GCA

Geotechnical Consultants Australia

Krishathi Pty Ltd

Detailed Site Investigation

Proposed Development at:

225 Bungarribee Road

Blacktown NSW 2148

Lot 8/-/DP26584

E21210-1

28th October 2021

Geotechnical Consultants Australia Pty Ltd
(02) 9788 2829
info@geoconsultants.com.au
www.geoconsultants.com.au

Report Distribution

Detailed Site Investigation

Address: 225 Bungarribee Road Blacktown NSW 2148

GCA Report No.: E21210-1

Date: 28th October 2021

Copies	Recipient/Custodian
1 Soft Copy (PDF) – Secured and Issued by Email	Krishathi Pty Ltd Prem Krithivasan pkrithivasan@hotmail.com
1 Original – Saved to GCA Archives	Secured and Saved by GCA on Register

Version	Prepared By	Reviewed By	Date Issue
Draft	**Sarah Houlahan** *Environmental Consultant*	**Nick Caltabiano** *Project Manager*	25th October 2021
FINAL	**Sarah Houlahan** *Environmental Consultant*	**Nick Caltabiano** *Project Manager*	28th October 2021

Report Revision	Details	Report No.	Date	Amended By
0	FINAL Report	E21210-1	28th October 2021	-

Issued By:

Joe Nader

Geotechnical Consultants Australia Pty Ltd
Suite 5, 5-7 Villiers Street
Parramatta NSW 2151
(02) 9788 2829
www.geoconsultants.com.au
info@geoconsultants.com.au

TABLE OF CONTENTS

APPENDICES

Executive Summary

Geotechnical Consultants Australia Pty Ltd (GCA) were appointed by Mr. Prem Krithivasan of Krishathi Pty Ltd (the client) to undertake a Detailed Site Investigation (DSI) for the property located at No. 225 Bungarribee Road Blacktown NSW 2148 (the site).

The proposed development for this site includes:

1) The demolition of the existing on-site structures;
2) Excavation and construction of basement carpark with six (6) car parking spaces;
3) Construction of a two (2) storey boarding house.

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

The scope of work undertaken includes:

- A site inspection to identify potential sources of contamination;
- Historical investigations relating to the site (if any);
- Historical aerial photographs;
- Local Council records and planning certificates;
- NSW Environment Protection Authority (EPA) environmental contaminated land register;
- Protection of the Environment Operations (POEO) Act public register;
- Dial-Before-You-Dig enquiry for an evaluation into local underground services and assets;
- Review of local geological and hydrogeological information, including an evaluation of the WaterNSW registered groundwater bore database; and
- Acid Sulphate Soils (ASS) data maps.

A site investigation was undertaken on the 15th October 2021 by a qualified environmental consultant. GCA obtained thirteen (13) soil samples from six (6) boreholes (two (2) primary samples per borehole and one (1) duplicate sample for QA/QC procedures). Samples were submitted to National Association of Testing Authorities, Australia (NATA) accredited laboratory for chemical analysis.

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

Based on the site investigation and analytical results, GCA considers the potential for significant contamination of the underlying natural soils onsite to be low. All analytes were below the NEPM Assessment Criteria for Residential (A) sites.

Therefore, GCA finds that the site is suitable for the proposed development and land use, providing the recommendations within **Section 16** of this report are undertaken.

1. Introduction

Geotechnical Consultants Australia Pty Ltd (GCA) were appointed by Mr. Prem Krithivasan of Krishathi Pty Ltd (the client) to undertake a Detailed Site Investigation (DSI) for the property located at No. 225 Bungarribee Road Blacktown NSW 2148 (the site). The site is legally defined as Lot 8/-/DP26584, has an approximate total area of 867.33m^2 and is currently zoned as R2 – Low Density Residential.

A site inspection was undertaken on the 15th October 2021 by a qualified environmental consultant. Reporting and site photographs were collected on this date (**Appendix A**) with reference to the relevant regulatory criteria (**Section 2, Scope of Work**). Further information obtained during the inspection is described in **Section 4, Site Conditions** of this report.

1.1 Proposed Development

The proposed development for this site includes:

1) The demolition of the existing on-site structures;
2) Excavation and construction of basement carpark with six (6) car parking spaces;
3) Construction of a two (2) storey boarding house.

Proposed development plans are attached in **Appendix C**.

1.2 Objectives

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

1.3 Trigger for Assessment

This DSI is required as part of a proposed development to ensure that the site does not contain contamination within the soils that pose human health and surrounding environmental risks.

2. Scope of Work

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

- National Environmental Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council, 2013;
- National Environment Protection Measures (NEPM), *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013*;
- National Environment Protection Measures (NEPM), *Schedule B2 – Guideline on Site Characterisation,* 2013;
- National Environmental Protection Measures (NEPM), Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- National Environment Protection Measures (NEPM), Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- National Environment Protection Measures (NEPM), *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- NSW Environmental Protection Authority (EPA), *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (3rd Edition);
- NSW Environmental Protection Authority (EPA), *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW Environmental Protection Authority (EPA), *Sampling Design Guidelines*, 1995;
- NSW Environmental Protection Authority (EPA), *Technical Note: Investigation of Service Station Sites,* 2014;
- NSW Department of Environment and Conservation, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- NSW Environmental Protection Authority, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- Protection of the Environment and Operation Act, 1997;
- Protection of the Environment Operations (Waste) Regulations, 2005;
- The Contaminated Land Management Act, 1997;
- NSW Environmental Protection Authority (EPA), *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;
- Work Health and Safety Act, 2011;
- Work Health and Safety Regulation, 2011.

The scope of works required to complete the DSI includes:

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

3. Site Details

Table 1. Site Details

Address	225 Bungarribee Road Blacktown NSW 2148
Deposited Plan	Lot 8 / - / DP26584
Zoning	R2 – Low Density Residential
Locality Map	**Figure 1, Appendix A**
Site Plan	**Figure 1, Appendix A**
Area (approx.)	867.33m^2

Table 2. Surrounding Land Use

Direction from Site	Land Use
North	Residential property
East	Residential property
South	Bungarribee Road, followed by a residential property
West	Residential property

4. Site Condition

A qualified environmental consultant inspected the site on the 15th October 2021. Site photographs are provided in **Appendix A**. Observations noted during the inspection are summarised below:

- The site contained a single storey brick residential building with external metal blinds and wooden patio;
- The site had grass groundcover and healthy vegetation;
- Rear access on the eastern side of the site was via a degraded wooden gate;
- The fencing on the eastern perimeter was wooden;
- The fencing on the western and norther perimeter was steel paneled;
- A degraded concrete driveway extended along the western perimeter from the road, through double metal gates and into the rear of the site;
- The driveway terminated on a concrete platform enclosed with low metal fencing;
- The rear of the site building had an enclosed steel paneled and glass verandah, built on stilts and concrete slab, with a wooden staircase that led to the rear garden;
- The rear of the site contained healthy grass groundcover with dirt patches;
- The site gradient was relatively flat;
- The nearest surface water receptor was Bungarribee Creek, located approximately 1.6km south west of the site;
- There were no visual or aromatic indications of contamination.

5. Site History

5.1 History of Region and Site

A review of the historical aerial photographs indicates how the site and surrounding suburbs have changed over time (**Figures 3-8, Appendix A**).

Table 3. Summary of Historical Aerial Photographs

Year	Description of Image
1943	The site appears to have been vacant at this time.
2000	The residential building identified during the site inspection has been erected. The site contains a detached shed, mature trees and grass groundcover. The surrounding area is low density residential lots.
2009	The site and surrounding area remain largely unchanged since 2000.
2014	The site and surrounding area remain largely unchanged from 2009. However, the regional vegetative health appears to have declined.
2017	The detached garage on site has been demolished, however the concrete slab remains. The surrounding area remain largely unchanged from 2014.
2021	The site and surrounding area remain largely unchanged from 2017. Although the vegetative health appears to have improved

5.2 Section 10.7 (2) Planning Certificate

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

5.3 NSW EPA Contaminated Land Register

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

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

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

5.5 SafeWork NSW Hazardous Goods

A search was not undertaken with NSW SafeWork for historical dangerous goods stored onsite. However, based on the historical ownership and historical aerial photographs of the site, no evidence of historical storage of dangerous goods were identified.

5.6 Product Spill and Loss History

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

5.7 Dial Before You Dig

A review of assets and services via Dial-Before-You-Dig request suggests potential impact to the site via underground services and assets or act as a portal to transport potential contamination offsite.

6. Environmental Setting

6.1 Geology

Data obtained from the Geological Survey of NSW and the Geoscience Bexley a Stratigraphic Units Database indicate the site is located within the Bringelly Shale, Wianamatta Group. This Formation is regionally characterised by carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone and rare coal and tuff.

6.2 Hydrology

A groundwater bore search was conducted on 21st October 2021 and no registered groundwater bores were detected within a 500m radius of the site. It was beyond the scope of works to study the groundwater flow direction.

However, based on topography, surface water is expected to flow south-west towards Bungarribee Creek (located ~1.57km from the site).

6.3. Acid Sulphate Soils

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

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

7. Areas of Environmental Concern

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

Table 4. AEC and Associated CoPC

AEC	Potentially Contaminating/ Hazardous Activity	CoPC	Likelihood of Site Impact	Comments
Entire site	Importation of fill material from unknown origin. Historical onsite operations.	Metals, TPH, BTEX, PAH, OCPs, PCB, Asbestos	Low	Based on site observations and location, the presence of imported fill material is possible.
Building structures	Hazardous materials	ACM, SMF, ODS, Lead (paint and/or dust), PCBs	Low	Based on site observations, it cannot be concluded that any of the hazardous materials mentioned here are present at this location. Though visual inspection provided strong indication of ACM in the external roof. Therefore, we recommend an HMS be carried out to determine the presence or absence of these materials.

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

8. Conceptual Site Model

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

- Potential contamination sources and their associated 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 suite conditions.

Table 5. Conceptual Site Model

Potential Sources	Potential Receptor	Potential Exposure Pathway	Complete Connection	Risk	Justification/Control Measures
Contaminated soil from importation of uncontrolled fill across the site. Historically contaminated soil on site. ACM, Lead Paint and other hazardous materials within onsite structure.	Site occupants, workers, general public	Dermal contact, inhalation/ ingestion of particulates.	Limited (current)	Moderate	Exposure to potentially contaminated soils is possible due to lack of sealed surfaces.
			No (future)	Low	If present, impacted soils are required to be disposed of and remediated offsite.
	Natural soils	Migration of contaminants through fill layer to natural soils.	Limited (current)	Moderate	If contamination is identified within fill layer, migration to natural soils is possible.
			No (future)	Low	If present, impacted soils are required to be disposed of and remediated offsite.
	Bungarribee Creek	Transport via surface water run-off.	Limited (current)	Low	Due to proximity to site, migration of contaminants through surface waters is considered unlikely.
			No (future)	Low	If present, impacted soils are required to be disposed of and remediated offsite.
	Underlying aquifer	Leaching and migration of contaminants through groundwater infiltration.	Unknown (current)	Low	Due to unsealed surfaces, leaching of CoPC is possible. However natural clays would likely inhibit migration.
			Limited (future)	Low	If present, contaminated soil and/or groundwater would require remediation.

9. Data Gaps

The following data gaps have been identified at the site:

- Extent of potential Asbestos Containing Materials (ACM), metals and other hazardous materials within on site structures.
- Condition of soils beneath the hardstands onsite.

10. Assessment Criteria

The following soil assessment criteria were adopted for the investigation.

10.1 NEPM Health Investigation Level A (HIL-A)

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

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

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

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

NEPM Assessment Criteria	NEPM 2013 Residential Soil **HIL-A**, mg/kg
Pesticides	
HCB	**10**
Heptachlor	**6**
Chlordane	**50**
Aldrin & Dieldrin	**6**
Endrin	**10**
DDT+DDE+DDT	**240**
Endosulfan	**270**
Methoxychlor	**300**
Mirex	**10**
Metals	
Arsenic, As	**100**
Cadmium, Cd	**20**
Chromium, Cr	**100**
Copper, Cu	**6,000**
Lead, Pb	**300**

Nickel, Ni	**400**
Zinc, Zn	**7,400**
Mercury, Hg	**40**
Polycyclic Aromatic Hydrocarbons	
Carcinogenic PAH (as BaP TEQ)	**3**
Total PAH (18)	**300**

10.2 NEPM Health Screening Level A (HSL-A)

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

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

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

Table 7. HSL-A for Benzene Toluene Ethylbenzene and Xylene (BTEX), Naphthalene and Total Recoverable Hydrocarbon Fractions

NEPM Assessment Criteria	NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, Clay, mg/kg	NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg
Benzene	**0.7**	**100**
Toluene	**480**	**14,000**
Ethylbenzene	**NL**	**4,500**
Xylenes	**110**	**12,000**
Naphthalene	**5**	**1,400**
TRH C6-C10		**4,400**
TRH C6-C10 - BTEX (F1)	**50**	
TRH >C10-C16		**3,300**
TRH >C10-C16 - N (F2)	**280**	
TRH >C16-C34 (F3)		**4,500**
TRH >C34-C40 (F4)		**6,300**

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

Ecological investigation levels (EILs) have been developed to assess the risk for the presence of metals and organic substance in a terrestrial ecosystem. EILs are guided by land-use scenarios, specific soil physicochemical properties and generally apply to the top 2m of soil. EILs can be applied for arsenic (As), copper (Cu), chromium III (Cr(III)), dichlorodiphenyltrichloroethane (DDT), naphthalene, nickel (Ni), lead (Pb) and zinc (Zn).

The NEPM Soil Quality Guidelines (SQG) for EILs are calculated using the Added Contamination Limit (ACL) to determine the amount of contamination that had to be added to the soil to cause toxicity, including ambient background concentration (ABC).

Table 8. Generic EIL for Arsenic, DDT and Naphthalene

NEPM Assessment Criteria	NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg
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 for Benzene Toluene Ethylbenzene and Xylene (BTEX), Benzo(a)pyrene and Total Recoverable Hydrocarbon Fractions

NEPM Assessment Criteria	NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **Fine-Grained Soil**, mg/kg
Benzene	**65**
Toluene	**105**
Ethylbenzene	**125**
Xylenes	**45**
BaPyr (BaP)	**0.7**
TRH C6-C10	**180**
TRH >C10-C16	**120**
TRH >C16-C34 (F3)	**1,300**
TRH >C34-C40 (F4)	**2,800**

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

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

Table 10. Management Limits for Total Recoverable Hydrocarbon Fractions

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

10.6 NEPM Guidelines for Asbestos

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

11. Sampling and Analysis Plan

11.1 Sampling Rationale

Table 11. Sampling Rationale

Sampling Rationale Criteria	Chosen Approach	Justification
Sampling Pattern	Systematic	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	13 samples were obtained from six (6) boreholes. Two (2) samples per borehole (one (1) shallow and one (1) deeper) (one (1) duplicate).	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)	Rate 1:13 samples Duplicate sample: BH2.2	QA/QC sampling was undertaken in general accordance with specifications outlined in Australian Standards (AS) 4482.1-2005, Standard Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil and NEPM 2013 Schedule B2; *Guideline on Site Characterisation*.
Sampling Depths	Two (2) samples per borehole Shallow sample within fill layer - 0.3m bgl Deeper sample within natural soil layer - 0.8m bgl	These depths were selected in compliment with sampling density and to target depths of potential contaminants. Additionally, soil thickness and proximity to the aquifer were considered when determining these depths.

11.2 Field Sampling Methodology

All boreholes were completed with a hand auger to a maximum depth of 1m below ground level (bgl), this allowed the qualified environmental consultant to conduct a visual inspection of the soil cross section. Soil was scraped from the freshly cut cross section for sample collection. Drill auger was decontaminated with deionised water between boreholes. Samples were immediately placed in laboratory prepared jars (labelled prior to arriving on site), with the lid securely attached to jar and only removed for the purpose of storing each sample. This sample storage approach allowed the preservation of any potential fill layers as well as natural underlying clay to be stored in stratigraphic layers.

Table 12. Sampling Details

Borehole ID	Sample ID	Depth (m)	Soil Matrix	Soil Type
BH1	BH1.1	0.3	Clay	Fill material
	BH1.2	0.8	Clay	Natural soils
BH2	BH2.1	0.3	Clay	Fill material
	BH2.2	0.8	Clay	Natural soils
BH3	BH3.1	0.3	Clay	Fill material
	BH3.2	0.8	Clay	Natural soils
BH4	BH4.1	0.3	Clay	Fill material
	BH4.2	0.8	Clay	Natural soils
BH5	BH5.1	0.3	Clay	Fill material
	BH5.2	0.8	Clay	Natural soils
BH6	BH6.1	0.3	Clay	Fill material
	BH6.2	0.8	Clay	Natural soils
Duplicate	D1	Duplicate of BH2.2		

One (1) duplicate sample was collected for quality control and assurance as part of the Sampling and Analysis Plan.

The thirteen (13) soil samples (twelve (12) samples and one (1) duplicate sample) were placed on ice in an esky for transport under Chain of Custody (COC) to a NATA accredited laboratory for the analysis of the CoPC.

11.3 Field Quality Assurance & Quality Control Procedures

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

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

11.4 Chemical Analysis Methodology

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

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

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

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

11.5 Laboratory Quality Assurance & Quality Control Procedures

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

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

12. Data Quality Objectives (DQOs)

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

Table 13. Data Quality Objectives Steps 1 to 7

Step 1: State the problem	GCA have identified the following risks to human and environmental receptors: - current and/or historical potentially contaminating activities that may have impacted the soils at the site.
Step 2: Identify the decision/goal of the study	GCA considered the site history, the use of this site, and the NEPM Guidelines, when identifying the decisions required for the site to be considered suitable for its continued land use. The questions required to meet these decisions are as follows: - Was the sampling, analysis and quality plan designed appropriate to achieve the aim of the DSI? - If present, is on-site contamination capable of migrating off-site? - Are there any unacceptable risks to the future on site or off-site receptors in the soil or groundwater? - Is the site suitable for its continued land use?
Step 3: Identify the information inputs	GCA has identified issues of potential environmental concern; - Appropriate identification of CoPC; - Soil sampling and analysis programs across the site; - Appropriate quality assurance/quality control to enable an evaluation of the reliability of the analytical data; and - Screening sampler analytical results against appropriate assessment criteria for the intended land use.
Step 4: Define the boundaries of the study	The study boundaries are: - Lateral boundary: The legally defined area of the site; - Vertical boundary: The soil interface to the maximum depth reached during soil sampling; and - Temporal boundary: Constrained to a single visit to the site.
Step 5: Develop the analytical approach	Here, GCA integrates the information from steps 1 – 4 to support and justify our proposed analytical approach. Our aim is to confirm if the site is suitable for the proposed development. If the findings of the SAQP identify; - Any exceedance of the adopted assessment criteria for soil; - Groundwater flow direction confirms contamination likely to be transported offsite; - Professional opinion that further assessment is required; and/or - Adopted RPD for QC data not met. Further assessment may be required to confirm suitability of the site in the form of; Data Gap investigation, Remediation Action Plan and Site Validation.
Step 6: Specify performance or acceptance criteria	For judgemental soil sampling the data must meet the following qualifiers; - Acceptable recovery on all surrogate spikes used in laboratory analyses; - Acceptable analytical method to ensure detection limit appropriate for all analytes; - If these conditions are not met, then chemical analysis will require re-testing for all samples with fresh aliquot.

Step 7: Optimise the design for obtaining data	Systematic sampling pattern within the AEC will provide suitable coverage of the site to produce reliable data in alignment with the Data Quality Indicators (DQIs) to cover precision, accuracy, representativeness, completeness and comparability (PARCC). This sampling pattern will ensure that critical locations are assessed and analysed appropriately for COPC.
The DQOs align with CSM	Yes

13. Investigation Results

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

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

Table 14. Total Recoverable Hydrocarbons (TRH) and Benzene Toluene Ethylbenzene Xylene (BTEX) Analytical Results

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

Table 15. Analytical Results for Polycyclic Aromatic Hydrocarbons (PAH)

Polycyclic Aromatic Hydrocarbons (PAH)	NEPM 2013 HSL-A for Vapour Intrusion, 0-<1m Depth, Clay, mg/kg	NEPM 2013 HSL-A for Direct Contact, mg/kg	NEPM 2013 HIL-A, mg/kg	NEPM 2013 Soil ESL for Urban, Residential and Public Open Spaces for Fine-Grained Soil, mg/kg	NEPM 2013 Generic EIL for Urban Residential and Public Open Space, mg/kg
Naphthalene	▼	▼			▼
Benzo(a)pyrene				Not Analysed	
Carcinogenic PAH (as BaP TEQ)			Not Analysed		
Total PAH (18)			Not Analysed		

Table 16. Analytical Results for Pesticides

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

Table 17. Analytical Results for Heavy Metals

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

Table 18. Analytical Results for Asbestos

Chemical	All Samples
Asbestos Detected	Not detected

14. Data Quality Indicators (DQIs)

Table 19. Field Data Quality Indicators

Completeness	The DSI ensured that all critical locations for soil were sampled, and samples were collected within the Systematic formation at the appropriate depths during a single visit to the site. This plan also aligns with Standard Operating Practices (SOP), to produce valid and reproducible data. GCA's qualified environmental consultants are experience and ensure compliance and completion of all sample recording, labelling and COC procedures.
Comparability	The DSI aligns with SOP to produce qualitative data. GCA's qualified environmental consultants sampled uniformly to ensure that each individual sample collection contained sufficient soil (g) to produce a dataset that is reflective of the environmental conditions of the site at time of collection. All samples were handled and stored in a manner that maximised the preservation of all potential CoPC within the soil samples. Climatic and physical conditions at the time of sample collection were considered and recorded.
Representativeness	The DSI aligns with SOP to produce a qualitative dataset that is representative of soil on site. GCA's qualified environmental consultants ensured sample collection, handling, storage and transfer was appropriate for soil. Additionally, samples reflect environmental conditions at time of collection and samples are homogenised to maximise detection during laboratory analysis.
Precision	The DSI aligns with SOP to produce qualitative data that measures the variability of results. The primary technique for evaluating field precision is by collection of duplicate samples, to measure the difference in response between two (2) different samples from the sample location. GCA's qualified environmental consultants collected one (1) duplicate sample along with the 12 samples collected for this site.
Accuracy	The DSI aligns with SOP to produce qualitative data that measures bias within the results. GCA's qualified environmental consultants ensured all COC procedures were carried out appropriately to minimise incidents of cross contamination or incorrect handling and storage of samples.

Table 20. Laboratory Data Quality Indicators

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

15. Conclusion

Based on the site investigation and analytical results, GCA considers the potential for significant contamination to be low. All analytes were below the NEPM Assessment Criteria for Residential (A) sites.

Therefore, GCA finds that the site is suitable for the proposed development and land use, providing the recommendations within **Section 16** of this report are undertaken.

16. Recommendations

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

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

References

- National Environmental Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council, 2013;
- National Environment Protection Measures (NEPM), *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013*;
- National Environment Protection Measures (NEPM), *Schedule B2 – Guideline on Site Characterisation,* 2013;
- National Environmental Protection Measures (NEPM), Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- National Environment Protection Measures (NEPM), Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- National Environment Protection Measures (NEPM), *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- NSW Environmental Protection Authority (EPA), *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (3rd Edition);
- NSW Environmental Protection Authority (EPA), *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW Environmental Protection Authority (EPA), *Sampling Design Guidelines*, 1995;
- NSW Environmental Protection Authority (EPA), *Technical Note: Investigation of Service Station Sites,* 2014;
- NSW Department of Environment and Conservation, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- NSW Environmental Protection Authority, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- Protection of the Environment and Operation Act, 1997;
- Protection of the Environment Operations (Waste) Regulations, 2005;
- The Contaminated Land Management Act, 1997;
- NSW Environmental Protection Authority (EPA), *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;
- Work Health and Safety Act, 2011;
- Work Health and Safety Regulation, 2011;
- Protection of the Environment Operations Act (POEO) Public Register, https://www.epa.nsw.gov.au/licensing-and-regulation/public-registers, accessed on 23rd October 2021;

- NSW EPA- Contaminated land register, https://apps.epa.nsw.gov.au/prclmapp/sitedetails.aspx, accessed on 23rd October 2021;
- Topography – map.com, https://en-au.topographic-map.com/, accessed on 23rd October 2021;
- WaterNSW, https://realtimedata.waternsw.com.au/, accessed on 23rd October 2021.

Limitations

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

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

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

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

Geotechnical Consultants Australia Pty Ltd (GCA)

Prepared by:

Sarah Houlahan
Environmental Consultant

Reviewed by:

Nick Caltabiano
Project Manager

APPENDIX A

Figures and Site Photographic Log

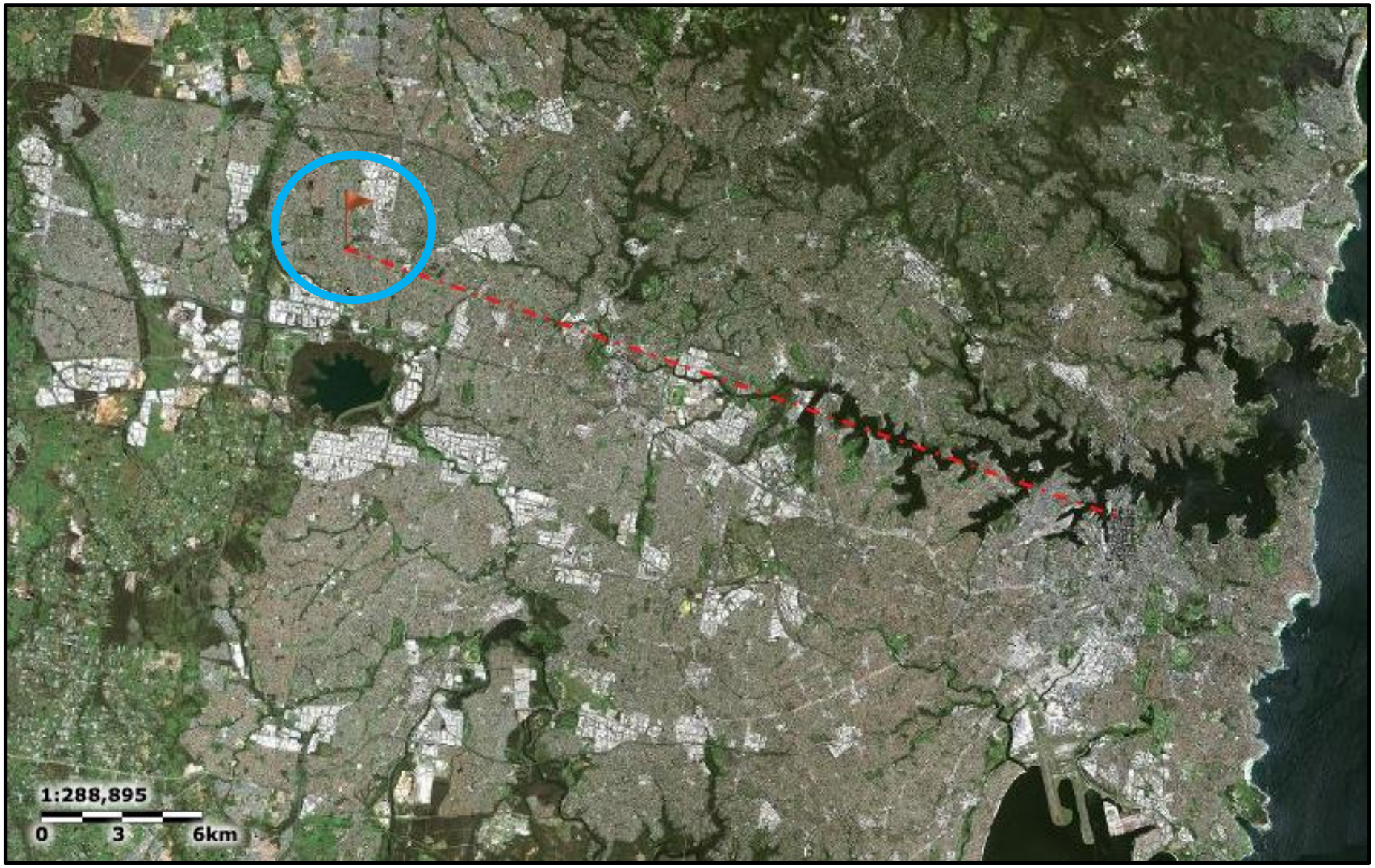


Figure 1. The site is located approximately 30.66 km north - west of Sydney CBD; Scale bar = 6km.

Site location

Source: Six Maps 2021

Figure 1	Locality Map
Project	225 Bungarribee Road, Blacktown NSW 2148

N

Figure 2. The area of site is approximately 867.33m^2.

Source: Near Map 2021

Figure 2	Site Area
Project	225 Bungarribee Road, Blacktown NSW 2148

N

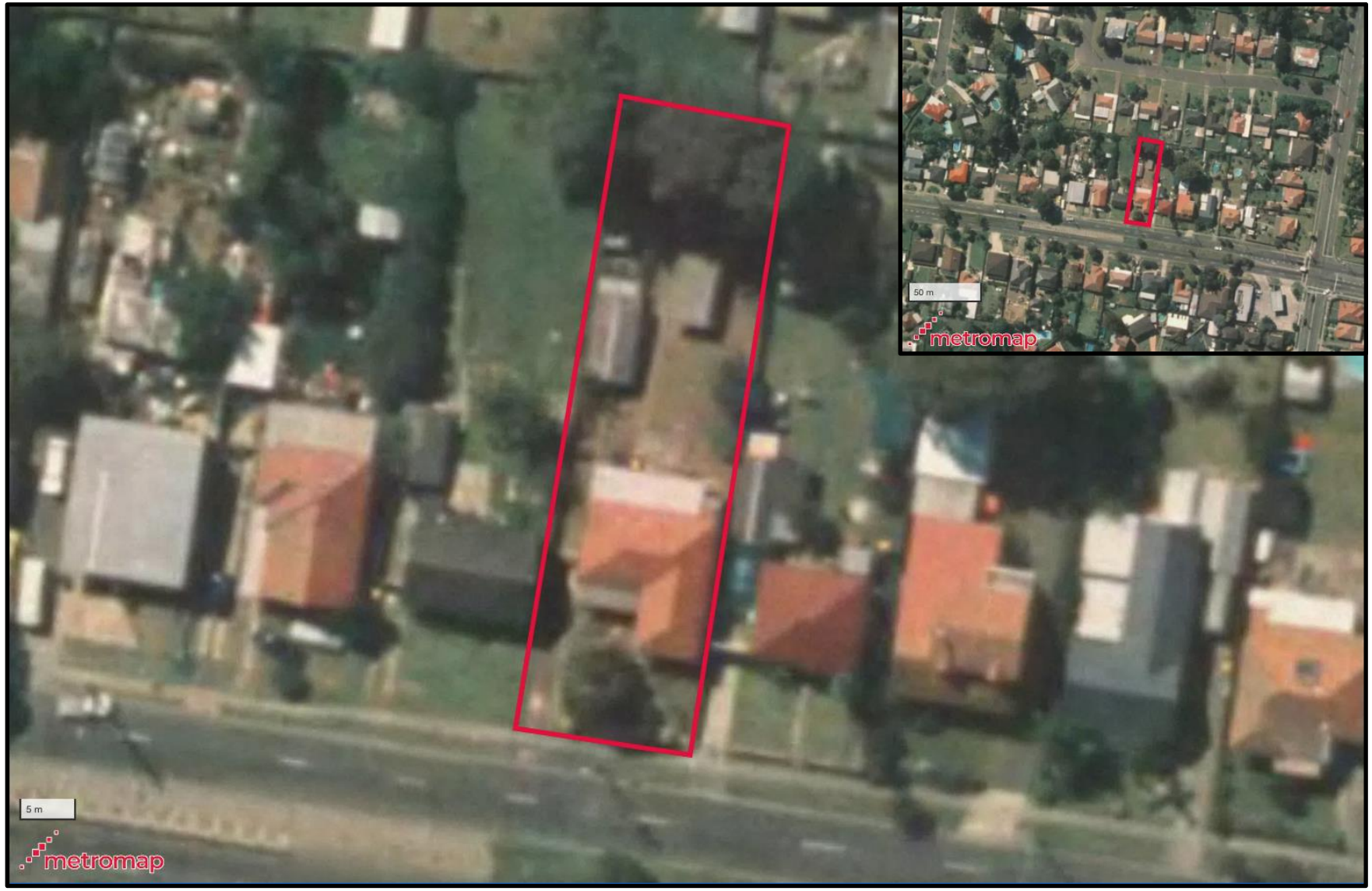
Figure 3. Aerial image of site taken in 1943. The site appears to have been vacant at this time. Scale bar = 5m; inserted image scale bar = 50m.

Figure 3	Aerial Image 1943
Project	225 Bungarribee Road, Blacktown NSW 2148

Source: Metro Maps 2021

N

Figure 4. Aerial image of site taken in 2000. The residential building identified during the site inspection has been erected. The site contains a detached shed, mature trees and grass groundcover. The surrounding area is low density residential lots. Scale bar = 5m; inserted image scale bar = 50m.



Source: Metro Maps 2021

Figure 4	Aerial Image 2000
Project	225 Bungarribee Road, Blacktown NSW 2148

N

Figure 5. Aerial image of site taken in 2009. The site and surrounding area remain largely unchanged since 2000. Scale bar = 5m; inserted image scale bar = 50m.

Source: Near Maps 2021

Figure 5	Aerial Image 2009
Project	225 Bungarribee Road, Blacktown NSW 2148

Figure 6. Aerial image of site taken in 2014. The site and surrounding area remain largely unchanged from 2009. However the regional vegetative health appears to have declined. Scale bar = 5m; inserted image scale bar = 50m.

Source: Near Maps 2021

Figure 6	Aerial Image 2014
Project	225 Bungarribee Road, Blacktown NSW 2148

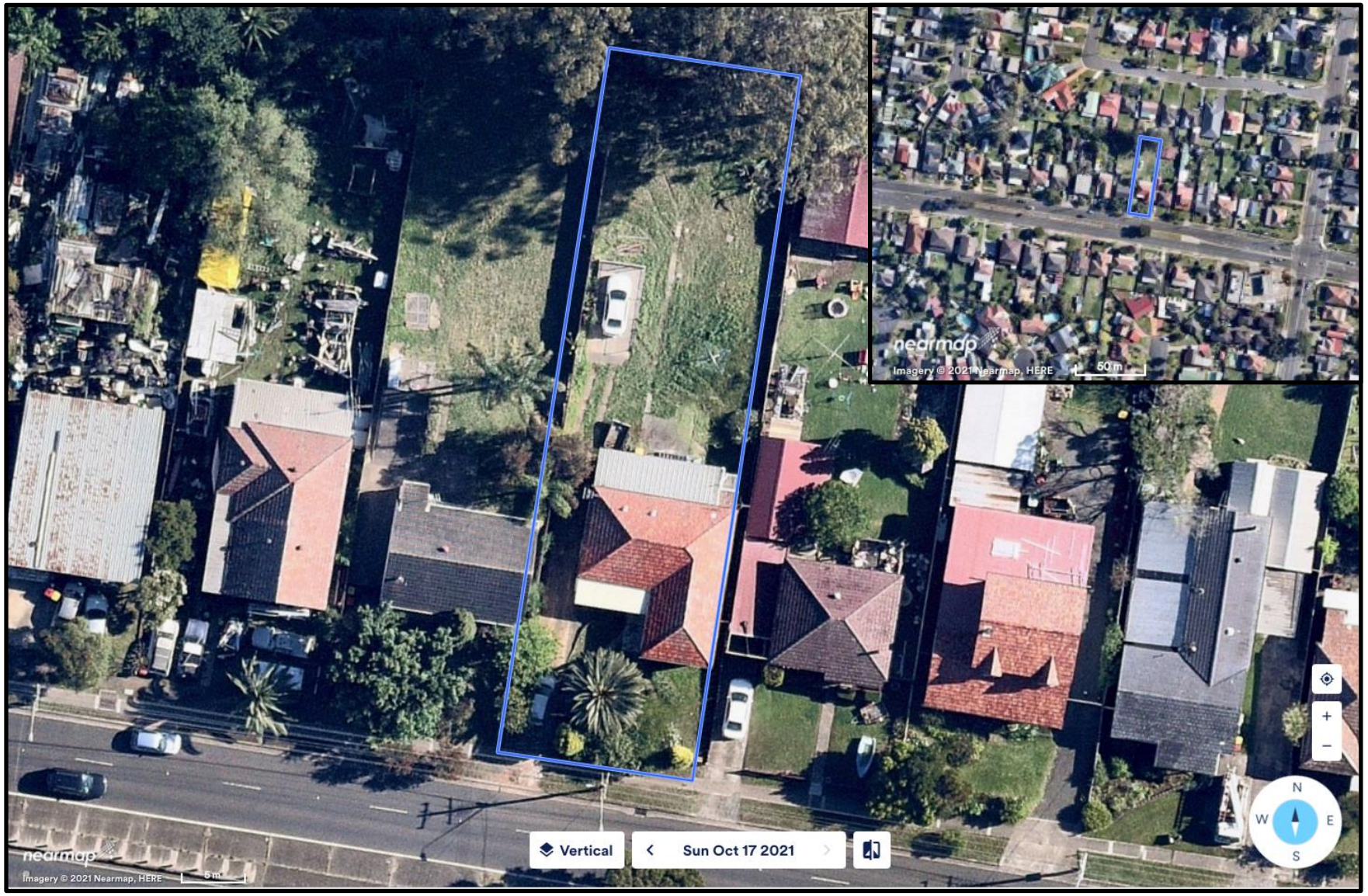
Figure 7. Aerial image of site taken in 2017. The detached garage on site has been demolished, however the concrete slab remains. The surrounding area remain largely unchanged from 2014. Scale bar = 5m; inserted image scale bar = 50m.

Source: Near Maps 2021

Figure 7	Aerial Image 2017
Project	225 Bungarribee Road, Blacktown NSW 2148

N

Figure 8. Aerial image of site taken in 2021. The site and surrounding area remain largely unchanged from 2017. Although the vegetative health appears to have improved. Scale bar = 5m; inserted image scale bar = 50m.



Source: Near Maps 2021

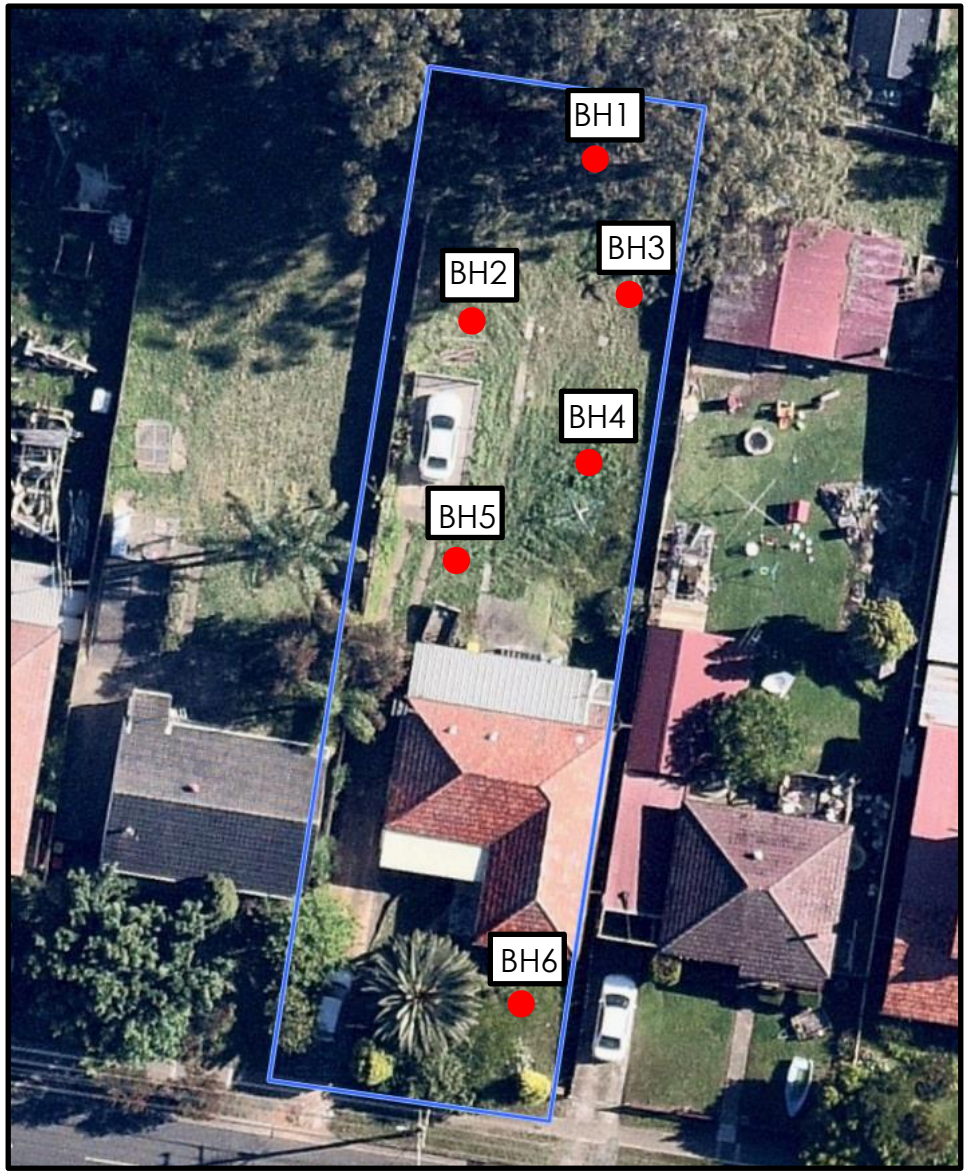
Figure 8	Aerial Image 2021
Project	225 Bungarribee Road, Blacktown NSW 2148

N

Figure 9. Locations and depths of samples collected across the site. Two samples were collected from each borehole and all boreholes were excavated using an extended hand auger.

Borehole location

Sample	Depth (m)
BH1.1	0.3
BH1.2	0.8
BH2.1	0.3
BH2.2 (D1)	0.8
BH3.1	0.3
BH3.2	0.8
BH4.1	0.3
BH4.2	0.8
BH5.1	0.3
BH5.2	0.8
BH6.1	0.3
BH6.2	0.8



Source: Near Maps 2021

Figure 9	Sample Locations
Project	225 Bungarribee Road, Blacktown NSW 2148

Figure 10. The site contained a single storey brick residential building with eternal metal blinds and wooden patio. The site had grass groundcover and healthy vegetation. Rear access on the eastern side of the site was via a degraded wooden gate. The fencing on the eastern perimeter was wooden and the steel paneled on the western perimeter.

Figure 11. A degraded concrete driveway extended along the western perimeter from the road, through double metal gates and into the rear of the site.

Figure 12. The rear of the site building had an enclosed steel paneled and glass verandah with a wooden staircase that led to the rear garden.

Figure 13. The rear of the site had healthy grass groundcover with minimal, healthy vegetation. The driveway terminated on a concrete platform enclosed with low metal fencing.

Figure 14. Beneath the verandah. The verandah was built on stilts and concrete slab.

Figure 15. The rear of the site contained healthy grass groundcover with dirt patches. The northern site perimeter was lined with a steel paneled fence.

Figure 16. Access along eastern perimeter of the site. The grass was overgrown with dirt patches.

Figure 17. The driveway transitioned from entirely concrete to concrete with grass through the center within the rear of the site. The concrete was persistently degraded along the length of indicating the driveway segments are the same age.

APPENDIX B

Analytical Results and Laboratory Reports

Table 21. Health Screening Levels, Ecological Screening Levels and Management Limits for TRH C_6-C_{10}, C_6-C_{10} F1*, >C_{10}-C_{16}, >C_{10}-C_{16} F2**, >C_{16}-C_{34} and >C_{34}-C_{40} * = F1 is calculated by subtracting the sum of BTEX concentrations from the C_6-C_{10} aliphatic hydrocarbon fraction. ** = F2 is calculated by subtracting Naphthalene from the >C_{10}-C_{16} aliphatic hydrocarbon fraction. NL = Not Limiting. Values are presented as mg/kg.

NEPM Assessment Criteria		TRH C6-C10	TRH C6-C10 – BTEX (F1)	TRH >C10-C16	TRH >C10-C16 – N (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, **Clay**, mg/kg			**50**		**280**		
NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg		**4,400**		**3,300**		**4,500**	**6,300**
NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **fine-grained soil**, mg/kg		**180**		**120**		**1,300**	**2,800**
NEPM 2013 **Management Limits** for Residential, Parkland and Public Open Space for **fine-grained soil**, mg/kg		**800**		**1,000**		**3,500**	**10,000**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	<25	<25	<25	<25	<90	<120
BH1.2	0.8	<25	<25	<25	<25	<90	<120
BH2.1	0.3	<25	<25	<25	<25	<90	<120
BH2.2	0.8	<25	<25	<25	<25	<90	<120
BH3.1	0.3	<25	<25	<25	<25	<90	<120
BH3.2	0.8	<25	<25	<25	<25	<90	<120
BH4.1	0.3	<25	<25	<25	<25	<90	<120
BH4.2	0.8	<25	<25	<25	<25	<90	<120
BH5.1	0.3	<25	<25	<25	<25	<90	<120
BH5.2	0.8	<25	<25	<25	<25	<90	<120
BH6.1	0.3	<25	<25	<25	<25	<90	<120
BH6.2	0.8	<25	<25	<25	<25	<90	<120
D1	Duplicate of BH2.2	<25	<25	<25	<25	<90	<120

Table 22. Health Screening Levels and Ecological Screening Levels for Benzene, Toluene, Ethylbenzene, Xylenes (BTEX). NL = Not Limiting. Values are presented as mg/kg.

NEPM 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 Residential Soil **HSL-A** for direct contact, mg/kg		**100**	**14,000**	**4,500**	**12,000**
NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **fine-grained soil**, mg/kg		**65**	**105**	**125**	**45**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	<0.1	<0.1	<0.1	<0.3
BH1.2	0.8	<0.1	<0.1	<0.1	<0.3
BH2.1	0.3	<0.1	<0.1	<0.1	<0.3
BH2.2	0.8	<0.1	<0.1	<0.1	<0.3
BH3.1	0.3	<0.1	<0.1	<0.1	<0.3
BH3.2	0.8	<0.1	<0.1	<0.1	<0.3
BH4.1	0.3	<0.1	<0.1	<0.1	<0.3
BH4.2	0.8	<0.1	<0.1	<0.1	<0.3
BH5.1	0.3	<0.1	<0.1	<0.1	<0.3
BH5.2	0.8	<0.1	<0.1	<0.1	<0.3
BH6.1	0.3	<0.1	<0.1	<0.1	<0.3
BH6.2	0.8	<0.1	<0.1	<0.1	<0.3
D1	Duplicate of BH2.2	<0.1	<0.1	<0.1	<0.3

Table 23. Health Investigation Levels, Ecological Investigation Levels and Ecological Screening Levels for Polycyclic Aromatic Hydrocarbons (PAH). The carcinogenic PAHs (Benzo(a)anthracene (BaAnt); Benzo(a)pyrene (BaPyr); Benzo(b+j)fluoranthene (BbjFl); Benzo(k)fluoranthene (BkFl); Benzo(g,h,i)perylene (BghiPer); Chrysene (Chr); Dibenz(a,h)anthracene (DBahAnt); and Indeno(1,2,3-c,d)pyrene (Ipyr)) 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 PAH. Values are presented as mg/kg.

NEPM Assessment Criteria		Naphthalene	BaPyr (B(a)P)	Carcinogenic PAHs (as BaP TEQ)	Total PAH (18)
NEPM 2013 Residential Soil **HSL-A** for Vapour Intrusion, 0-<1m depth, **Clay**, mg/kg		**5**			
NEPM 2013 Residential Soil **HSL-A** for direct contact, mg/kg		**1,400**			
NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg		**170**			
NEPM 2013 Soil **ESL** for Urban, Residential and Public Open Spaces for **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	mg/kg	mg/kg
BH1.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH1.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
BH2.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH2.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
BH3.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH3.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
BH4.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH4.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
BH5.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH5.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
BH6.1	0.3	<0.1	Not Analysed	Not Analysed	Not Analysed
BH6.2	0.8	<0.1	Not Analysed	Not Analysed	Not Analysed
D1	Duplicate of BH2.2	<0.1	Not Analysed	Not Analysed	Not Analysed

Table 24. Health Investigation Levels and Ecological Investigation Levels for heavy metals. Values are presented as mg/kg.

NEPM 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**	**6,000**	**300**	**400**	**7,400**	**40**
NEPM 2013 Soil Generic **EIL** for Urban Residential and Public Open Space, mg/kg		**100**							
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	**6**	<0.3	**17**	**20**	**20**	**5.2**	**40**	<0.05
BH1.2	0.8	**9**	<0.3	**14**	**34**	**12**	**8.6**	**52**	<0.05
BH2.1	0.3	**6**	<0.3	**16**	**21**	**13**	**4.6**	**41**	<0.05
BH2.2	0.8	**7**	<0.3	**13**	**36**	**14**	**17**	**87**	<0.05
BH3.1	0.3	**4**	**0.8**	**11**	**35**	**45**	**5.9**	**230**	<0.05
BH3.2	0.8	**5**	**0.6**	**15**	**60**	**64**	**7.8**	**190**	<0.05
BH4.1	0.3	**3**	**0.4**	**10**	**21**	**55**	**7.1**	**120**	<0.05
BH4.2	0.8	**5**	<0.3	**13**	**18**	**15**	**4.6**	**34**	<0.05
BH5.1	0.3	**5**	**1.1**	**12**	**22**	**50**	**6.2**	**170**	<0.05
BH5.2	0.8	**6**	**0.3**	**13**	**20**	**27**	**5.8**	**86**	<0.05
BH6.1	0.3	**6**	<0.3	**14**	**27**	**19**	**11**	**49**	<0.05
BH6.2	0.8	**5**	<0.3	**14**	**30**	**10**	**15**	**62**	<0.05
D1	Duplicate of BH2.2	**7**	<0.3	**14**	**38**	**13**	**18**	**92**	<0.05

Table 25. Health Investigation Levels and Ecological Investigation Levels for pesticides. Values are presented as mg/kg.

NEPM Assessment Criteria		HCB	Heptachlor	Chlordane	Aldrin & Dieldrin	Endrin	DDT	DDT+DDE +DDT
NEPM 2013 Residential Soil **HIL-A**, mg/kg		**10**	**6**	**50**	**6**	**10**		**240**
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
BH1.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH1.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH2.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH2.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH3.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH3.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH4.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH4.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH5.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH5.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH6.1	0.3	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
BH6.2	0.8	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6
D1	Duplicate of BH2.2	<0.1	<0.2	<0.2	<0.3	<0.2	<0.2	<0.6

NEPM Assessment Criteria		Endosulfan	Mirex	Methoxychlor	Total CLP OC Pesticides	Total OP Pesticides
NEPM 2013 Residential Soil **HIL-A**, mg/kg		**270**	**10**	**300**		
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH1.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
BH2.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH2.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
BH3.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH3.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
BH4.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH4.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
BH5.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH5.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
BH6.1	0.3	<0.5	<0.1	<0.1	<1	<1.7
BH6.2	0.8	<0.5	<0.1	<0.1	<1	<1.7
D1	Duplicate of BH2.2	<0.5	<0.1	<0.1	<1	<1.7

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

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

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

Project Name/No: NS190
Purchase Order No:
Results Required By: Next day / 3 days / Standard (Circle one)
Telephone: Nick mobile: 0416 680 375 Luke's mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Heavy Metals	OCP/PP	Asbestos
BH1.1	15.10.21	1		✓		2	✓	✓	✓	✓	✓
BH1.2	"	2		✓		1	✓	✓	✓	✓	
BH2.1	"	3		✓		2	✓	✓	✓	✓	✓
BH2.2	"	4		✓		1	✓	✓	✓	✓	
BH3.1	"	5		✓		2	✓	✓	✓	✓	✓
BH3.2	"	6		✓		1	✓	✓	✓	✓	
BH4.1	"	7		✓		2	✓	✓	✓	✓	✓
BH4.2	"	8		✓		1	✓	✓	✓	✓	
BH5.1	"	9		✓		2	✓	✓	✓	✓	✓

SGS EHS Sydney COC
SE224701

Relinquished By:	Date/Time:	Received By: George Zhi	Date/Time 15/10/21 @ 3:25pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments: Email Reports and Invoices to all emails => ① Nick@neoconsulting.com.au ② Luke@neoconsulting.com.au ③ admin@neoconsulting.com.au ④ Oskar@neoconsulting.com.au ⑤ sarah@neoconsulting.com.au ⑥ Ehsan@neoconsulting.com.au		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

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

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

Contact Name: Nick Cattubiano
Luke Brevu

Project Name/No: N 5190
Purchase Order No:
Results Required By: Next day / 3 days / Standard (Circle one)
Telephone: Nick's mobile: 0416 680 375 Luke's mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TRH	BTEX	Heavy Metals	OCP/OPP	Asbestos
BH5.2	15.10.21	10		✓		1	✓	✓	✓	✓	
BH6.1	"	11		✓		2	✓	✓	✓	✓	✓
BH6.2	"	12		✓		1	✓	✓	✓	✓	
D1	"	13		✓		1	✓	✓	✓	✓	

Relinquished By:	Date/Time:	Received By: George Zhi	Date/Time 15/10/21 @ 3:25pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments: Email Report and Invoices to all emails => ① Nick@neoconsulting.com.au ② Luke@neoconsulting.com.au ③ admin@neoconsulting.com.au ④ Oskar@neoconsulting.com.au ⑤ Sarah@neoconsulting.com.au ⑥ Ehsan@neoconsulting.com.au		

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5190**
Order Number	**N5190**
Samples	13

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	**SE224701 R0**
Date Received	15/10/2021
Date Reported	22/10/2021

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 Yusuf Kuthpudin.

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

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: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

OC Pesticides in Soil [AN420] Tested: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 18/10/2021 (continued)

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 18/10/2021 (continued)

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
Arsenic, As	mg/kg	1	6	9	6	7	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	0.8
Chromium, Cr	mg/kg	0.5	17	14	16	13	11
Copper, Cu	mg/kg	0.5	20	34	21	36	35
Lead, Pb	mg/kg	1	20	12	13	14	45
Nickel, Ni	mg/kg	0.5	5.2	8.6	4.6	17	5.9
Zinc, Zn	mg/kg	2	40	52	41	87	230

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
Arsenic, As	mg/kg	1	5	3	5	5	6
Cadmium, Cd	mg/kg	0.3	0.6	0.4	<0.3	1.1	0.3
Chromium, Cr	mg/kg	0.5	15	10	13	12	13
Copper, Cu	mg/kg	0.5	60	21	18	22	20
Lead, Pb	mg/kg	1	64	55	15	50	27
Nickel, Ni	mg/kg	0.5	7.8	7.1	4.6	6.2	5.8
Zinc, Zn	mg/kg	2	190	120	34	170	86

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
Arsenic, As	mg/kg	1	6	5	7
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	14	14
Copper, Cu	mg/kg	0.5	27	30	38
Lead, Pb	mg/kg	1	19	10	13
Nickel, Ni	mg/kg	0.5	11	15	18
Zinc, Zn	mg/kg	2	49	62	92

Mercury in Soil [AN312] Tested: 21/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 18/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH1.2 SOIL - 15/10/2021 SE224701.002	BH2.1 SOIL - 15/10/2021 SE224701.003	BH2.2 SOIL - 15/10/2021 SE224701.004	BH3.1 SOIL - 15/10/2021 SE224701.005
% Moisture	%w/w	1	12.2	15.5	16.1	9.0	20.0

PARAMETER	UOM	LOR	BH3.2 SOIL - 15/10/2021 SE224701.006	BH4.1 SOIL - 15/10/2021 SE224701.007	BH4.2 SOIL - 15/10/2021 SE224701.008	BH5.1 SOIL - 15/10/2021 SE224701.009	BH5.2 SOIL - 15/10/2021 SE224701.010
% Moisture	%w/w	1	16.5	19.3	18.7	19.4	18.6

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011	BH6.2 SOIL - 15/10/2021 SE224701.012	D1 SOIL - 15/10/2021 SE224701.013
% Moisture	%w/w	1	17.1	19.3	8.1

Fibre Identification in soil [AN602] Tested: 21/10/2021

PARAMETER	UOM	LOR	BH1.1 SOIL - 15/10/2021 SE224701.001	BH2.1 SOIL - 15/10/2021 SE224701.003	BH3.1 SOIL - 15/10/2021 SE224701.005	BH4.1 SOIL - 15/10/2021 SE224701.007	BH5.1 SOIL - 15/10/2021 SE224701.009
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH6.1 SOIL - 15/10/2021 SE224701.011
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01

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

FOOTNOTES

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

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

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

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

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

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

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

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

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

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

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5190**
Order Number	**N5190**
Samples	6

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	**SE224701 R0**
Date Received	15 Oct 2021
Date Reported	22 Oct 2021

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 Yusuf Kuthpudin .

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

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*
SE224701.001	BH1.1	Soil	226g Clay,Sand,Soil, Rocks	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE224701.003	BH2.1	Soil	261g Clay,Sand,Rock s	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE224701.005	BH3.1	Soil	213g Clay,Sand,Soil, Rocks	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE224701.007	BH4.1	Soil	166g Clay,Sand,Rock s	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE224701.009	BH5.1	Soil	145g Clay,Sand,soil, Rocks	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE224701.011	BH6.1	Soil	240g Clay,Sand,Soil, Rocks	15 Oct 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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 .

STATEMENT OF QA/QC PERFORMANCE

SE224701 R0

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5190**
Order Number	**N5190**
Samples	13

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	**SE224701 R0**
Date Received	15 Oct 2021
Date Reported	22 Oct 2021

COMMENTS

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

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

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

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	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	13 Soil
Date documentation received	15/10/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	14°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE224701 R0

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

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

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

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021
BH2.1	SE224701.003	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021
BH3.1	SE224701.005	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021
BH4.1	SE224701.007	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021
BH5.1	SE224701.009	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021
BH6.1	SE224701.011	LB235222	15 Oct 2021	15 Oct 2021	15 Oct 2022	21 Oct 2021	15 Oct 2022	22 Oct 2021

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH1.2	SE224701.002	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH2.1	SE224701.003	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH2.2	SE224701.004	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH3.1	SE224701.005	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH3.2	SE224701.006	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH4.1	SE224701.007	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH4.2	SE224701.008	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH5.1	SE224701.009	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH5.2	SE224701.010	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH6.1	SE224701.011	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
BH6.2	SE224701.012	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021
D1	SE224701.013	LB235237	15 Oct 2021	15 Oct 2021	12 Nov 2021	21 Oct 2021	12 Nov 2021	22 Oct 2021

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH1.2	SE224701.002	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH2.1	SE224701.003	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH2.2	SE224701.004	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH3.1	SE224701.005	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH3.2	SE224701.006	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH4.1	SE224701.007	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH4.2	SE224701.008	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH5.1	SE224701.009	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH5.2	SE224701.010	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH6.1	SE224701.011	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
BH6.2	SE224701.012	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021
D1	SE224701.013	LB235037	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	23 Oct 2021	22 Oct 2021

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH1.2	SE224701.002	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.1	SE224701.003	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.2	SE224701.004	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH3.1	SE224701.005	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH3.2	SE224701.006	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.1	SE224701.007	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.2	SE224701.008	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.1	SE224701.009	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.2	SE224701.010	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.1	SE224701.011	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.2	SE224701.012	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
D1	SE224701.013	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH1.2	SE224701.002	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.1	SE224701.003	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.2	SE224701.004	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH3.1	SE224701.005	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021

HOLDING TIME SUMMARY

SE224701 R0

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

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

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

OP Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3.2	SE224701.006	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.1	SE224701.007	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.2	SE224701.008	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.1	SE224701.009	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.2	SE224701.010	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.1	SE224701.011	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.2	SE224701.012	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
D1	SE224701.013	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021

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
BH1.1	SE224701.001	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH1.2	SE224701.002	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH2.1	SE224701.003	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH2.2	SE224701.004	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH3.1	SE224701.005	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH3.2	SE224701.006	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH4.1	SE224701.007	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH4.2	SE224701.008	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH5.1	SE224701.009	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH5.2	SE224701.010	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH6.1	SE224701.011	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
BH6.2	SE224701.012	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021
D1	SE224701.013	LB235231	15 Oct 2021	15 Oct 2021	13 Apr 2022	21 Oct 2021	13 Apr 2022	22 Oct 2021

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
BH1.1	SE224701.001	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH1.2	SE224701.002	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.1	SE224701.003	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH2.2	SE224701.004	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH3.1	SE224701.005	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH3.2	SE224701.006	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.1	SE224701.007	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH4.2	SE224701.008	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.1	SE224701.009	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH5.2	SE224701.010	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.1	SE224701.011	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
BH6.2	SE224701.012	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021
D1	SE224701.013	LB235015	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	27 Nov 2021	22 Oct 2021

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH1.2	SE224701.002	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH2.1	SE224701.003	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH2.2	SE224701.004	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH3.1	SE224701.005	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH3.2	SE224701.006	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH4.1	SE224701.007	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH4.2	SE224701.008	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH5.1	SE224701.009	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH5.2	SE224701.010	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH6.1	SE224701.011	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH6.2	SE224701.012	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
D1	SE224701.013	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1.1	SE224701.001	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH1.2	SE224701.002	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH2.1	SE224701.003	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021

HOLDING TIME SUMMARY

SE224701 R0

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2.2	SE224701.004	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH3.1	SE224701.005	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH3.2	SE224701.006	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH4.1	SE224701.007	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH4.2	SE224701.008	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH5.1	SE224701.009	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH5.2	SE224701.010	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH6.1	SE224701.011	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
BH6.2	SE224701.012	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021
D1	SE224701.013	LB235025	15 Oct 2021	15 Oct 2021	29 Oct 2021	18 Oct 2021	29 Oct 2021	22 Oct 2021

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	91
	BH1.2	SE224701.002	%	60 - 130%	89
	BH2.1	SE224701.003	%	60 - 130%	90
	BH2.2	SE224701.004	%	60 - 130%	91
	BH3.1	SE224701.005	%	60 - 130%	94
	BH3.2	SE224701.006	%	60 - 130%	93
	BH4.1	SE224701.007	%	60 - 130%	94
	BH4.2	SE224701.008	%	60 - 130%	90
	BH5.1	SE224701.009	%	60 - 130%	89
	BH5.2	SE224701.010	%	60 - 130%	97
	BH6.1	SE224701.011	%	60 - 130%	98
	BH6.2	SE224701.012	%	60 - 130%	95
	D1	SE224701.013	%	60 - 130%	91

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	90
	BH1.2	SE224701.002	%	60 - 130%	82
	BH2.1	SE224701.003	%	60 - 130%	84
	BH2.2	SE224701.004	%	60 - 130%	86
	BH3.1	SE224701.005	%	60 - 130%	79
	BH3.2	SE224701.006	%	60 - 130%	89
	BH4.1	SE224701.007	%	60 - 130%	86
	BH4.2	SE224701.008	%	60 - 130%	86
	BH5.1	SE224701.009	%	60 - 130%	85
	BH5.2	SE224701.010	%	60 - 130%	85
	BH6.1	SE224701.011	%	60 - 130%	84
	BH6.2	SE224701.012	%	60 - 130%	87
	D1	SE224701.013	%	60 - 130%	83
d14-p-terphenyl (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	85
	BH1.2	SE224701.002	%	60 - 130%	89
	BH2.1	SE224701.003	%	60 - 130%	91
	BH2.2	SE224701.004	%	60 - 130%	91
	BH3.1	SE224701.005	%	60 - 130%	82
	BH3.2	SE224701.006	%	60 - 130%	96
	BH4.1	SE224701.007	%	60 - 130%	93
	BH4.2	SE224701.008	%	60 - 130%	87
	BH5.1	SE224701.009	%	60 - 130%	94
	BH5.2	SE224701.010	%	60 - 130%	90
	BH6.1	SE224701.011	%	60 - 130%	93
	BH6.2	SE224701.012	%	60 - 130%	89
	D1	SE224701.013	%	60 - 130%	87

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	81
	BH1.2	SE224701.002	%	60 - 130%	82
	BH2.1	SE224701.003	%	60 - 130%	78
	BH2.2	SE224701.004	%	60 - 130%	79
	BH3.1	SE224701.005	%	60 - 130%	78
	BH3.2	SE224701.006	%	60 - 130%	81
	BH4.1	SE224701.007	%	60 - 130%	80
	BH4.2	SE224701.008	%	60 - 130%	79
	BH5.1	SE224701.009	%	60 - 130%	76
	BH5.2	SE224701.010	%	60 - 130%	80
	BH6.1	SE224701.011	%	60 - 130%	78
	BH6.2	SE224701.012	%	60 - 130%	80
	D1	SE224701.013	%	60 - 130%	78
d4-1,2-dichloroethane (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	100
	BH1.2	SE224701.002	%	60 - 130%	101
	BH2.1	SE224701.003	%	60 - 130%	100
	BH2.2	SE224701.004	%	60 - 130%	102

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH3.1	SE224701.005	%	60 - 130%	97
	BH3.2	SE224701.006	%	60 - 130%	102
	BH4.1	SE224701.007	%	60 - 130%	104
	BH4.2	SE224701.008	%	60 - 130%	103
	BH5.1	SE224701.009	%	60 - 130%	98
	BH5.2	SE224701.010	%	60 - 130%	103
	BH6.1	SE224701.011	%	60 - 130%	99
	BH6.2	SE224701.012	%	60 - 130%	102
	D1	SE224701.013	%	60 - 130%	101
d8-toluene (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	103
	BH1.2	SE224701.002	%	60 - 130%	104
	BH2.1	SE224701.003	%	60 - 130%	102
	BH2.2	SE224701.004	%	60 - 130%	104
	BH3.1	SE224701.005	%	60 - 130%	99
	BH3.2	SE224701.006	%	60 - 130%	105
	BH4.1	SE224701.007	%	60 - 130%	106
	BH4.2	SE224701.008	%	60 - 130%	106
	BH5.1	SE224701.009	%	60 - 130%	100
	BH5.2	SE224701.010	%	60 - 130%	104
	BH6.1	SE224701.011	%	60 - 130%	101
	BH6.2	SE224701.012	%	60 - 130%	105
	D1	SE224701.013	%	60 - 130%	104

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	81
	BH1.2	SE224701.002	%	60 - 130%	82
	BH2.1	SE224701.003	%	60 - 130%	78
	BH2.2	SE224701.004	%	60 - 130%	79
	BH3.1	SE224701.005	%	60 - 130%	78
	BH3.2	SE224701.006	%	60 - 130%	81
	BH4.1	SE224701.007	%	60 - 130%	80
	BH4.2	SE224701.008	%	60 - 130%	79
	BH5.1	SE224701.009	%	60 - 130%	76
	BH5.2	SE224701.010	%	60 - 130%	80
	BH6.1	SE224701.011	%	60 - 130%	78
	BH6.2	SE224701.012	%	60 - 130%	80
	D1	SE224701.013	%	60 - 130%	78
d4-1,2-dichloroethane (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	100
	BH1.2	SE224701.002	%	60 - 130%	101
	BH2.1	SE224701.003	%	60 - 130%	100
	BH2.2	SE224701.004	%	60 - 130%	102
	BH3.1	SE224701.005	%	60 - 130%	97
	BH3.2	SE224701.006	%	60 - 130%	102
	BH4.1	SE224701.007	%	60 - 130%	104
	BH4.2	SE224701.008	%	60 - 130%	103
	BH5.1	SE224701.009	%	60 - 130%	98
	BH5.2	SE224701.010	%	60 - 130%	103
	BH6.1	SE224701.011	%	60 - 130%	99
	BH6.2	SE224701.012	%	60 - 130%	102
	D1	SE224701.013	%	60 - 130%	101
d8-toluene (Surrogate)	BH1.1	SE224701.001	%	60 - 130%	103
	BH1.2	SE224701.002	%	60 - 130%	104
	BH2.1	SE224701.003	%	60 - 130%	102
	BH2.2	SE224701.004	%	60 - 130%	104
	BH3.1	SE224701.005	%	60 - 130%	99
	BH3.2	SE224701.006	%	60 - 130%	105
	BH4.1	SE224701.007	%	60 - 130%	106
	BH4.2	SE224701.008	%	60 - 130%	106
	BH5.1	SE224701.009	%	60 - 130%	100
	BH5.2	SE224701.010	%	60 - 130%	104

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH6.1	SE224701.011	%	60 - 130%	101
	BH6.2	SE224701.012	%	60 - 130%	105
	D1	SE224701.013	%	60 - 130%	104

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB235237.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB235015.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB235015.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	92
		d14-p-terphenyl (Surrogate)	%	-	90

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

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

Sample Number	Parameter	Units	LOR	Result
LB235231.001	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
LB235015.001	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

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.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB235015.001		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB235025.001	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
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	105
		d8-toluene (Surrogate)	%	-	106
		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
LB235025.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	105

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

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

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

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.004	LB235237.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE224701.013	LB235237.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235037.011	% Moisture	%w/w	1	18.6	19.5	35	5
SE224746.007	LB235037.022	% Moisture	%w/w	1	17.9	18.1	36	1

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235015.014		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	30	2
SE224746.007	LB235015.025		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0

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

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

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

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

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

OC Pesticides in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224746.007	LB235015.025		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.13	30	3

OP Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235015.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	2

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 %
SE224701.004	LB235231.014	Arsenic, As	mg/kg	1	7	6	45	5
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	13	12	34	7
		Copper, Cu	mg/kg	0.5	36	34	31	7
		Nickel, Ni	mg/kg	0.5	17	16	33	3
		Lead, Pb	mg/kg	1	14	11	38	28
		Zinc, Zn	mg/kg	2	87	83	32	4
SE224701.013	LB235231.024	Arsenic, As	mg/kg	1	7	7	44	8
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	14	13	34	6
		Copper, Cu	mg/kg	0.5	38	36	31	5
		Nickel, Ni	mg/kg	0.5	18	17	33	6
		Lead, Pb	mg/kg	1	13	16	37	18
		Zinc, Zn	mg/kg	2	92	86	32	6

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235015.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE224746.007	LB235015.025		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0

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

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224746.007	LB235015.025		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235025.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.3	10.7	50	4
			d8-toluene (Surrogate)	mg/kg	-	10.4	11.0	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.0	8.3	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE224746.007	LB235025.025	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	9.5	50	1
			d8-toluene (Surrogate)	mg/kg	-	9.9	9.4	50	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.1	7.2	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224701.010	LB235025.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.3	10.7	30	4
			d8-toluene (Surrogate)	mg/kg	-	10.4	11.0	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.0	8.3	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE224746.007	LB235025.025		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	9.5	30	1
			d8-toluene (Surrogate)	mg/kg	-	9.9	9.4	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.1	7.2	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235237.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	112

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235015.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	120
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	106
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	114
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	104
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	121
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	117
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	102

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235015.002		Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	90
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	2	60 - 140	100
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	2	60 - 140	101
		Ethion	mg/kg	0.2	1.6	2	60 - 140	78
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		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 %
LB235231.002		Arsenic, As	mg/kg	1	350	318.22	80 - 120	110
		Cadmium, Cd	mg/kg	0.3	4.5	4.81	70 - 130	94
		Chromium, Cr	mg/kg	0.5	39	38.31	80 - 120	101
		Copper, Cu	mg/kg	0.5	320	290	80 - 120	110
		Nickel, Ni	mg/kg	0.5	190	187	80 - 120	103
		Lead, Pb	mg/kg	1	95	89.9	80 - 120	106
		Zinc, Zn	mg/kg	2	290	273	80 - 120	105

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235015.002		TRH C10-C14	mg/kg	20	43	40	60 - 140	108
		TRH C15-C28	mg/kg	45	45	40	60 - 140	113
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	78
	TRH F Bands	TRH >C10-C16	mg/kg	25	44	40	60 - 140	110
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	98
		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 %
LB235025.002	Monocyclic	Benzene	mg/kg	0.1	5.0	5	60 - 140	101
	Aromatic	Toluene	mg/kg	0.1	4.9	5	60 - 140	99
		Ethylbenzene	mg/kg	0.1	5.2	5	60 - 140	104
		m/p-xylene	mg/kg	0.2	11	10	60 - 140	114
		o-xylene	mg/kg	0.1	5.5	5	60 - 140	110
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.0	10	70 - 130	110
		d8-toluene (Surrogate)	mg/kg	-	11.0	10	70 - 130	110
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	10	70 - 130	90

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235025.002		TRH C6-C10	mg/kg	25	78	92.5	60 - 140	84
		TRH C6-C9	mg/kg	20	69	80	60 - 140	87
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.0	10	70 - 130	110
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	10	70 - 130	90
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	46	62.5	60 - 140	74

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

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

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224730.001	LB235237.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	90

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224701.001	LB235015.004		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.3	<0.1	0.2	127
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	110
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	123
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	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	112
			Endrin	mg/kg	0.2	0.3	<0.2	0.2	127
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.3	<0.1	0.2	137
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	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	0.14	-	92

OP Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224701.001	LB235015.004		Dichlorvos	mg/kg	0.5	1.6	<0.5	2	80
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.9	<0.5	2	95
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	<0.2	2	92
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.7	<0.2	2	83
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	7.0	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	92
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	88

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%
SE224730.001	LB235231.004	Arsenic, As	mg/kg	1	48	3	50	90
		Cadmium, Cd	mg/kg	0.3	43	<0.3	50	85
		Chromium, Cr	mg/kg	0.5	81	50	50	62 ④
		Copper, Cu	mg/kg	0.5	63	18	50	91
		Nickel, Ni	mg/kg	0.5	67	29	50	77
		Lead, Pb	mg/kg	1	56	12	50	88

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

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224730.001	LB235231.004	Zinc, Zn	mg/kg	2	68	23	50	90

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224701.001	LB235015.004		TRH C10-C14	mg/kg	20	50	<20	40	125
			TRH C15-C28	mg/kg	45	<45	<45	40	108
			TRH C29-C36	mg/kg	45	<45	<45	40	75
			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	TRH >C10-C16	mg/kg	25	42	<25	40	105
		Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	42	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	93
			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%
SE224701.001	LB235025.004	Monocyclic	Benzene	mg/kg	0.1	4.4	<0.1	5	87
		Aromatic	Toluene	mg/kg	0.1	4.4	<0.1	5	89
			Ethylbenzene	mg/kg	0.1	4.9	<0.1	5	97
			m/p-xylene	mg/kg	0.2	11	<0.2	10	107
			o-xylene	mg/kg	0.1	5.2	<0.1	5	104
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.1	10.0	10	101
			d8-toluene (Surrogate)	mg/kg	-	10.1	10.3	10	101
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.9	8.1	10	79
		Totals	Total Xylenes	mg/kg	0.3	16	<0.3	-	-
			Total BTEX	mg/kg	0.6	30	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224701.001	LB235025.004		TRH C6-C10	mg/kg	25	74	<25	92.5	80
			TRH C6-C9	mg/kg	20	67	<20	80	83
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.1	10.0	10	101
			d8-toluene (Surrogate)	mg/kg	-	10.1	10.3	10	101
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.9	8.1	-	79
		VPH F	Benzene (F0)	mg/kg	0.1	4.4	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	45	<25	62.5	71

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

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

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

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

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

No matrix spike duplicates were required for this job.

id samples expressed on a dry weight basis.

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

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

APPENDIX C

Proposed Plans and Relevant Site Data

Property Report

225 BUNGARRIBEE ROAD BLACKTOWN 2148

Property Details

Address:	225 BUNGARRIBEE ROAD BLACKTOWN 2148
Lot/Section /Plan No:	8/-/DP26584
Council:	BLACKTOWN 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	Blacktown Local Environmental Plan 2015 (pub. 26-5-2015)
Land Zoning	R2 - Low Density Residential: (pub. 26-5-2015)
Height Of Building	9 m
Floor Space Ratio	NA
Minimum Lot Size	450 m²
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Local Provisions	30 km

Detailed planning information

State Environmental Planning Policies which apply to this property

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

- State Environmental Planning Policy (Affordable Rental Housing) 2009: Land Application (pub. 31-7-2009)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Concurrences and Consents) 2018: Land Application (pub. 21-12-2018)

- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017: Land Application (pub. 1-9-2017)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004: Land Application (pub. 31-3-2004)
- State Environmental Planning Policy (Infrastructure) 2007: Land Application (pub. 21-12-2007)
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007: Land Application (pub. 16-2-2007)
- State Environmental Planning Policy (Primary Production and Rural Development) 2019: Land Application (pub. 28-2-2019)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Excluded (pub. 17-9-2021)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Subject Land (pub. 25-8-2017)
- State Environmental Planning Policy No 19—Bushland in Urban Areas: Land Application (pub. 24-10-1986)
- State Environmental Planning Policy No 21—Caravan Parks: Land Application (pub. 24-4-1992)
- State Environmental Planning Policy No 33—Hazardous and Offensive Development: Land Application (pub. 13-3-1992)
- State Environmental Planning Policy No 36—Manufactured Home Estates: Land Application (pub. 16-7-1993)
- State Environmental Planning Policy No 50—Canal Estate Development: Land Application (pub. 10-11-1997)
- State Environmental Planning Policy No 55—Remediation of Land: Land Application (pub. 28-8-1998)
- State Environmental Planning Policy No 64—Advertising and Signage: Land Application (pub. 16-3-2001)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)
- State Environmental Planning Policy No 70—Affordable Housing (Revised Schemes): Land Application (pub. 31-5-2002)
- Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997): Land Application (pub. 7-11-1997)
- Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997): Sub Catchment Boundaries (pub. 7-11-1997)

Other matters affecting the property

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

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

Job No 30694249

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Nick Caltabiano	**Caller Id:**	3063293	**Phone:**	0423 834 874
Company:	Neo Consulting				
Address:	186 Riverstone Parade Riverstone NSW 2765	**Email:**	neo.searches.dbyd@gmail.com		

Dig Site and Enquiry Details

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

User Reference: Blacktown
Working on Behalf of: Private

Enquiry Date:	Start Date:	End Date:
13/10/2021	15/10/2021	29/10/2021

Address:
227 Bungarribee Road
Blacktown NSW 2148

Job Purpose:	Onsite Activities:
Excavation	Vertical Boring
Location of Workplace:	**Location in Road:**
Private	

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

Notes/Description of Works:
Not supplied

Your Responsibilities and Duty of Care

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

Asset Owner Details

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

Seq. No.	Authority Name	Phone	Status
204057000	Endeavour Energy	(02) 9853 4161	NOTIFIED
204057001	Jemena Gas West	1300 880 906	NOTIFIED
204056998	NBN Co NswAct	1800 687 626	NOTIFIED
204057002	Sydney Water	13 20 92	NOTIFIED
204056999	Telstra NSW Central	1800 653 935	NOTIFIED

END OF UTILITIES LIST

Proposed 12 Rooms Boarding House
at 225 Bungarribee Rd Blacktown NSW

CERTIFIED BY
EEC
EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL

ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Cover Page

FOR DA ONLY

Project number 2020-19

Date Feb-2021

Drawn by SL/GF

Printed 9/09/2021 5:05:22 PM

Checked by GF

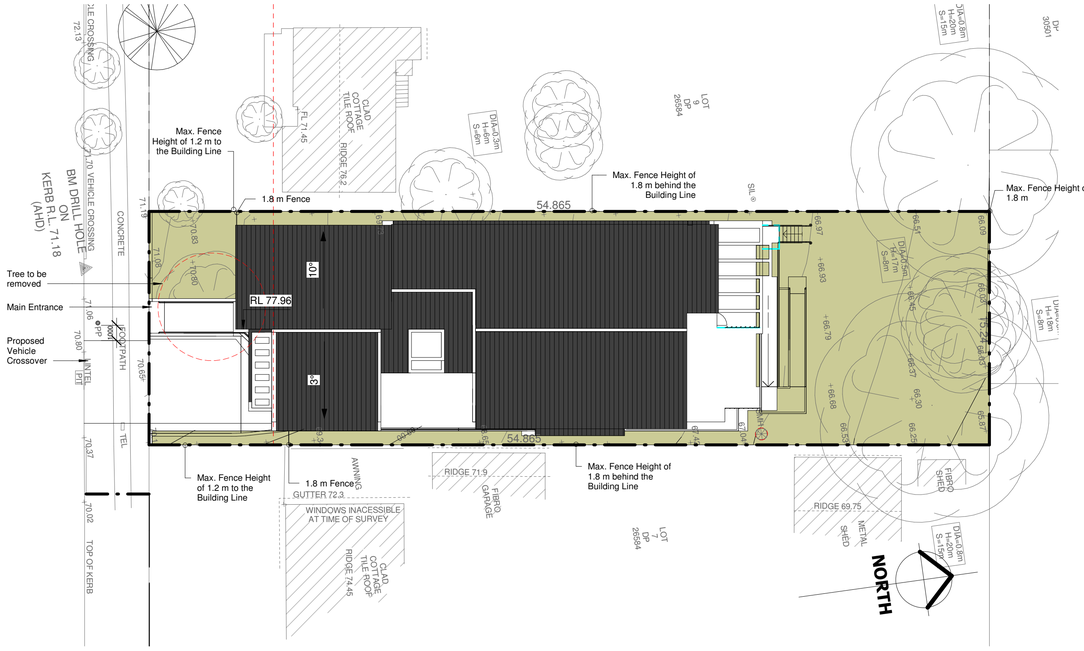
A000

Scale

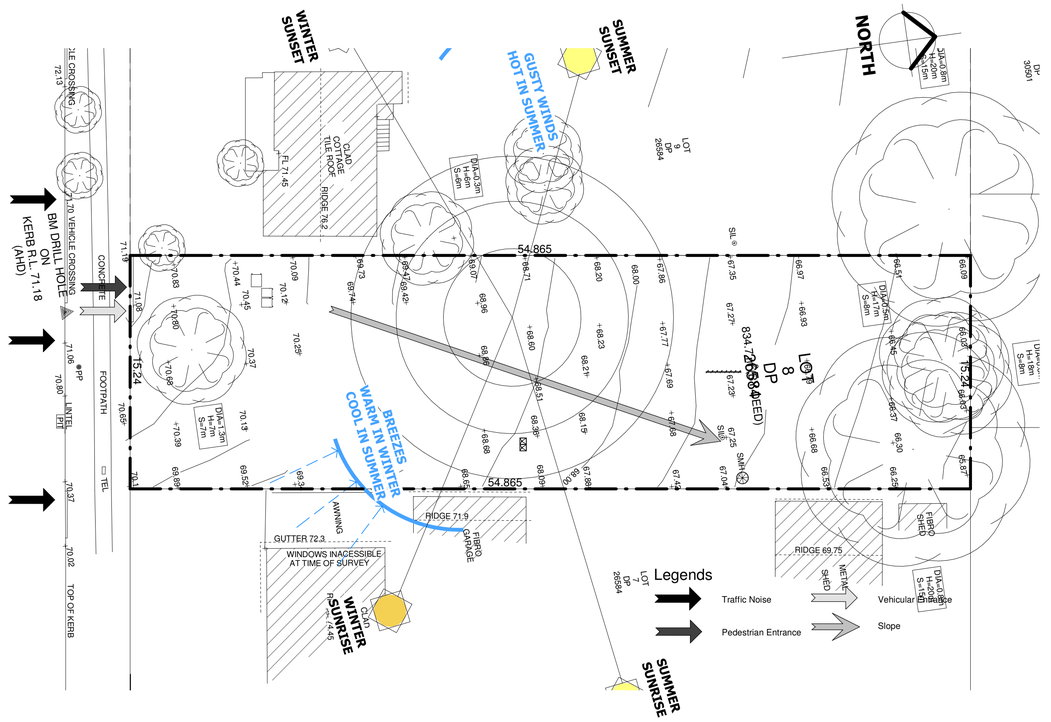
Drawing : DA

Issue D

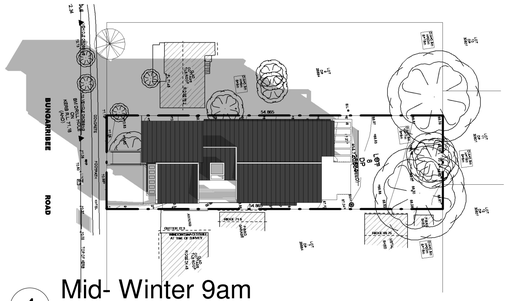
9/09/2021 5:05:22 PM



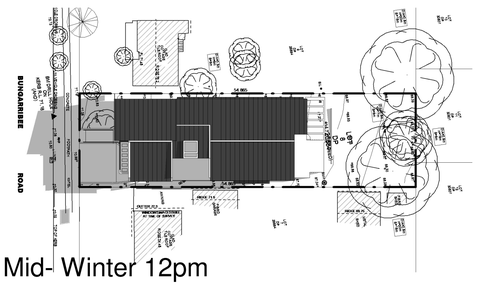
1 Site
1 : 200



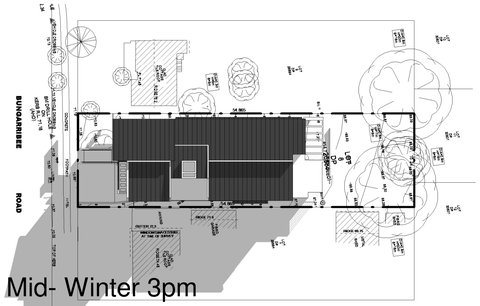
7 Site Analysis
1 : 200



4 Mid- Winter 9am
1 : 500



5 Mid- Winter 12pm
1 : 500



6 Mid- Winter 3pm
1 : 500

General Information	
Council	Blacktown City Council
Project Address	225 Bungarribee Road, Blacktown
Site area	834.7 m²
Maximum allowable FSR	No FSR Control
Maximum allowable GFA	Maximum allowable GFA
Heritage	Not Applicable
HOB	9 m
Zoning	R2 - Low Density Residential
Site Frontage	15.24 m
Deep Soil	No Deep Soil Control
Landscaping	No Landscaping Control
Communal Open Space	20 m²

Proposal

	Manager	Double Lodger	Total	
Room Numbers	1	11	12 (24 Persons)	Rooms (incl. accessible room)
Accessible Rooms	2		2	Rooms
Proposed GFA			532.16	m²
Proposed FSR			No FSR Control	
Carpark (Residential)	0.5 parking space/room		6	Residential Car Spaces
			6	Total Car Spaces
Carpark (Shared area)	1		1	Shared area
Motorcycle	0.2 space/room		3	Motorcycle Spaces
Bycicle carpark	0.2 space/room		3	Bicycle Spaces
Deep Soil			242	m²
Landscape			242	m²
Communal Open Space			231	m²

225 Bungarribee Road, Blacktown
SUMMARY OF BASIX COMMITMENTS
This is a summary of the BASIX Commitments as detailed in the BASIX Certificate.
Refer to the CURRENT BASIX Certificate for Complete details.

WATER COMMITMENTS					
Fixtures					
Alternative Water – None					
Fixtures					
4 Star Shower Heads	4 Star Toilet	4 Star Kitchen Taps	4 Star Basin Taps		
THERMAL COMFORT COMMITMENTS - Refer to TPA Specification on plans					
ENERGY COMMITMENTS					
Hot Water	Gas instantaneous 3 star				
Cooling System	Living	None			
	Bedrooms	None			
Heating System	Living	None			
	Bedrooms	None			
Ventilation	Bathrooms	Fan ducted to roof/facade	Manual on/off		
	Kitchen	Fan ducted to roof/facade	Manual on/off		
	Laundry	Not Applicable			
Natural Lighting	Window/Skylight in Kitchen		As Drawn		
	Window/Skylight in Bathrooms/Toilets		As Drawn		
Artificial Lighting (Primarily lit by fluoro or LED)	Number of bedrooms	1	Dedicated	No	
	Number of Living/Dining rooms	1	Dedicated	No	
	Kitchen	Yes	Dedicated	No	
	All Bathrooms/Toilets	Yes	Dedicated	No	
	Laundry	Yes	Dedicated	No	
	All Hallways	Yes	Dedicated	No	
OTHER COMMITMENTS					
Outdoor clothes line	No	Indoor or sheltered clothes drying line	No		
Stove/Oven	Electric cooktop, electric oven				
Other	Central photovoltaic system to generate minimum 10 kW of electricity				

Glazing Reccomendation from the Acoustic Report prepared by Far West Consulting Engineers

Ground Level -

- **Facade to Road - Bedroom** - 8.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 34
- **West Elevation - Bedroom & Kitchen** - 8.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 34
- **East & West Elevation - Bedroom & all glazing** - 6.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 32

First Level -

- Facade to Road - Bedroom - 8.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 34
- **East & West Elevation - Bedroom & Kitchen** - 8.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 34
- **East & West Elevation - Bedroom & all Kitchen** - 6.38 mm VLam with Acoustic seals and min. R_w or STC Rating of 32

CERTIFIED BY
EEC EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL
ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	Calculation revised to reflect amendments	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Site Information

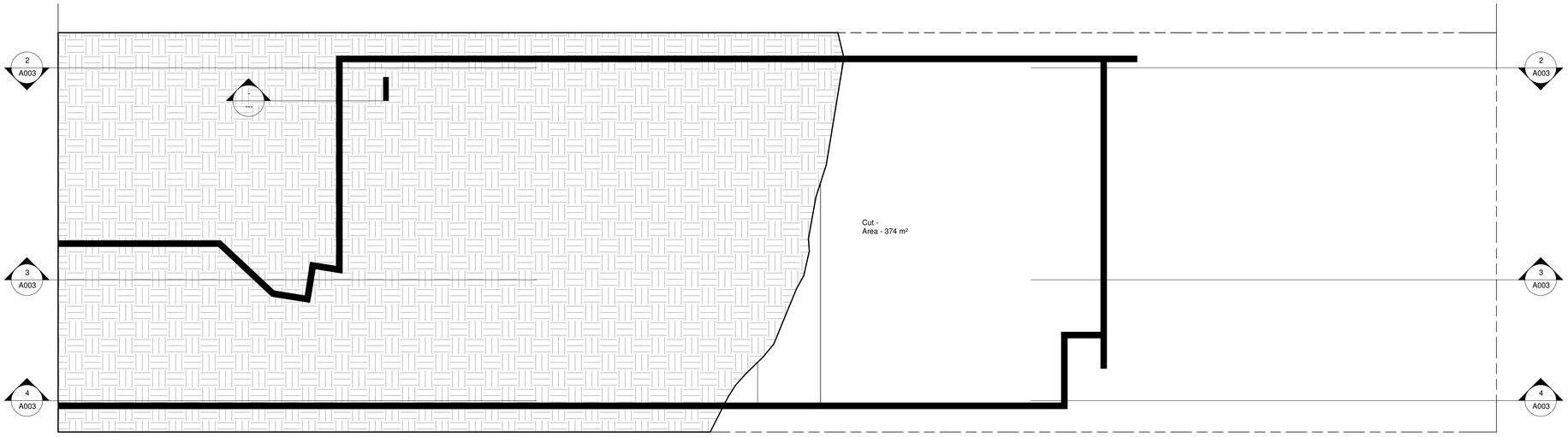
FOR DA ONLY

Project number	2020-19
Date	Feb-2021
Drawn by	SL/GF
Printed	9/09/2021 5:05:25 PM
Checked by	GF

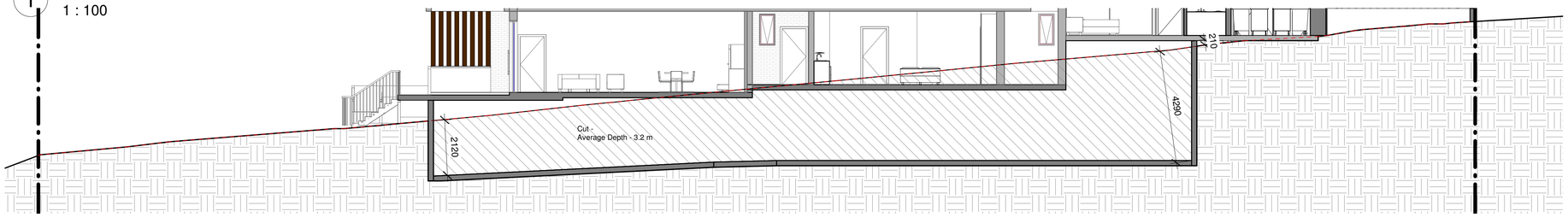
A001

Scale	Drawing :	Issue
As indicated	DA	D

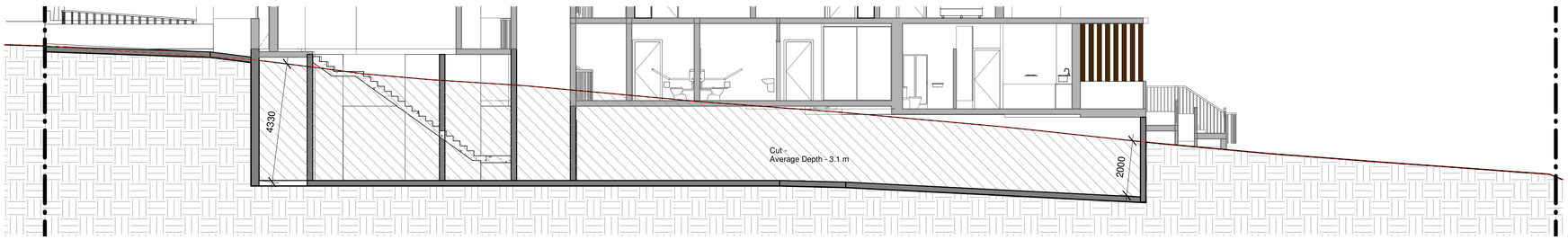
9/09/2021 5:05:25 PM



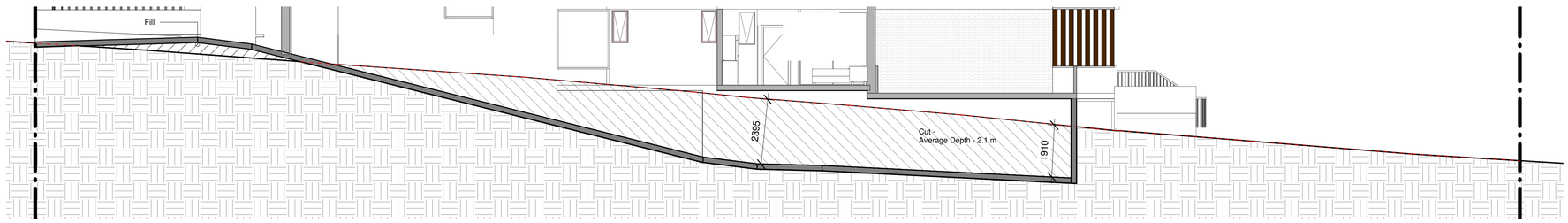
1 Basement Plan
1 : 100



2 Cut & Fill - AA
1 : 100



3 Cut & Fill - BB
1 : 100



4 Cut & Fill - CC
1 : 100

Gus Fares Architects PL
ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
	Cut & Fill plan provided	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Cut & Fill

FOR DA ONLY

Project number 2020-19

Date Feb-2021

Drawn by SL

Printed 9/09/2021 5:05:27 PM

Checked by GF

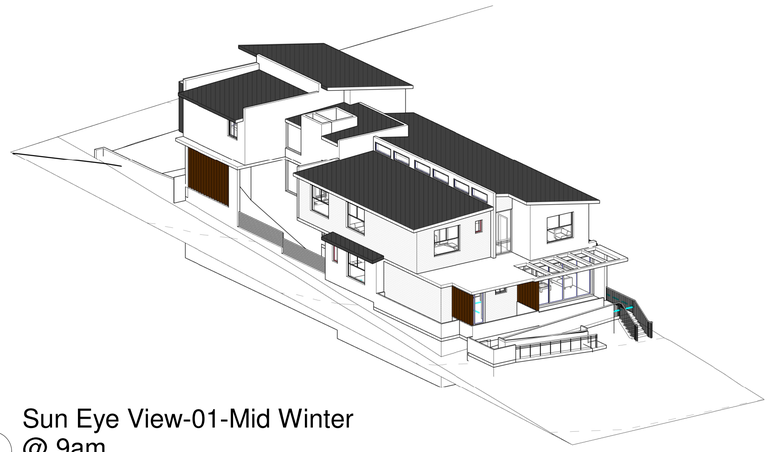
A003

Scale 1 : 100

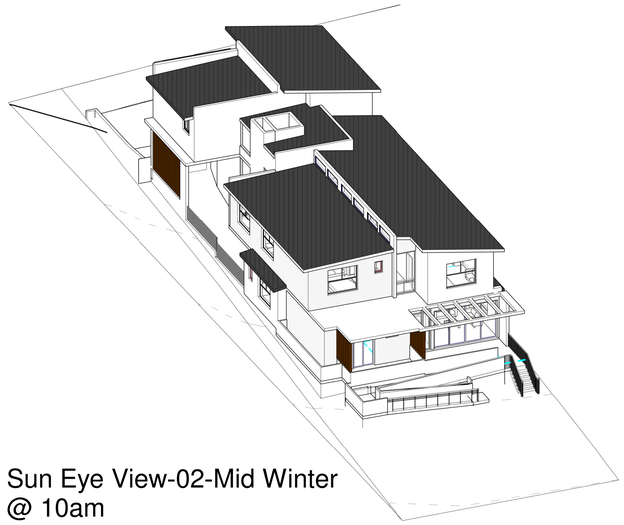
Drawing : DA

Issue C

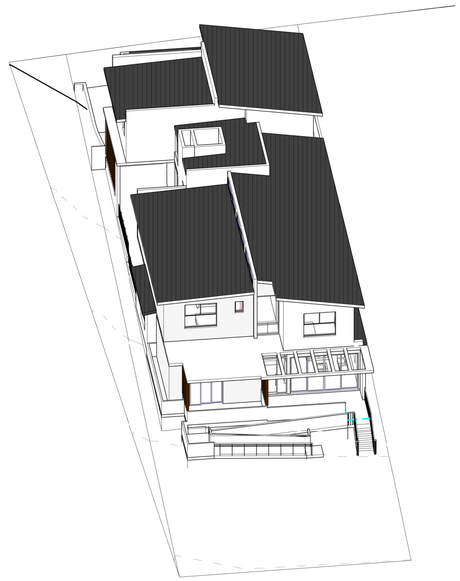
9/09/2021 5:05:27 PM



1 Sun Eye View-01-Mid Winter
@ 9am

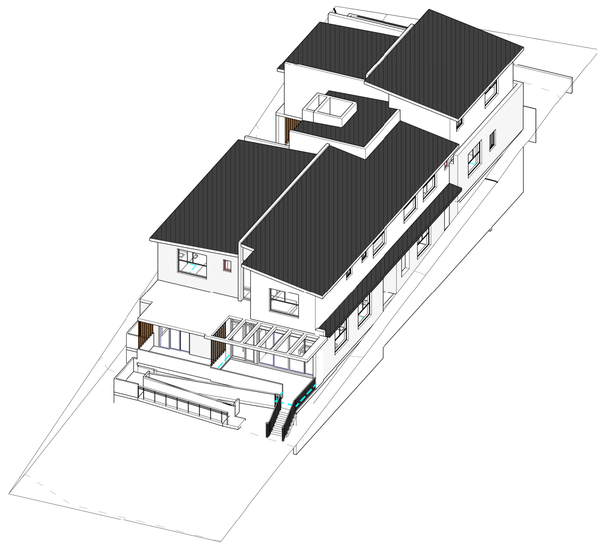


2 Sun Eye View-02-Mid Winter
@ 10am

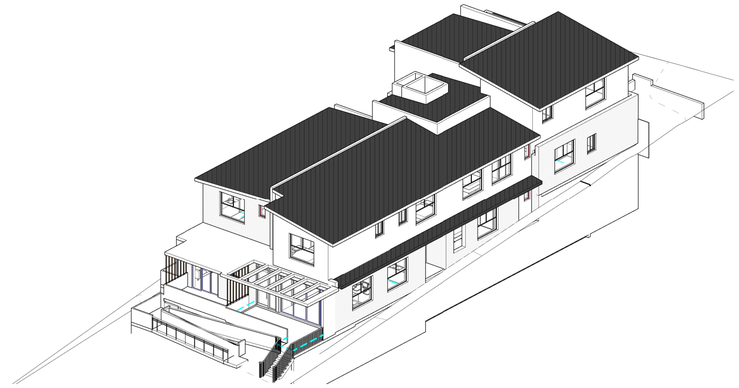


3 Sun Eye View-03-Mid Winter
@ 11am

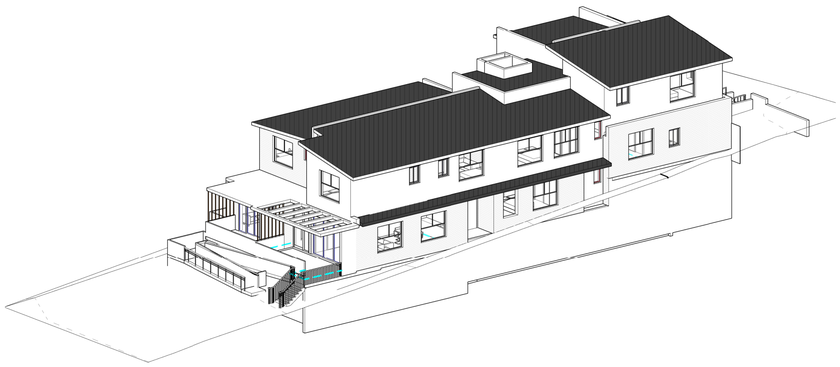
4 Sun Eye View-04-Mid Winter
@ 12pm



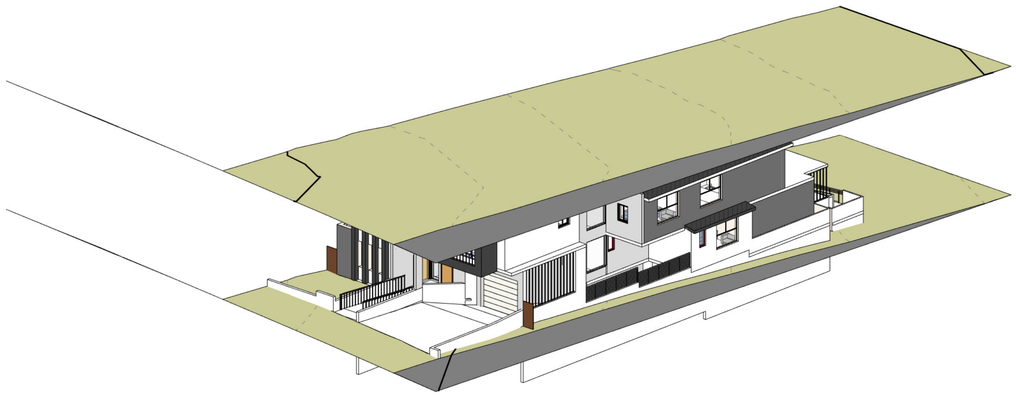
5 Sun Eye View-05-Mid Winter
@ 1pm



6 Sun Eye View-06-Mid Winter
@ 2pm



7 Sun Eye View-07-Mid Winter
@ 3pm



8 9 m max. HOB Compliance
1 : 1

Gus Fares Architects PL

ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	9 m max. HOB compliance 3D perspective provided	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Sun Eye Views / HOB Compliance

FOR DA ONLY

Project number 2020-19

Date Feb-2021

Drawn by SL

Printed 9/09/2021 5:05:35 PM

Checked by GF

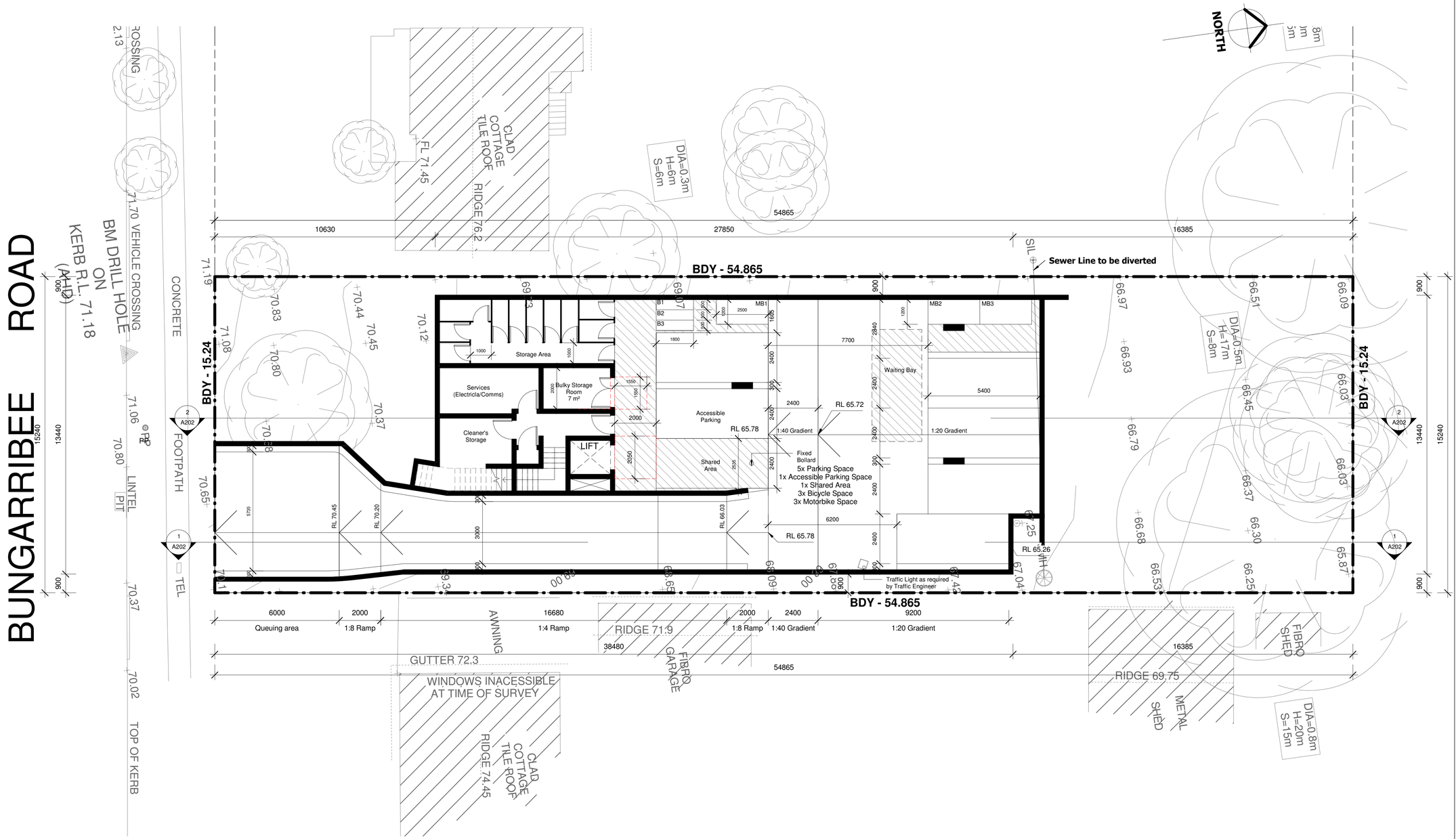
A004

Scale 1 : 1

Drawing : DA

Issue D

9/09/2021 5:05:35 PM



1 Basement Floor Plan
1 : 100

CERTIFIED BY
EEC
EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL

ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Basement Plans

FOR DA ONLY

Project number 2020-19

Date Feb-2021

Drawn by SL/GF

Printed 9/09/2021 5:05:35 PM

Checked by GF

A101

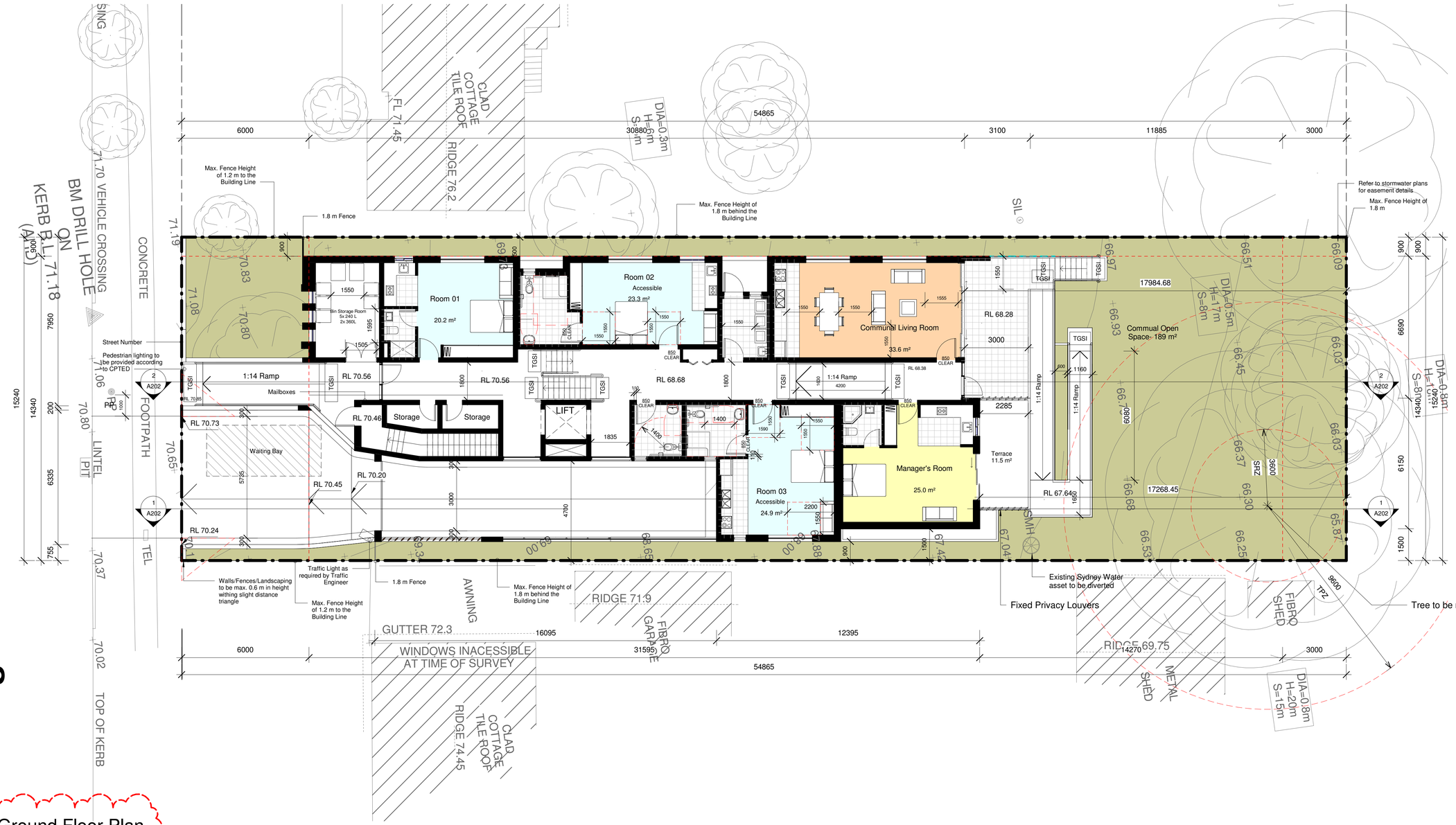
Scale 1 : 100

Drawing : DA

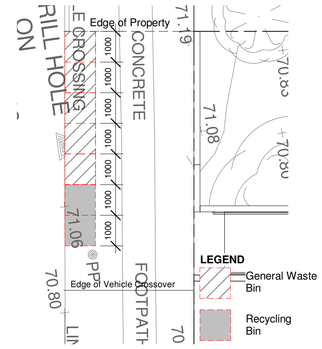
Issue D

9/09/2021 5:05:35 PM

Bungarribee Road



1 Ground Floor Plan
1 : 100



2 Bin Presentation Along Kerb
1 : 100

CERTIFIED BY
EEC
EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL
ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	Manager's room provided	
	Door width to bin storage room increased to 1500 mm	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Ground Level Plan

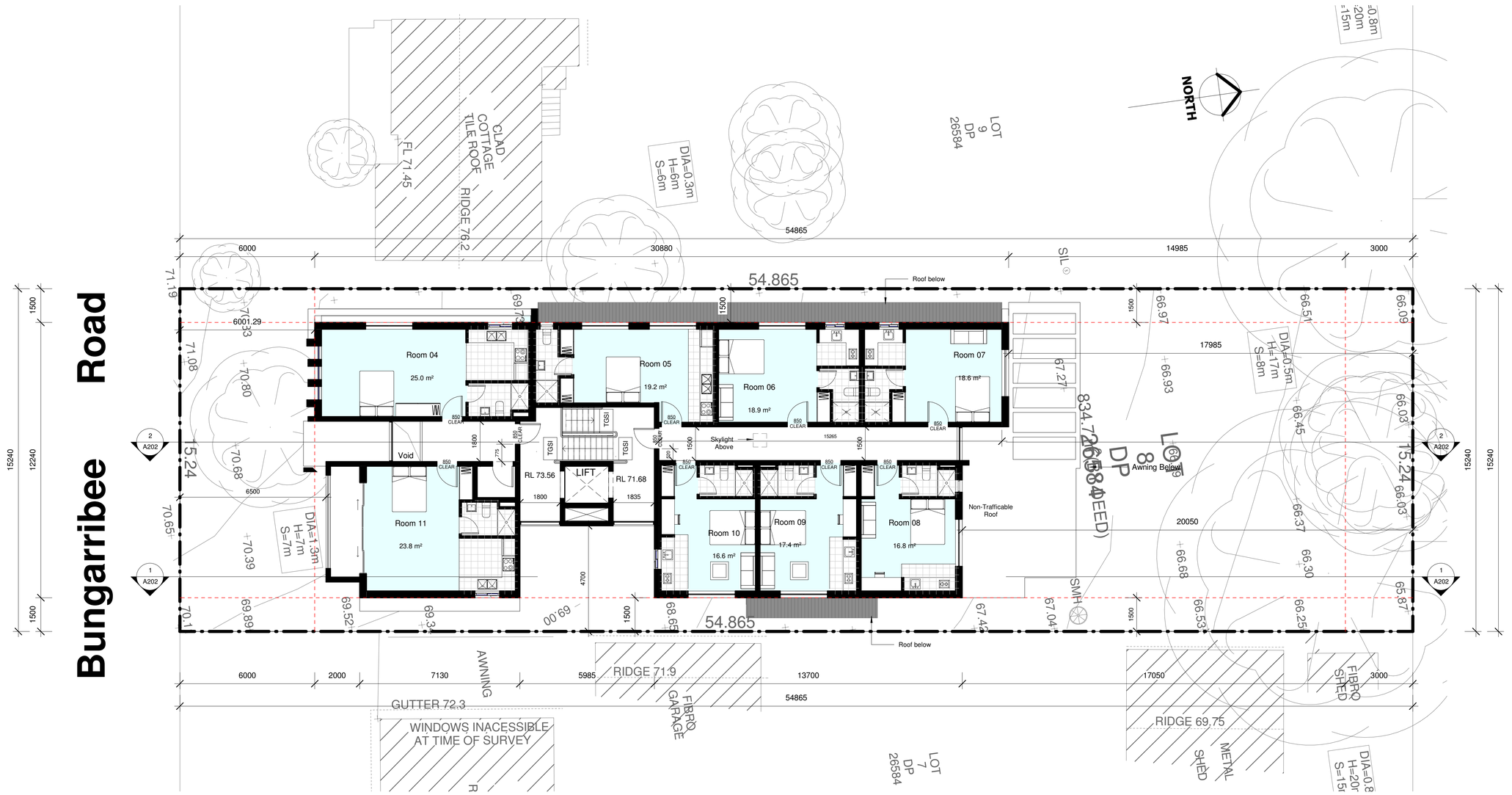
FOR DA ONLY

Project number	2020-19
Date	Feb-2021
Drawn by	SL/GF
Printed	9/09/2021 5:05:36 PM
Checked by	GF

A102

Scale	Drawing :	Issue
1 : 100	DA	D

9/09/2021 5:05:36 PM



1 First Floor Plan
1 : 100

CERTIFIED BY
EEC
EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL
ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	Room area for all single rooms increased to be > 16 m²	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

First Floor Plan

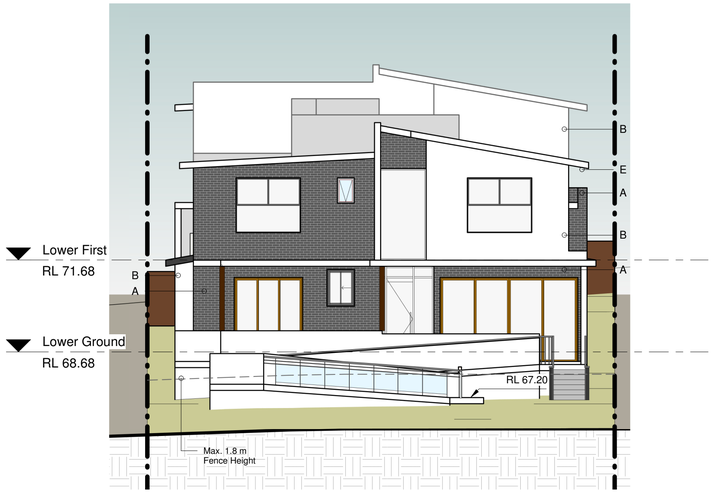
FOR DA ONLY

Project number	2020-19
Date	Feb-2021
Drawn by	SL/GF
Printed	9/09/2021 5:05:37 PM
Checked by	GF

A103

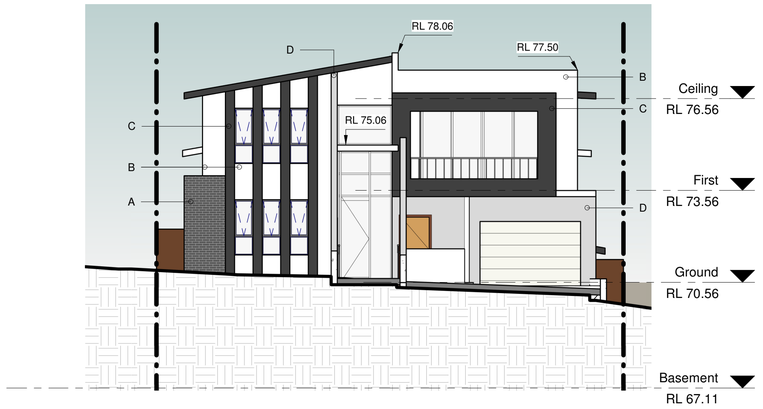
Scale	Drawing :	Issue
1 : 100	DA	D

9/09/2021 5:05:37 PM



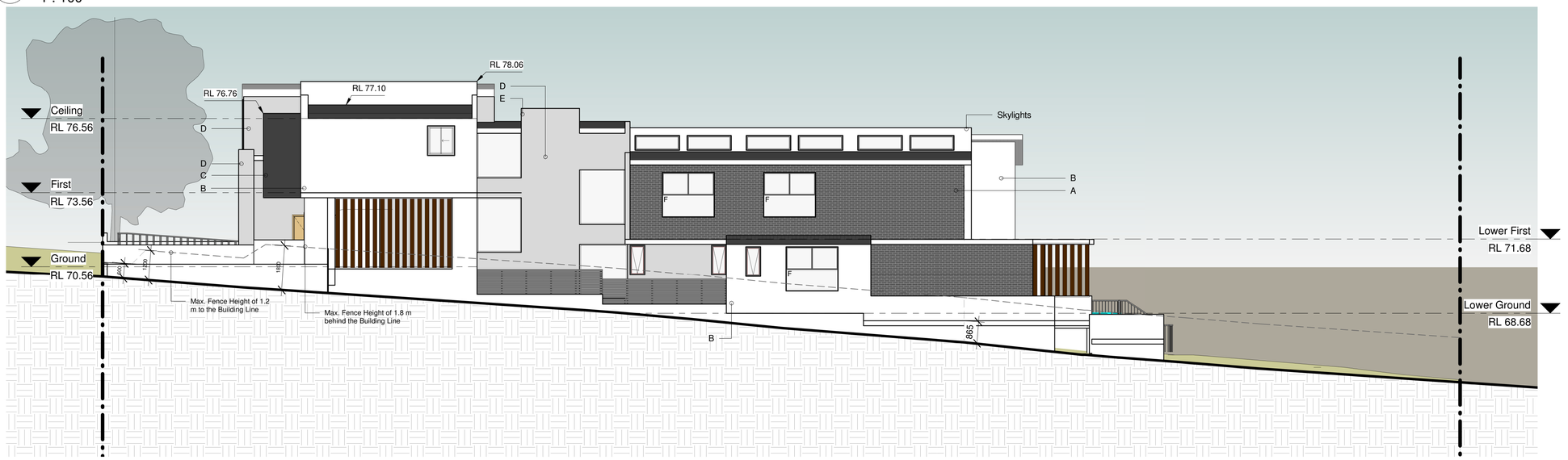
1 North Elevation

1 : 100



2 South Elevation

1 : 100



3 East Elevation

1 : 100

4 West Elevation

1 : 100

CERTIFIED BY

EEC
EVERGREEN ENERGY CONSULTANTS

Schedule of Finishes

A.	Face Brick - Austral Bricks Metallix - Bronze or Similar
B.	Render & Paint Dulux - Vivid White or Similar
C.	Render & Paint Dulux - Domino or Similar
D.	Render & Paint Dulux - Western Myall or Similar
E.	Metal Roof Colorbond - Basalt or Similar
F.	Frosted Glass

Gus Fares Architects PL

ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	Elevations revised to reflect amendments	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Elevations

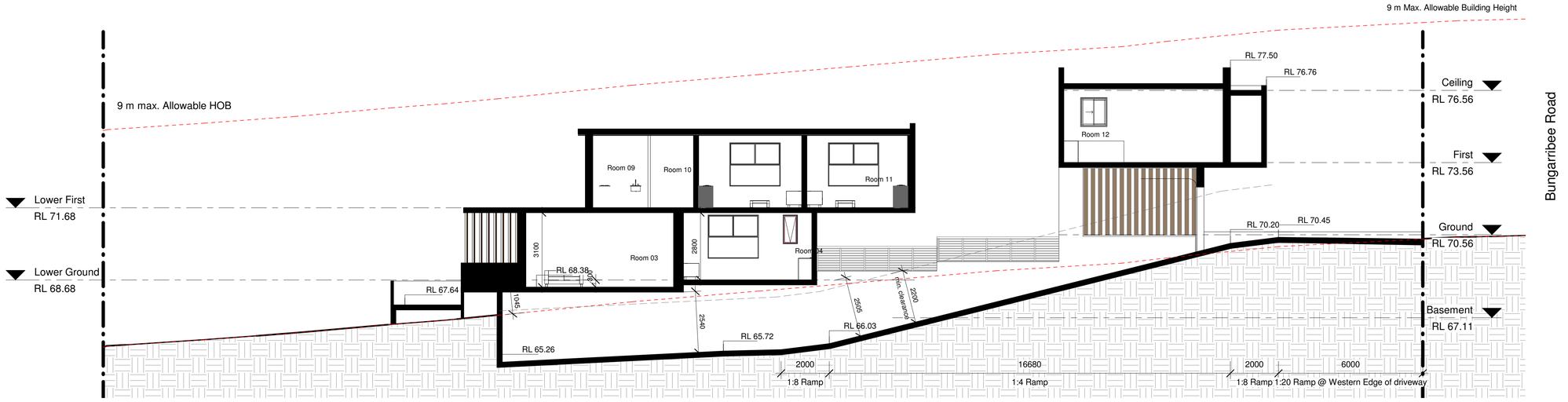
FOR DA ONLY

Project number	2020-19
Date	Feb-2021
Drawn by	SL/GF
Printed	9/09/2021 5:05:44 PM
Checked by	GF

A201

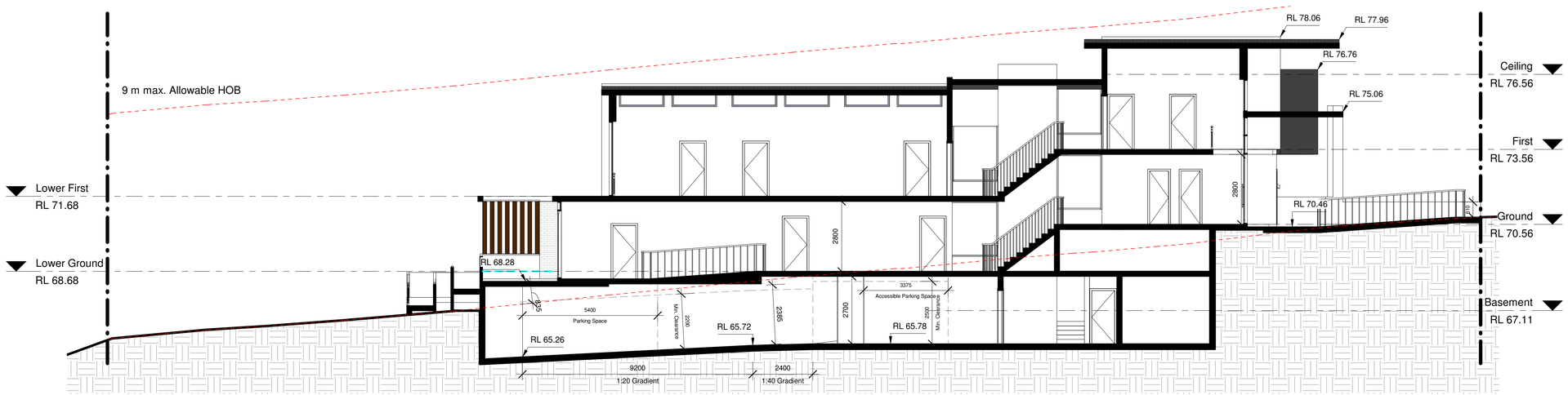
Scale	Drawing :	Issue
1 : 100	DA	D

9/09/2021 5:05:44 PM



1 Long Section AA

1 : 100



2 Long Section BB

1 : 100

CERTIFIED BY

EEC
EVERGREEN ENERGY CONSULTANTS

Gus Fares Architects PL

ACN 112691237
Tel: 02 9160 9250
email: gus@gfares.com

Notes:
1. Do not scale the drawings, read all dimensions shown.
2. The contractor shall check and verify all dimensions before commencing new work, and shall ask if in doubt.
3. The contractor shall comply with all relevant Australian Standards (AS) and the Building Code of Australia (BCA).
4. This document is for the purpose of Development Application approval only. They cannot be used as construction documents, tender documents,contract administration drawings, nor workshop drawings.
5. All sheets should be read as one document. For any discrepancy, the project manager should inform the architect immediately.
6. Note that ground levels may vary due to site conditions.

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
C	LEC Amendments	08/2021
D	LEC Amendments	08/2021
	Sections revised to reflect amendments	

Client
Krishathi Pty Ltd

Project
Proposed Boarding House Development at 225 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009

Sections

FOR DA ONLY

Project number 2020-19

Date Feb-2021

Drawn by SL/GF

Printed 9/09/2021 5:05:44 PM

Checked by GF

A202

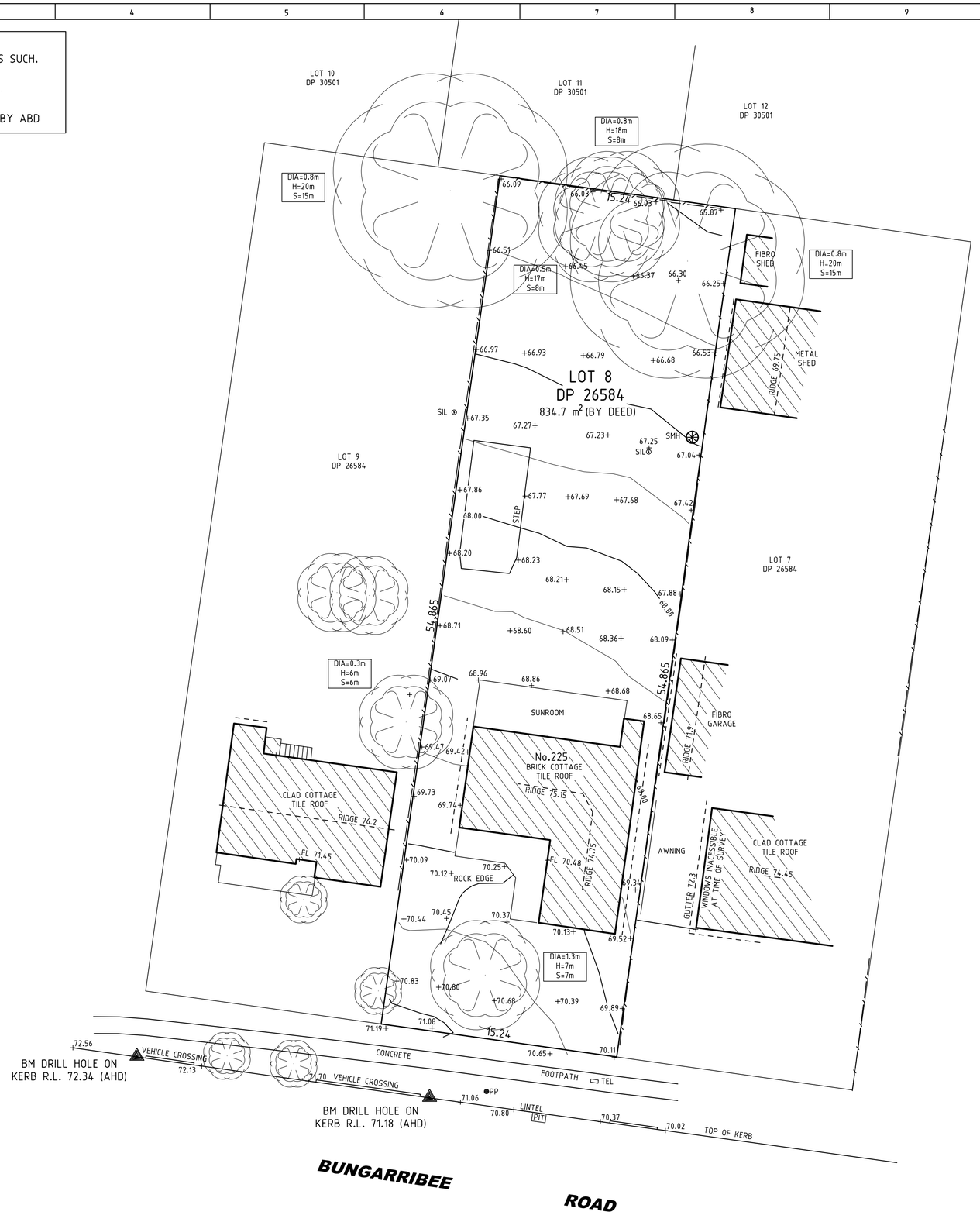
Scale 1 : 100

Drawing : DA

Issue D

9/09/2021 5:05:44 PM

WARNING
THIS PLAN IS NOT AN IDENTIFICATION SURVEY AND MUST NOT BE USED AS SUCH.
THE BOUNDARIES HAVE NOT BEEN INVESTIGATED NOR MARKED.
SCALING (DIGITALLY OR OTHERWISE) IS UNACCEPTABLE - ASK IF IN DOUBT.
THE DIGITAL PDF VERSION CONSTITUTES THE ORIGINAL DOCUMENT.
NO RE-ISSUE OF DELIVERABLES WILL BE MADE - UNLESS UNDER REVISION BY ABD



DIAL BEFORE YOU DIG
www.1100.com.au

IMPORTANT NOTES:

a) The cadastral overlay shown on this plan has not been established by survey and is shown in approximate positions only. If any structure is to be erected upon the land then the boundary corners MUST be marked.
b) Underground services have not been surveyed and, if shown, are in approximate positions only. End users are warned to establish line and depth of buried assets prior to any excavation works. A "dial before you dig" search MUST be made before any construction works can commence.
c) Windows, doors, roof profiles and elevated structures are surveyed by remote measurement and are shown in indicative positions only. All detail (including levels) shown on this plan MUST NOT be used for accurate design purposes unless verified on-site before hand.
d) All spot levels shown are based on Australian Height Datum (origin SSM 2900 RL 75.014)
e) Contours show indicative relief patterns only and are not to be used for level interpolation.
f) Contour interval = 0.5

I, ROSS ALBERT ROBINSON, hereby certify that the land comprised in this plan was surveyed under my supervision and in accordance with Part 2 Division 1 Clause 9(1) of the Surveying & Spatial Information Regulation, 2017 and was completed on: 20/12/2020

Registered Land Surveyor
BOSSI ID: SU001922
Date 20/12/2020

NOTE: ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE
SCALE: 1:150
3 1.5 0 3 6 9 12 15

AB DIMENSIONS

AB DIMENSIONS PTY LTD
Engineering Surveyors
Sydney Office: 115 Waminda Avenue, Campbelltown 2560
Email: abdimensions@hotmail.com Contact: 0426262332

A.B.	A.B.	R.R.	ISSUED FOR INFORMATION PURPOSES ONLY			02/12/20	A
SURVEY	DRAWN	CHKD	AMENDMENTS	EXAMD	APPD	DATE	No.

CLIENT: GUS FARES ARCHITECTS

TITLE: DETAIL SURVEY OF LAND AT 225 BUNGARRIBEE ROAD, BLACKTOWN NSW 2148

SCALE 1 : 150
DRAWING No. A1-20204-1-A
SHEET 1 of 1 | A1