor (TEF). The Toxicity Equivalent Quotient (TEQ) is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its Benzo(a)pyrene (B(a)P) TEF. Total PAH includes Naphthalene (N), 2-methylnaphthalene (2-MN), 1-methylnaphthalene (1-MN), Acenaphthylene (Acy), Acenaphthene (Ace), Fluorene (F), Phenanthrene (P), Anthracene (Ant), Fluoranthene (Fl), Pyrene (Pyr) and the carcinogenic PAHs. Values are presented as mg/kg. NL = Not Limiting.

Assessment Criteria		Naphthalene	Benzo(a)pyrene	Carcinogenic PAH (as BaP TEQ)	Total PAH (18)
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
Sample	Depth (m)	mg/kg	mg/kg	TEQ (mg/kg)	mg/kg
BH1	0.1	<0.1	<0.1	<0.3	<0.8
BH2	0.1	<0.1	<0.1	<0.3	<0.8
BH3	0.1	<0.1	<0.1	<0.3	<0.8
BH4	0.1	<0.1	<0.1	<0.3	<0.8

**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	0.1	<b>5</b>	<0.3	<b>6.5</b>	<0.5	<b>6</b>	<b>1.0</b>	<b>4.1</b>	<0.05
BH2	0.1	<b>3</b>	<0.3	<b>4.6</b>	<0.5	<b>3</b>	<b>1.2</b>	<b>4.4</b>	<0.05
BH3	0.1	<b>7</b>	<0.3	<b>12</b>	<0.5	<b>8</b>	<b>1.7</b>	<b>17</b>	<0.05
BH4	0.1	<b>5</b>	<0.3	<b>7.0</b>	<0.5	<b>6</b>	<b>1.4</b>	<b>8.2</b>	<0.05



**Table 19.** Pesticides analytical results. Values are presented as mg/kg.

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	0.1	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH2	0.1	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH3	0.1	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6	<0.5	<0.1	<0.1
BH4	0.1	<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. Values are presented as %w/w.

Assessment Criteria		Asbestos		
NEPM 2013 Residential Soil HSL-A, mg/kg		Detected	Bonded ACM	FA and AF
			0.01%w/w	0.001%w/w
Sample	Depth (m)	Y/N	%w/w	%w/w
BH1	0.1	N	<0.01	<0.001
BH2	0.1	N	<0.01	<0.001
BH3	0.1	N	<0.01	<0.001
BH4	0.1	N	<0.01	<0.001



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

Lab ID Number: *(please quote on correspondence)*

**CHAIN OF CUSTODY & ANALYSIS REQUEST**

Company Name:	Neo Consulting Pty Ltd	Project Name/No:	N6484
Address:	186 Riverstone Parade	Purchase Order No:	QUOTE NUMBER: 322722
	Riverstone NSW 2765	Results Required Date:	Next Day/3 days/ <u>Standard</u>
Contact Name:	Nick Caltabiano	Telephone:	0416680375
Quotation No:		Email Results and invoices to:	nick@neoconsulting, admin@neoconsulting, oskar@neoconsulting, sarah@neoconsulting, eshan@neoconsulting

Matrix (Tick as appropriate)			NO. OF CONTAINERS	ANALYSIS REQUESTED										Additional Report Formats
Soil Sample	Water Sample	Other		NEO 1	NEO 2	NEO 3	NEO 4	Asbestos WA/ NEPM 500mL						

SGS ID	Client Sample ID	Sampling Date/ Time
1	BH1	22/11/2022
2	BH2	22/11/2022
3	BH3	22/11/2022
4	BH4	22/11/2022

x			2		x			x							
x			2		x			x							
x			2		x			x							
x			2		x			x							

Notes/Guidelines/LOR/  
 Special instructions  
**500ml Bags provided for Asbestos testing**

**SGS EHS Sydney COC**  
**SE239503**



Relinquished By: Oskar Lamperts	Date/Time: 23/11/12	Received By:	Date/Time: 23-11-12 2:50
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: <u>Yes</u> / No	Temperature: <u>6.1</u> °C	Sample Security Sealed: <u>Yes</u> / No	Hazards: e.g. may contain Asbestos

Comments / Subcontracting details:

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 **N6484**  
 Order Number **N6484**  
 Samples 4

LABORATORY DETAILS

Manager Huong Crawford  
 Laboratory SGS Alexandria Environmental  
 Address Unit 16, 33 Maddox St  
 Alexandria NSW 2015

Telephone +61 2 8594 0400  
 Facsimile +61 2 8594 0499  
 Email au.environmental.sydney@sgs.com

SGS Reference **SE239503 R0**  
 Date Received 23/11/2022  
 Date Reported 30/11/2022

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.  
 Asbestos analysed by Approved Identifier Ravee Sivasubramaniam

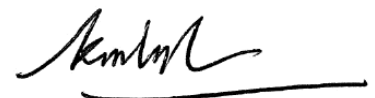
SIGNATORIES



**Dong LIANG**  
 Metals/Inorganics Team Leader



**Kamrul AHSAN**  
 Senior Chemist



**Ly Kim HA**  
 Organic Section Head



**Ravee SIVASUBRAMANIAM**  
 Hygiene Team Leader



**Shane MCDERMOTT**  
 Inorganic/Metals Chemist

VOC's in Soil [AN433] Tested: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
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

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
Arsenic, As	mg/kg	1	<b>5</b>	<b>3</b>	<b>7</b>	<b>5</b>
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	<b>6.5</b>	<b>4.6</b>	<b>12</b>	<b>7.0</b>
Copper, Cu	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Lead, Pb	mg/kg	1	<b>6</b>	<b>3</b>	<b>8</b>	<b>6</b>
Nickel, Ni	mg/kg	0.5	<b>1.0</b>	<b>1.2</b>	<b>1.7</b>	<b>1.4</b>
Zinc, Zn	mg/kg	2	<b>4.1</b>	<b>4.4</b>	<b>17</b>	<b>8.2</b>

Mercury in Soil [AN312] Tested: 28/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 28/11/2022

			BH1	BH2	BH3	BH4
			SOIL	SOIL	SOIL	SOIL
			-	-	-	-
			22/11/2022	22/11/2022	22/11/2022	22/11/2022
PARAMETER	UOM	LOR	SE239503.001	SE239503.002	SE239503.003	SE239503.004
% Moisture	%w/w	1	<b>10.4</b>	<b>11.8</b>	<b>17.6</b>	<b>13.3</b>

Fibre Identification in soil [AN602] Tested: 29/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
Asbestos Detected	No unit	-	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 29/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
Total Sample Weight*	g	1	<b>525</b>	<b>497</b>	<b>488</b>	<b>442</b>
Bonded ACM in >7mm Sample*	g	0.001	<0.001	<0.001	<0.001	<0.001
AF/FA in >2mm to <7mm Sample*	g	0.00001	<0.00001	<0.00001	<0.00001	<0.00001
AF/FA in <2mm Sample*	g	0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type*	No unit	-	NAD	NAD	NAD	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 ASS or ICP as per USEPA Method 200.8.
- AN312** Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
- AN403** Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
- AN403** Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
- AN403** The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
- AN420** (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).  
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** Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
- AN602** Fibres/material that cannot be unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
- AN602** AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
- AN602** The sample can be reported "no asbestos found at the reporting limit (RL) of 0.1 g/kg" (<0.01%/w/w) where AN602 section 4.5 of this method has been followed, and if-
- (a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres):
  - (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and
  - (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.



- 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

<p>* NATA accreditation does not cover the performance of this service.</p> <p>** Indicative data, theoretical holding time exceeded.</p> <p>*** Indicates that both * and ** apply.</p>	<p>- Not analysed.</p> <p>NVL Not validated.</p> <p>IS Insufficient sample for analysis.</p> <p>LNR Sample listed, but not received.</p>	<p>UOM Unit of Measure.</p> <p>LOR Limit of Reporting.</p> <p>↑↓ Raised/lowered Limit of Reporting.</p>
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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](http://www.sgs.com.au/en-gb/environment-health-and-safety).

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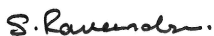
SGS Reference **SE239503 R0**  
 Date Received 23 Nov 2022  
 Date Reported 30 Nov 2022

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.  
 Asbestos analysed by Approved Identifier Ravee Sivasubramaniam

SIGNATORIES



Ravee SIVASUBRAMANIAM  
 Hygiene Team Leader

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE239503.001	BH1	Soil	525g Sand, Soil, Rocks, Plant Matter	22 Nov 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE239503.002	BH2	Soil	497g Sand, Soil, Rocks, Plant Matter	22 Nov 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE239503.003	BH3	Soil	488g Sand, Soil, Rocks, Plant Matter	22 Nov 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE239503.004	BH4	Soil	442g Sand, Soil, Rocks, Plant Matter	22 Nov 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 29/11/2022

PARAMETER	UOM	LOR	BH1	BH2	BH3	BH4
			SOIL - 22/11/2022 SE239503.001	SOIL - 22/11/2022 SE239503.002	SOIL - 22/11/2022 SE239503.003	SOIL - 22/11/2022 SE239503.004
Total Sample Weight*	g	1	<b>525</b>	<b>497</b>	<b>488</b>	<b>442</b>
Bonded ACM in >7mm Sample*	g	0.001	<0.001	<0.001	<0.001	<0.001
AF/FA in >2mm to <7mm Sample*	g	0.00001	<0.00001	<0.00001	<0.00001	<0.00001
AF/FA in <2mm Sample*	g	0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type*	No unit	-	NAD	NAD	NAD	NAD



METHOD

METHODOLOGY SUMMARY

AN602	<p>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.</p>
AN602	<p>Fibres/material that cannot be unequivocally 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.</p>
AN602	<p>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."</p>
AN602	<p>The sample can be reported "no asbestos found at the reporting limit (RL) of 0.1 g/kg" (&lt;0.01%w/w) where AN602 section 4.5 of this method has been followed, and if-</p> <ul style="list-style-type: none"> <li>(a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres);</li> <li>(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</li> <li>(c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.</li> </ul>
AN605	<p>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.</p>
AN605	<p>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.</p>
AN605	<p>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.</p>
AN-605	<p>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..</p>

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](http://www.sgs.com.au/en-gb/environment-health-and-safety).

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SGS Reference **SE239503 R0**  
 Date Received 23 Nov 2022  
 Date Reported 30 Nov 2022

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	VOC's in Soil	1 item
	Volatile Petroleum Hydrocarbons in Soil	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil
Date documentation received	23/11/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265199	22 Nov 2022	23 Nov 2022	22 Nov 2023	29 Nov 2022	22 Nov 2023	30 Nov 2022
BH2	SE239503.002	LB265199	22 Nov 2022	23 Nov 2022	22 Nov 2023	29 Nov 2022	22 Nov 2023	30 Nov 2022
BH3	SE239503.003	LB265199	22 Nov 2022	23 Nov 2022	22 Nov 2023	29 Nov 2022	22 Nov 2023	30 Nov 2022
BH4	SE239503.004	LB265199	22 Nov 2022	23 Nov 2022	22 Nov 2023	29 Nov 2022	22 Nov 2023	30 Nov 2022

### 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	SE239503.001	LB265199	22 Nov 2022	23 Nov 2022	21 May 2023	29 Nov 2022	21 May 2023	30 Nov 2022
BH2	SE239503.002	LB265199	22 Nov 2022	23 Nov 2022	21 May 2023	29 Nov 2022	21 May 2023	30 Nov 2022
BH3	SE239503.003	LB265199	22 Nov 2022	23 Nov 2022	21 May 2023	29 Nov 2022	21 May 2023	30 Nov 2022
BH4	SE239503.004	LB265199	22 Nov 2022	23 Nov 2022	21 May 2023	29 Nov 2022	21 May 2023	30 Nov 2022

### Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265067	22 Nov 2022	23 Nov 2022	20 Dec 2022	28 Nov 2022	20 Dec 2022	30 Nov 2022
BH2	SE239503.002	LB265067	22 Nov 2022	23 Nov 2022	20 Dec 2022	28 Nov 2022	20 Dec 2022	30 Nov 2022
BH3	SE239503.003	LB265067	22 Nov 2022	23 Nov 2022	20 Dec 2022	28 Nov 2022	20 Dec 2022	30 Nov 2022
BH4	SE239503.004	LB265067	22 Nov 2022	23 Nov 2022	20 Dec 2022	28 Nov 2022	20 Dec 2022	30 Nov 2022

### Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265061	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	03 Dec 2022	30 Nov 2022
BH2	SE239503.002	LB265061	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	03 Dec 2022	30 Nov 2022
BH3	SE239503.003	LB265061	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	03 Dec 2022	30 Nov 2022
BH4	SE239503.004	LB265061	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	03 Dec 2022	30 Nov 2022

### OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH2	SE239503.002	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH3	SE239503.003	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH4	SE239503.004	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022

### OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH2	SE239503.002	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH3	SE239503.003	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH4	SE239503.004	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022

### 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	SE239503.001	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH2	SE239503.002	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH3	SE239503.003	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH4	SE239503.004	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022

### 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	SE239503.001	LB265064	22 Nov 2022	23 Nov 2022	21 May 2023	28 Nov 2022	21 May 2023	30 Nov 2022
BH2	SE239503.002	LB265064	22 Nov 2022	23 Nov 2022	21 May 2023	28 Nov 2022	21 May 2023	30 Nov 2022
BH3	SE239503.003	LB265064	22 Nov 2022	23 Nov 2022	21 May 2023	28 Nov 2022	21 May 2023	30 Nov 2022
BH4	SE239503.004	LB265064	22 Nov 2022	23 Nov 2022	21 May 2023	28 Nov 2022	21 May 2023	30 Nov 2022

### 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	SE239503.001	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH2	SE239503.002	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH3	SE239503.003	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022
BH4	SE239503.004	LB265046	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	07 Jan 2023	30 Nov 2022

### VOC's in Soil

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

Sample Name	Sample No.	QC Ref
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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 (continued)**

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1	SE239503.001	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH2	SE239503.002	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH3	SE239503.003	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH4	SE239503.004	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022

**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	SE239503.001	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH2	SE239503.002	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH3	SE239503.003	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022
BH4	SE239503.004	LB265058	22 Nov 2022	23 Nov 2022	06 Dec 2022	28 Nov 2022	06 Dec 2022	30 Nov 2022

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 identifier 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	SE239503.001	%	60 - 130%	85
	BH2	SE239503.002	%	60 - 130%	90
	BH3	SE239503.003	%	60 - 130%	91
	BH4	SE239503.004	%	60 - 130%	89

**OP Pesticides in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1	SE239503.001	%	60 - 130%	86
	BH2	SE239503.002	%	60 - 130%	88
	BH3	SE239503.003	%	60 - 130%	88
	BH4	SE239503.004	%	60 - 130%	91
d14-p-terphenyl (Surrogate)	BH1	SE239503.001	%	60 - 130%	94
	BH2	SE239503.002	%	60 - 130%	96
	BH3	SE239503.003	%	60 - 130%	95
	BH4	SE239503.004	%	60 - 130%	100

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1	SE239503.001	%	70 - 130%	86
	BH2	SE239503.002	%	70 - 130%	88
	BH3	SE239503.003	%	70 - 130%	88
	BH4	SE239503.004	%	70 - 130%	91
d14-p-terphenyl (Surrogate)	BH1	SE239503.001	%	70 - 130%	94
	BH2	SE239503.002	%	70 - 130%	96
	BH3	SE239503.003	%	70 - 130%	95
	BH4	SE239503.004	%	70 - 130%	100
d5-nitrobenzene (Surrogate)	BH1	SE239503.001	%	70 - 130%	108
	BH2	SE239503.002	%	70 - 130%	108
	BH3	SE239503.003	%	70 - 130%	111
	BH4	SE239503.004	%	70 - 130%	110

**VOC's in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1	SE239503.001	%	60 - 130%	76
	BH2	SE239503.002	%	60 - 130%	78
	BH3	SE239503.003	%	60 - 130%	70
	BH4	SE239503.004	%	60 - 130%	82
d4-1,2-dichloroethane (Surrogate)	BH1	SE239503.001	%	60 - 130%	73
	BH2	SE239503.002	%	60 - 130%	83
	BH3	SE239503.003	%	60 - 130%	89
	BH4	SE239503.004	%	60 - 130%	85
d8-toluene (Surrogate)	BH1	SE239503.001	%	60 - 130%	62
	BH2	SE239503.002	%	60 - 130%	84
	BH3	SE239503.003	%	60 - 130%	86
	BH4	SE239503.004	%	60 - 130%	94

**Volatile Petroleum Hydrocarbons in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1	SE239503.001	%	60 - 130%	76
	BH2	SE239503.002	%	60 - 130%	78
	BH3	SE239503.003	%	60 - 130%	70
	BH4	SE239503.004	%	60 - 130%	82
d4-1,2-dichloroethane (Surrogate)	BH1	SE239503.001	%	60 - 130%	73
	BH2	SE239503.002	%	60 - 130%	83
	BH3	SE239503.003	%	60 - 130%	89
	BH4	SE239503.004	%	60 - 130%	85
d8-toluene (Surrogate)	BH1	SE239503.001	%	60 - 130%	62
	BH2	SE239503.002	%	60 - 130%	84
	BH3	SE239503.003	%	60 - 130%	86
	BH4	SE239503.004	%	60 - 130%	94

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)-ENVJAN312

Sample Number	Parameter	Units	LOR	Result
LB265067.001	Mercury	mg/kg	0.05	<0.05

**OC Pesticides in Soil**

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB265046.001	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)	%	-	92

**OP Pesticides in Soil**

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result	
LB265046.001	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	
	Methodathion	mg/kg	0.5	<0.5	
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	98
		d14-p-terphenyl (Surrogate)	%	-	106

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB265046.001	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	
LB265046.001	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)	%	-	120
		2-fluorobiphenyl (Surrogate)	%	-	98
		d14-p-terphenyl (Surrogate)	%	-	106

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

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

Sample Number	Parameter	Units	LOR	Result
LB265064.001	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
LB265046.001	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	
LB265058.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
	Polycyclic VOCs	o-xylene	mg/kg	0.1	<0.1
		Naphthalene (VOC)*	mg/kg	0.1	<0.1
		Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-
	d8-toluene (Surrogate)		%	-	96
	Bromofluorobenzene (Surrogate)		%	-	91
	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
LB265058.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-



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

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:  $MAD = 100 \times SDL / Mean + LR$

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 identifier 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 %
SE239571.006	LB265067.014	Mercury	mg/kg	0.05	0.1262050396	0.124254	70	2
SE239594.006	LB265067.021	Mercury	mg/kg	0.05	0.0368778443	0.037767625	164	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE239571.006	LB265061.011	% Moisture	%w/w	1	27.56696428527	581329561E	34	0
SE239594.006	LB265061.018	% Moisture	%w/w	1	21.22641509424	0.62877871E	34	13

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE239571.006	LB265064.014	Arsenic, As	mg/kg	1	6.19609061626	2896514754	46	1
		Cadmium, Cd	mg/kg	0.3	2.25115307722	2683710655	43	1
		Chromium, Cr	mg/kg	0.5	16.28406321236	746564836E	33	3
		Copper, Cu	mg/kg	0.5	30.10681404321	1.504598360E	31	2
		Nickel, Ni	mg/kg	0.5	4.24159227804	0.0275044262	42	5
		Lead, Pb	mg/kg	1	16.77927899221	1.53308196E	31	4
SE239594.006	LB265064.021	Zinc, Zn	mg/kg	2	75.93337493172	1.28002459E	31	2
		Arsenic, As	mg/kg	1	5.38560861475	5.5674394628	48	3
		Cadmium, Cd	mg/kg	0.3	0.06080611880	0.0855076446	200	0
		Chromium, Cr	mg/kg	0.5	11.00910783472	8.57097314E	34	15
		Copper, Cu	mg/kg	0.5	7.71864338547	0.0011351239	37	10
		Nickel, Ni	mg/kg	0.5	3.41314346093	1.842417355E	45	7
		Lead, Pb	mg/kg	1	17.26893775476	8.60743595E	36	2
Zinc, Zn	mg/kg	2	31.38875861728	9.01059297E	37	8		

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 %
LB265067.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	103

**OC Pesticides in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB265046.002	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	87
	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	88
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	88
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	91
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	97
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	84
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	83

**OP Pesticides in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB265046.002	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	97	
	Diazinon (Dimpylate)	mg/kg	0.5	2.0	2	60 - 140	101	
	Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	78	
	Ethion	mg/kg	0.2	1.5	2	60 - 140	77	
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	91
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88	

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB265046.002	Naphthalene	mg/kg	0.1	4.4	4	60 - 140	110	
	Acenaphthylene	mg/kg	0.1	4.2	4	60 - 140	104	
	Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	109	
	Phenanthrene	mg/kg	0.1	4.3	4	60 - 140	107	
	Anthracene	mg/kg	0.1	4.4	4	60 - 140	109	
	Fluoranthene	mg/kg	0.1	4.3	4	60 - 140	108	
	Pyrene	mg/kg	0.1	4.1	4	60 - 140	103	
	Benzo(a)pyrene	mg/kg	0.1	4.0	4	60 - 140	101	
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	91	
d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88		

**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 %
LB265064.002	Arsenic, As	mg/kg	1	310	318.22	80 - 120	97
	Cadmium, Cd	mg/kg	0.3	4.5	4.81	70 - 130	94
	Chromium, Cr	mg/kg	0.5	37	38.31	80 - 120	96
	Copper, Cu	mg/kg	0.5	300	290	80 - 120	102
	Nickel, Ni	mg/kg	0.5	180	187	80 - 120	98
	Lead, Pb	mg/kg	1	89	89.9	80 - 120	99
	Zinc, Zn	mg/kg	2	260	273	80 - 120	94

**TRH (Total Recoverable Hydrocarbons) in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB265046.002	TRH C10-C14	mg/kg	20	42	40	60 - 140	105
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	105
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH >C10-C16	mg/kg	25	44	40	60 - 140	110
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	95
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB265058.002	Monocyclic	Benzene	mg/kg	0.1	4.2	5	60 - 140	84
	Aromatic	Toluene	mg/kg	0.1	4.4	5	60 - 140	88
		Ethylbenzene	mg/kg	0.1	4.4	5	60 - 140	88
		m/p-xylene	mg/kg	0.2	8.3	10	60 - 140	83
		o-xylene	mg/kg	0.1	4.4	5	60 - 140	88
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.9	10	70 - 130	99

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 %	
LB265058.002	Surrogates	d8-toluene (Surrogate)	mg/kg	-	10.9	10	70 - 130	109
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	10	70 - 130	95

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB265058.002		TRH C6-C10	mg/kg	25	85	92.5	60 - 140	92
		TRH C6-C9	mg/kg	20	74	80	60 - 140	92
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.9	10	70 - 130	99
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	10	70 - 130	95
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	59	62.5	60 - 140	94

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 identifier 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%
SE239503.001	LB265067.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	96

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE239503.001	LB265046.004	Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	97
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	98
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	97
		Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	99
		Endrin	mg/kg	0.2	0.2	<0.2	0.2	104
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	91
		Endrin ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Total OC VIC EPA	mg/kg	1	1	<1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.13	-	91

OP Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE239503.001	LB265046.004	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	<0.2	2	103
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	<0.5	2	105
		Dichlorvos	mg/kg	0.5	1.6	<0.5	2	77
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	1.6	<0.2	2	80
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Total OP Pesticides*	mg/kg	1.7	7.3	<1.7	-	-
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE239503.001	LB265046.004	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.3	<0.1	4	107
		Acenaphthene	mg/kg	0.1	4.5	<0.1	4	113
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-



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 identifier 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%	
SE239503.001	LB265046.004	Phenanthrene	mg/kg	0.1	4.5	<0.1	4	113	
		Anthracene	mg/kg	0.1	4.6	<0.1	4	116	
		Fluoranthene	mg/kg	0.1	4.5	<0.1	4	113	
		Pyrene	mg/kg	0.1	4.3	<0.1	4	108	
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-	
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-	
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-	
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-	
		Benzo(a)pyrene	mg/kg	0.1	4.2	<0.1	4	104	
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-	
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-	
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	4.2	<0.2	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	4.2	<0.2	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	4.3	<0.3	-	-	
		Total PAH (18)	mg/kg	0.8	36	<0.8	-	-	
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	-	110
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	92	
d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	90			

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%
SE239503.001	LB265064.004	Arsenic, As	mg/kg	1	49	5	50	88
		Cadmium, Cd	mg/kg	0.3	43	<0.3	50	86
		Chromium, Cr	mg/kg	0.5	51	6.5	50	90
		Copper, Cu	mg/kg	0.5	47	<0.5	50	94
		Nickel, Ni	mg/kg	0.5	48	1.0	50	95
		Lead, Pb	mg/kg	1	50	6	50	88
		Zinc, Zn	mg/kg	2	48	4.1	50	87

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE239503.001	LB265046.004	TRH C10-C14	mg/kg	20	44	<20	40	110	
		TRH C15-C28	mg/kg	45	<45	<45	40	110	
		TRH C29-C36	mg/kg	45	<45	<45	40	90	
		TRH C37-C40	mg/kg	100	<100	<100	-	-	
		TRH C10-C36 Total	mg/kg	110	<110	<110	-	-	
		TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-	
		TRH F Bands	TRH >C10-C16	mg/kg	25	44	<25	40	110
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	44	<25	-	-	
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	110	
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-			

VOC's in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE239503.001	LB265058.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	4.5	<0.1	5	90
			Toluene	mg/kg	0.1	3.3	<0.1	5	66
			Ethylbenzene	mg/kg	0.1	4.6	<0.1	5	91
			m/p-xylene	mg/kg	0.2	8.9	<0.2	10	89
			o-xylene	mg/kg	0.1	4.8	<0.1	5	95
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	-	-
			Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.1	7.3	10
			d8-toluene (Surrogate)	mg/kg	-	5.5	6.2	10	55
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.6	7.6	10	86
		Totals	Total BTEX*	mg/kg	0.6	26	<0.6	-	-
			Total Xylenes*	mg/kg	0.3	14	<0.3	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE239503.001	LB265058.004	TRH C6-C10	mg/kg	25	73	<25	92.5	78	
		TRH C6-C9	mg/kg	20	64	<20	80	80	
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.1	7.3	10	71
		d8-toluene (Surrogate)	mg/kg	-	5.5	6.2	10	55	

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 identifier 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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE239503.001	LB265058.004	Surrogates	Bromofluorobenzene (Surrogate)	mg/kg	-	8.6	7.6	-	86
		VPH F	Benzene (F0)	mg/kg	0.1	4.5	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	47	<25	62.5	74

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

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:  $MAD = 100 \times SDL / Mean + LR$

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 identifier 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 here: [https://www.sgs.com.au/~media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022\\_QA\\_QC\\_Plan.pdf](https://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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## SAMPLE RECEIPT ADVICE

SE239503

### 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 **N6484**  
Order Number **N6484**  
Samples 4

### LABORATORY DETAILS

Manager Huong Crawford  
Laboratory SGS Alexandria Environmental  
Address Unit 16, 33 Maddox St  
Alexandria NSW 2015

Telephone +61 2 8594 0400  
Facsimile +61 2 8594 0499  
Email au.environmental.sydney@sgs.com

Samples Received Wed 23/11/2022  
Report Due Wed 30/11/2022  
SGS Reference **SE239503**

### SUBMISSION DETAILS

This is to confirm that 4 samples were received on Wednesday 23/11/2022. Results are expected to be ready by COB Wednesday 30/11/2022. Please quote SGS reference SE239503 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil
Date documentation received	23/11/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

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CLIENT DETAILS

Client **NEO CONSULTING PTY LTD**

Project **N6484**

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) 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	7	10	11	7
002	BH2	30	14	26	7	10	11	7
003	BH3	30	14	26	7	10	11	7
004	BH4	30	14	26	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.

CLIENT DETAILS

Client **NEO CONSULTING PTY LTD**

Project **N6484**

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content
001	BH1	2	9	1	1
002	BH2	2	9	1	1
003	BH3	2	9	1	1
004	BH4	2	9	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 .



## APPENDIX C

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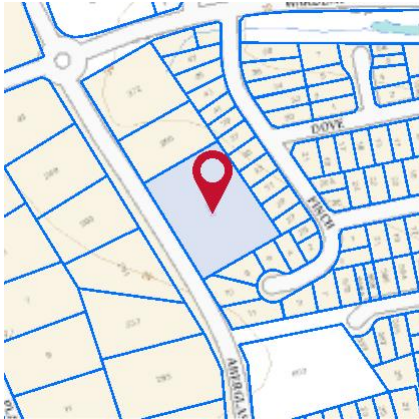
Property Report and Relevant Site Data

**NEO** CONSULTING



# Property Report

262 ABERGLASSLYN ROAD ABERGLASSLYN 2320



## Property Details

Address: 262 ABERGLASSLYN ROAD  
ABERGLASSLYN 2320

Lot/Section /Plan No: 21/-/DP841959

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. 26-6-2020)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	450 m <sup>2</sup>
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: <a href="https://www.planningportal.nsw.gov.au/greenfield-housing-code">https://www.planningportal.nsw.gov.au/greenfield-housing-code</a>

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)

## 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. 2-12-2021)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Subject Land (pub. 2-12-2021)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Subject Land (pub. 6-5-2018)
- 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 (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)

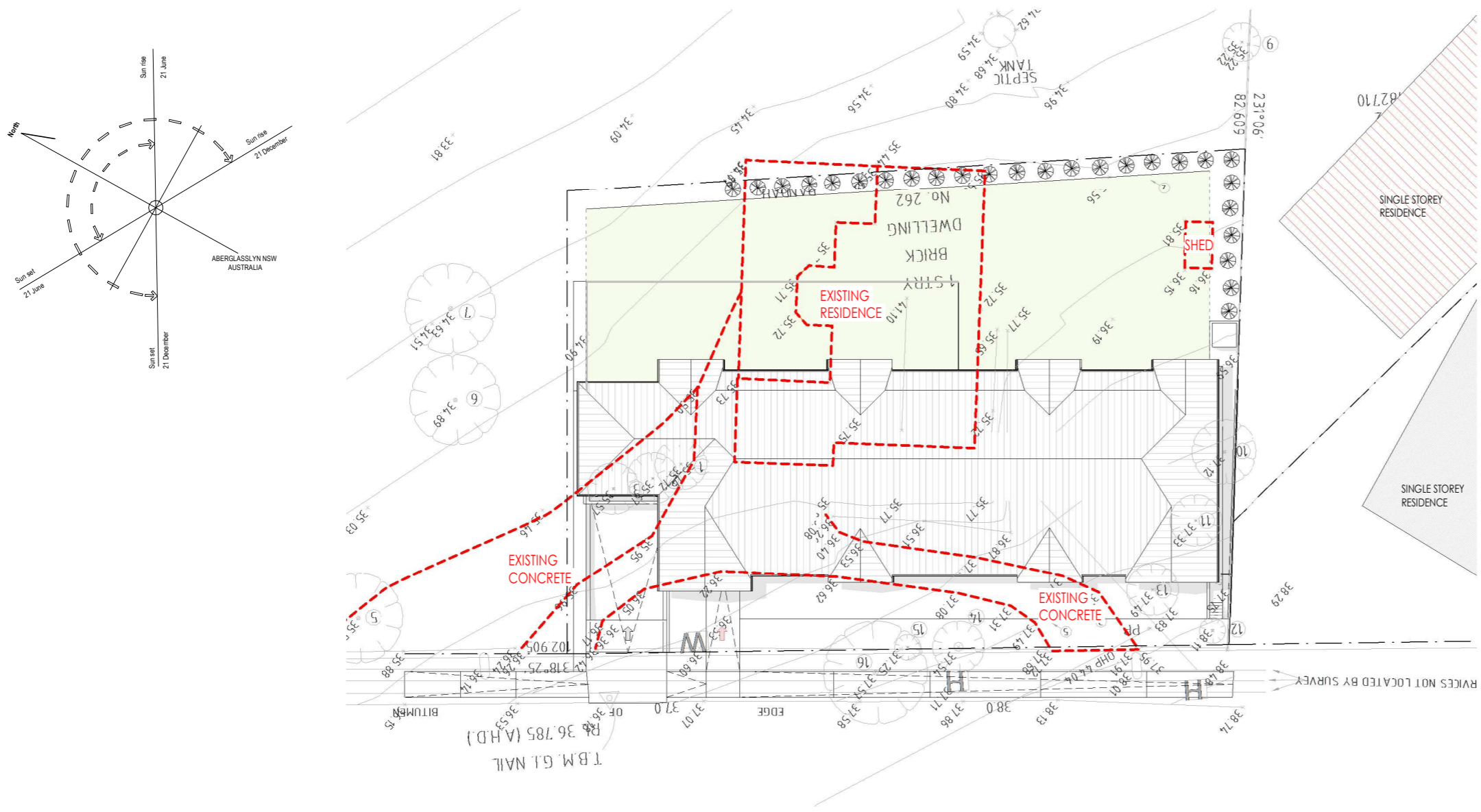
### Other matters affecting the property

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

Local Aboriginal Land Council	MINDARIBBA
Regional Plan Boundary	Hunter

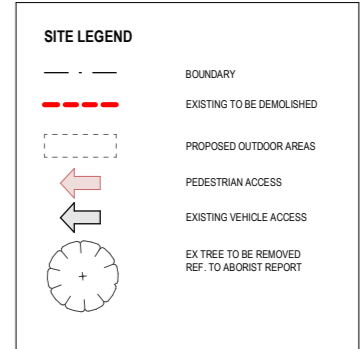
This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

# PROPOSED CHILDCARE CENTER AT 262 ABERGLASSLYN RD, ABERGLASSLYN NSW



PLAN NO: B2183DET-A  
 LOCAL AUTHORITY: MAITLAND C.C  
 SITE ADDRESS: 262 Aberglasslyn Rd, Aberglasslyn NSW 2320

CHILD CARE SITE CALCULATION						
AGE GROUP	No. CHILDREN	Req. INDOOR	Prop. INDOOR	Req. OUTDOOR	Prop. OUTDOOR	
0-2	32	104	104	224	234	
2-3	25	81.25	81.25	175		
3-5	40	130	135	280	522	
<b>TOTAL</b>	<b>97</b>	<b>315.25</b>	<b>325</b>	<b>679</b>	<b>756</b>	



1 SITE  
1:200

SHEET LIST			
Sheet No.	Sheet Name	Revision	Date
DA001	SITE PLAN		
DA002	BASEMENT		
DA003	GROUND FLOOR PLAN		
DA004	ROOF PLAN		
DA005	EAST & WEST ELEVATION		
DA006	NORTH & SOUTH ELEVATION		
DA007	SECTIONS		
DA008	3D VIEWS		
DA009	MID WINTER SHADOW		
DA100	3D VIEW 1		



2 SITE PLAN VIEW

ALL PLANS TO BE PRINTED IN COLOR  
 - ALL BUILDING WORK TO COMPLY WITH BCA AND AS CODES AND RELEVANT AUTHORITIES REQUIREMENTS.  
 - ALL STEEL, CONCRETE AND TIMBER WORK TO BE IN ACCORDANCE WITH STRUCTURAL ENGINEERS SPECIFICATIONS AND RELEVANT SAA CODES.  
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 - READ FIGURED DIMENSIONS IN PREFERENCE TO SCALING.



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PRE DA	A	27 MAY 2022						JO
								DB
								DB

ABERGLASSLYN ROAD CHILDCARE		Scale:	As indicated @A1
SITE PLAN		Date:	20/05/22
GREENSCAPE DESIGN & ASSOCIATES		Project Number:	201002
SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW		Drawing Number:	DA001
INFO@GREENSCAPEDESIGN.COM.AU		Rev:	

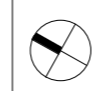




ABERGLASSLYN ROAD

1 BASEMENT  
1:100

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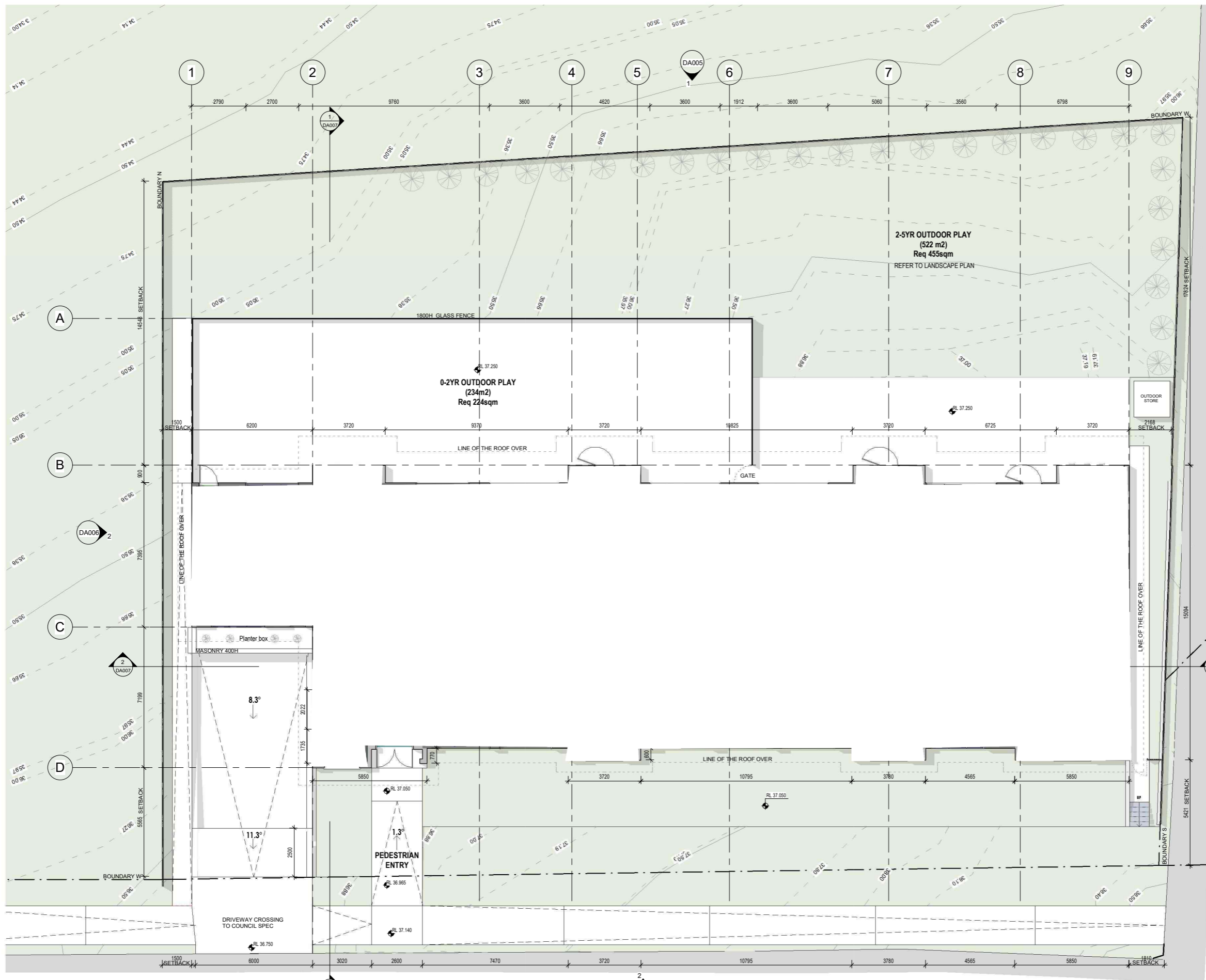


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PRE DA	A	27 MAY 2022					

DRAFTING
Author
Checked
Approved

ABERGLASSLYN ROAD CHILDCARE  
**BASEMENT**  
 GREENSCAPE DESIGN & ASSOCIATES  
 SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW  
 INFO@GREENSCAPEDESIGN.COM.AU

Scale:	1:100 @A1
Date:	20/05/22
Project Number:	201002
Drawing Number:	DA002
Rev:	



- AREAS**
- 0-2YR INDOOR PLAY (16 Places)
  - 2-3YR INDOOR PLAY (25 Places)
  - 3-5YR INDOOR PLAY (20 Places)
  - BIN ROOM
  - BOTTLE PREP
  - COT
  - DIS/WC
  - KITCHEN
  - LNDY
  - MEETING
  - OFFICE
  - PWD
  - RECEPTION
  - STAFF
  - STORE
  - WASH/DRYING
  - WC
  - WC/NAPPY



**CHILD CARE AREA AND OCCUPATION CALCULATIONS**

Age Group	No. of Kids	Req. Indoor	Prop. Indoor	Req. Outdoor	Prop. Outdoor	Staff	RMS Parking
0-2	32	104m²	107m²	224m²	234m²	8	8
2-3	25	81.25m²	82m²			5	6
3-5	40	130m²	135m²	455m²	522m²	4	10
<b>TOTAL</b>	<b>97</b>	<b>315.25m²</b>	<b>324m²</b>	<b>679m²</b>	<b>756m²</b>	<b>17</b>	<b>24</b>

**JUNIOR SANITARY FACILITIES:**

Required:	Proposed:	Complies:
1 toilet per 15 children over 2 yrs old.	4 (for 65 children)	Yes
1 basin per 15 children over 2 yrs old.	4 (for 65 children)	Yes
Shower	Ground Floor	Yes

**NAPPY CHANGE**  
Required for children under 3 yrs old: No new. Proposed: No new. Complies: yes

**ADULT SANITARY FACILITIES**  
Required for 10 staff: 1 unisex facility. Proposed: 2 new. Complies: Yes

**LAUNDRY**  
Required for children under 3 yrs old. Proposed: New. Complies: yes

**FOOD PREP / KITCHEN**  
Proposed: New. Complies: yes

**BOTTLE PREP AREA**  
Proposed: New. Complies: yes

**CHILD CARE REQ STORAGE CALCULATIONS - TOTAL (GF)**

Age Group	No. of Kids	Req. Indoor	Prop. Indoor	Req. Outdoor	Prop. Outdoor
GF 0-2	32	6.4m³	8.24m³	9.6m³	9.6m³
GF 2-3	25	5m³	5.54m³	7.5m³	7.5m³
GF 3-5	40	8m³	8.00m³	12m³	12m³
<b>TOTAL</b>	<b>97</b>	<b>19.4m³</b>	<b>21.78m³</b>	<b>29.1m³</b>	<b>29.1m³</b>

**CHILD CARE AREA AND OCCUPATION CALCULATIONS - TOTAL (GF)**

Age Group	No. of Kids	Req. Indoor	Prop. Indoor	Req. Outdoor	Prop. Outdoor	Staff	RMS Parking
GF	97	315.25m²	324m²	679m²	756m²	17	24
<b>TOTAL</b>	<b>97</b>	<b>315.25m²</b>	<b>324m²</b>	<b>679m²</b>	<b>756m²</b>	<b>17</b>	<b>24</b>

**CAR PARK**

STAFF	15	DROPP OFF	8	DISABLED PARKING	1	<b>TOTAL</b>	<b>24</b>
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**AREA**

Hard Surface	1078m²	Landscape Deep Soil	832m²	43.59%
Building	33.55%	Not Built		66.45%
Built Ground Floor	641m²			Land 1270m²

1 GROUND FLOOR  
1:100

ABERGLASSLYN ROAD

**ALL PLANS TO BE PRINTED IN COLOR**  
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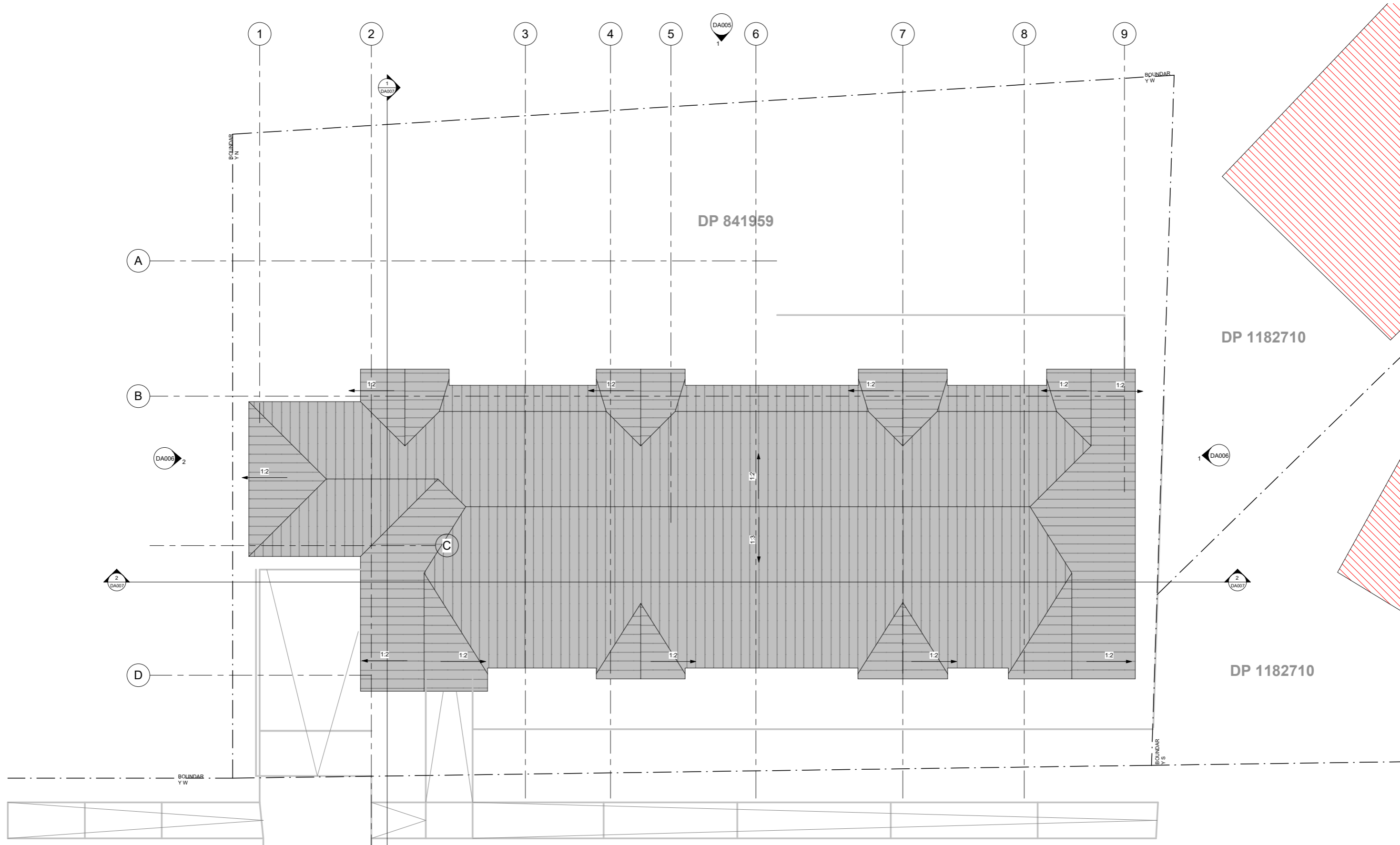


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								Checked
								Approver

**ABERGLASSLYN ROAD CHILDCARE**  
**GROUND FLOOR PLAN**  
**GREENSCAPE DESIGN & ASSOCIATES**  
 SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW  
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 Project Number: 201002  
 Drawing Number: DA003  
 Rev: 1





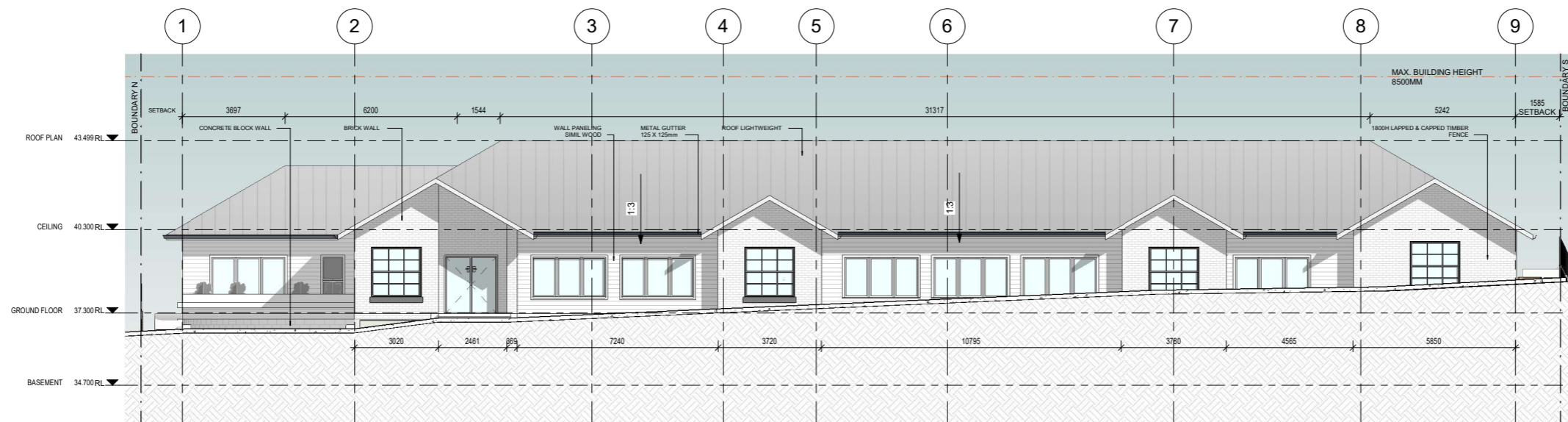
1 ROOF PLAN  
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ABERGLASSLYN ROAD

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1 EAST ELEVATION  
1 : 100



2 WEST ELEVATION  
1 : 100

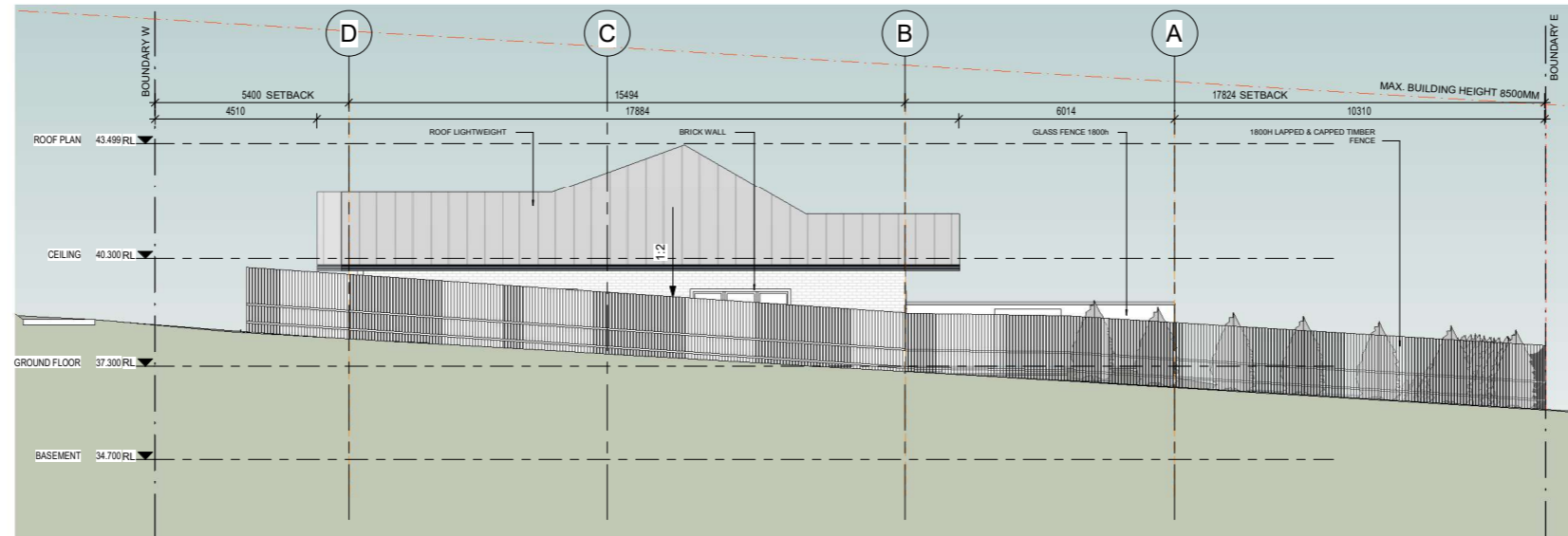
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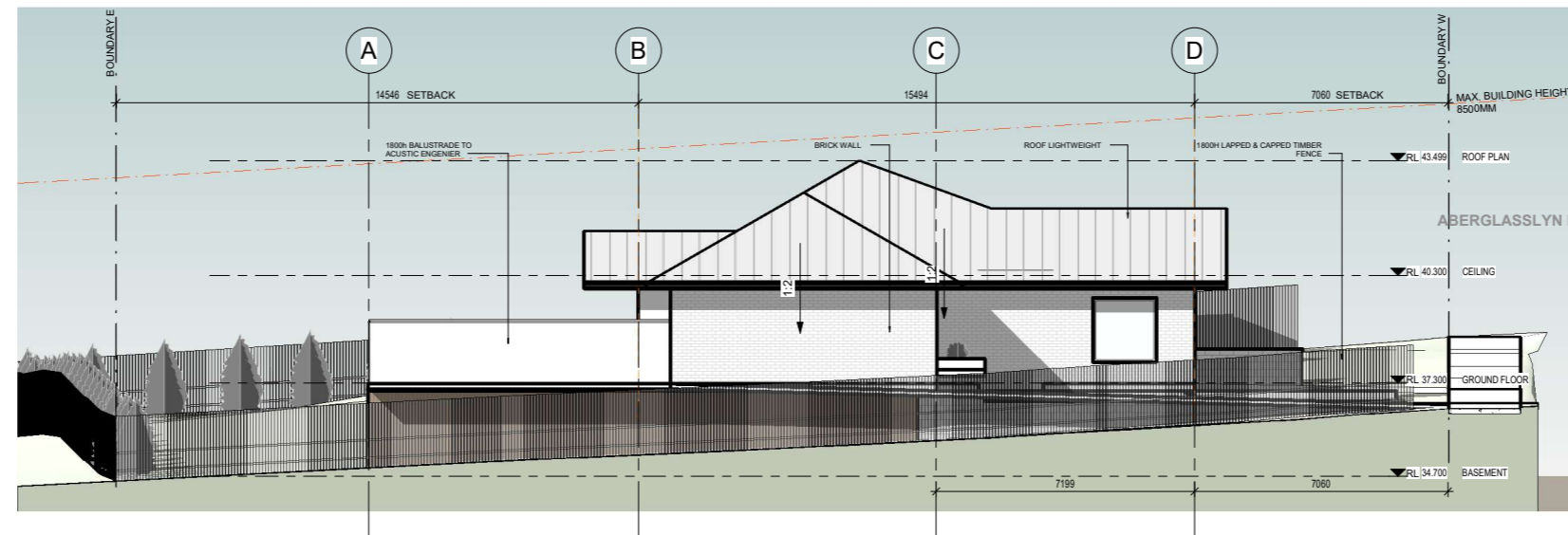
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ABERGLASSLYN ROAD CHILDCARE  
 EAST & WEST ELEVATION  
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Rev:	



1 SOUTH ELEVATION  
1 : 100



2 NORTH ELEVATION  
1 : 100

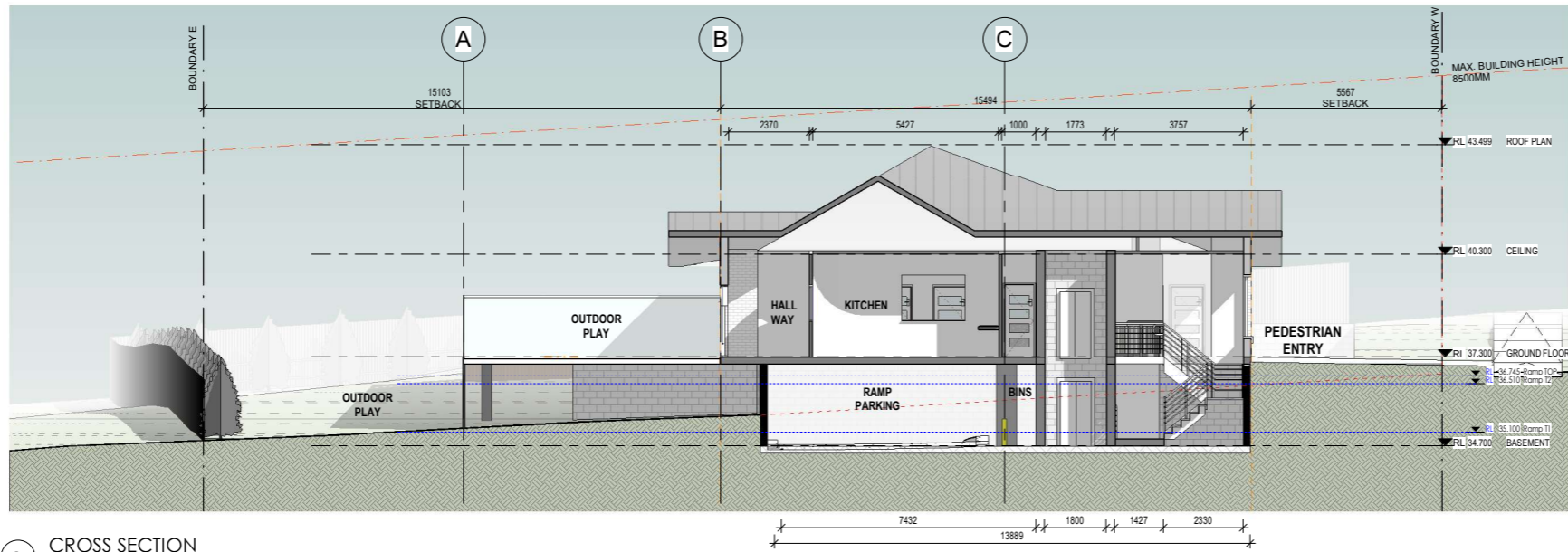
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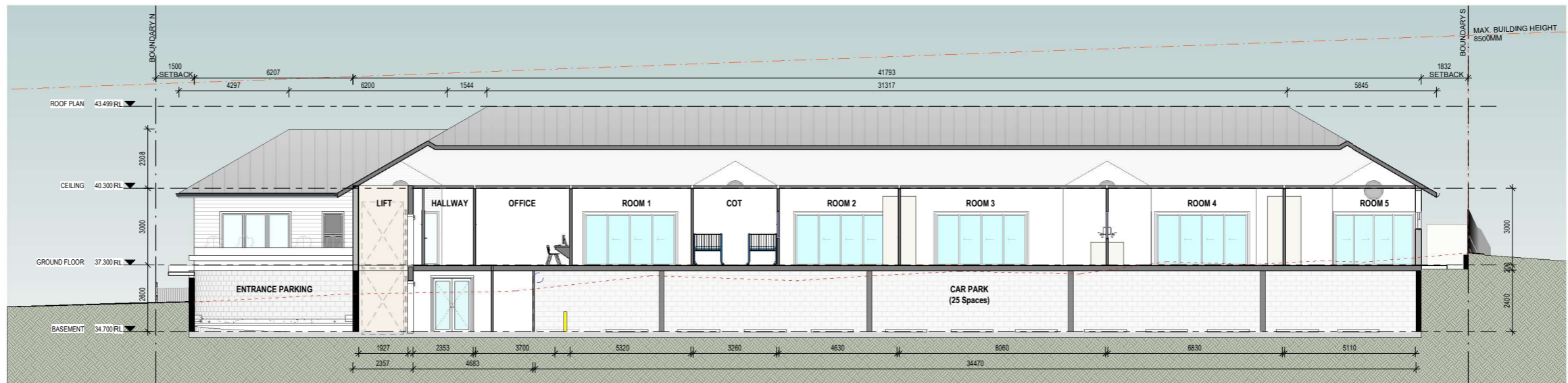
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ABERGLASSLYN ROAD CHILDCARE		Scale:	1 : 100 @A1
NORTH & SOUTH ELEVATION		Date:	20/05/22
GREENSCAPE DESIGN & ASSOCIATES		Project Number:	201002
SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW		Drawing Number:	DA006
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1 CROSS SECTION  
1 : 100



2 LONG SECTION  
1 : 100

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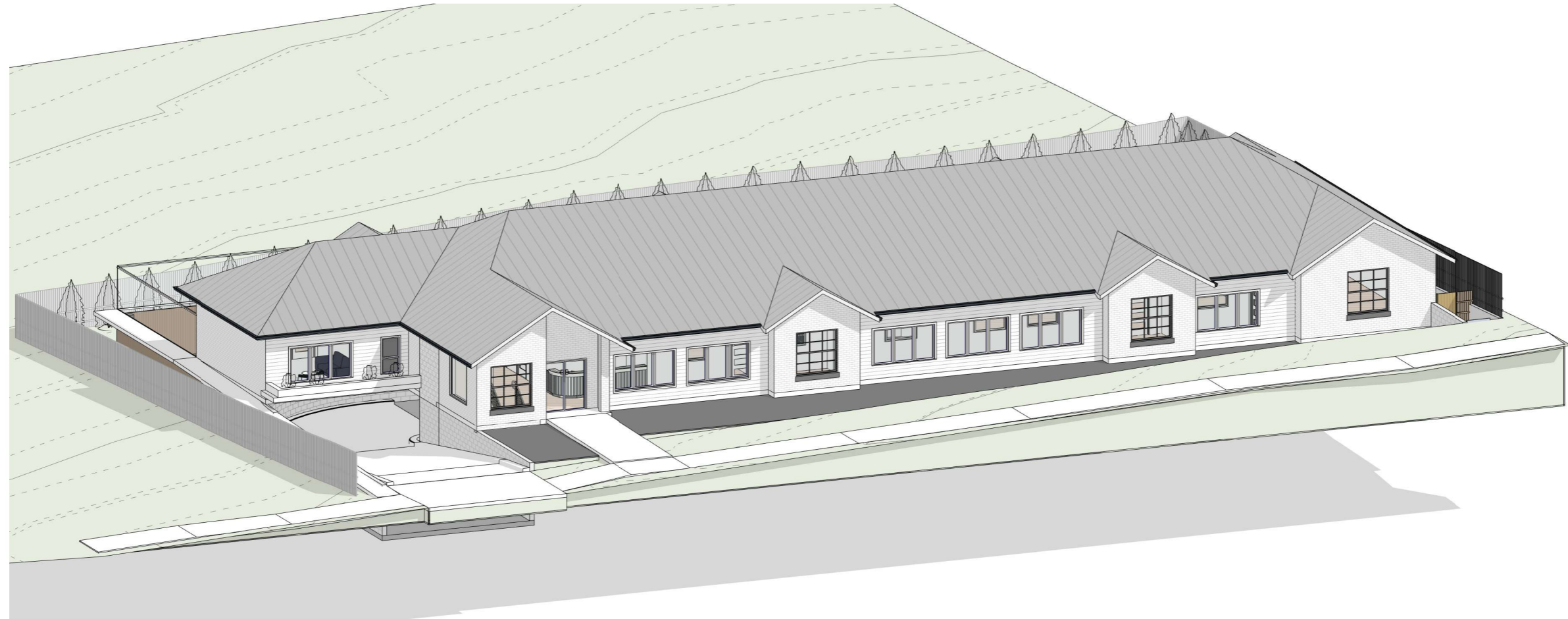


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PRE DA	A	27 MAY 2022						JO
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ABERGLASSLYN ROAD CHILDCARE		Scale:	1 : 100 @A1
SECTIONS		Date:	20/05/22
GREENSCAPE DESIGN & ASSOCIATES		Project Number:	201002
SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW		Drawing Number:	DA007
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① 3D VEIW REAR



② 3D VEIW FRONT

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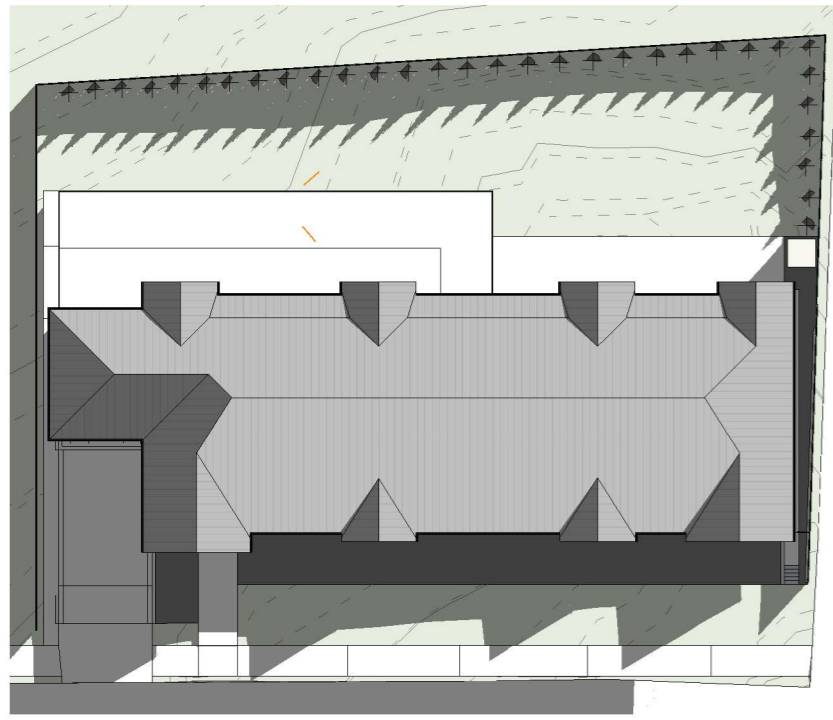


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PRE DA	A	27 MAY 2022						DRAWN: JO
								CHECKED: DB
								APPROVED: DB

**ABERGLASSLYN ROAD CHILDCARE**  
**3D VIEWS**  
**GREENSCAPE DESIGN & ASSOCIATES**  
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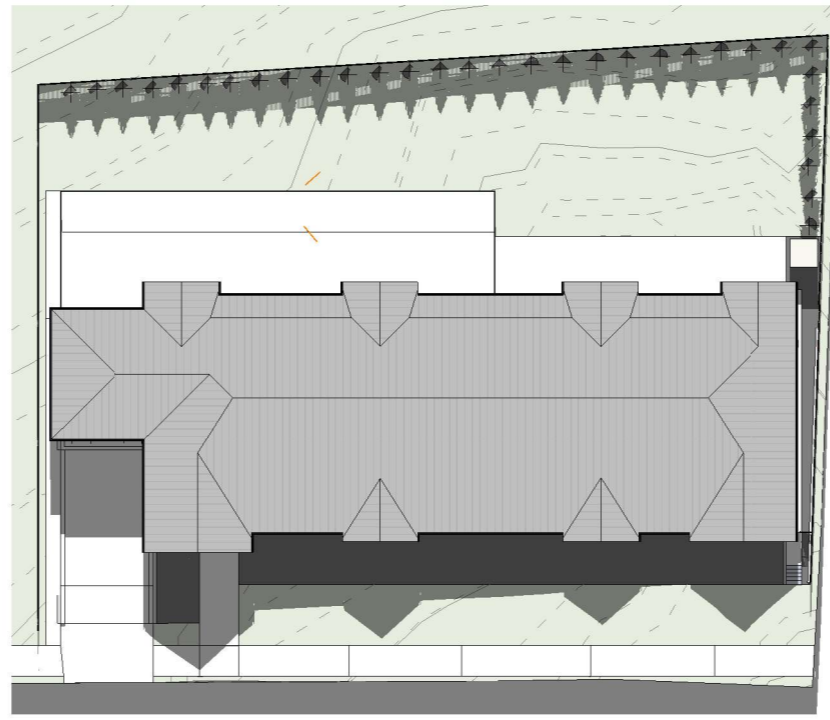
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Date:	20/05/22
Project Number:	201002
Drawing Number:	DA008
Rev:	





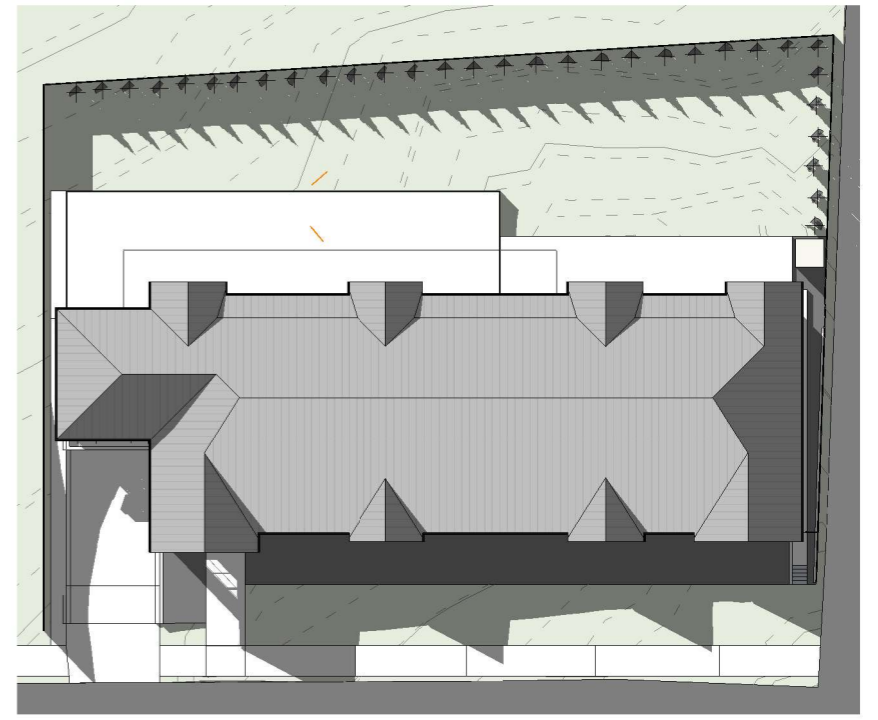
ABERGLASSLYN ROAD

① SHADOW 9AM



ABERGLASSLYN ROAD

② SHADOW 12PM



ABERGLASSLYN ROAD

③ SHADOW 3PM

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FOR	ISSUE	DATE	AMENDMENT	FOR	ISSUE	DATE	AMENDMENT

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DRAWN: CG
CHECKED: DB
APPROVED: DB

ABERGLASSLYN ROAD CHILDCARE  
 MID WINTER SHADOW  
 GREENSCAPE DESIGN & ASSOCIATES  
 SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW  
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Scale:	@A1
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Rev:	



① 3D View 3

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								Checked:
								Approver

<b>ABERGLASSLYN ROAD CHILDCARE</b>		Scale:	@A1
<b>3D VIEW 1</b>		Date:	20/05/22
<b>GREENSCAPE DESIGN &amp; ASSOCIATES</b>		Project Number:	201002
SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN, NSW		Drawing Number:	<b>DA100</b>
INFO@GREENSCAPEDESIGN.COM.AU		Rev:	