

Detailed Site Investigation

16-21 Cusack Place, Yass, NSW

Catalyze Property Consulting Pty Ltd

5 October 2021

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Report Reference P21091_DSI Cusack Place Yass_20211005

Date 5/10/2021

Revision Text R01

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REVISIONS

Revision	Date	Description	Prepared	Approved
R00	05/05/2021	Draft for Review	CG	CG
R01	07/05/2021	Final	CG	CG

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Table of Contents

Executive Summary.....	4
1. Introduction	5
1.1 Objectives.....	5
1.2 Scope of Work.....	5
1.3 Regulatory Guidelines / Legislations.....	5
1.4 Limitations.....	6
2. Site Characteristics	7
2.1 Site Location and Description	7
2.2 Surrounding Land Uses	7
2.3 Sensitive Environments.....	8
2.4 Proposed Land Use	8
3. Previous Investigations	9
4. Site Condition and Environmental Setting	10
4.1 Topography.....	10
4.2 Visible Signs of Contamination	10
4.3 Odours.....	10
4.4 Fill Material	10
4.5 Staining.....	10
4.6 Vegetation.....	10
5. Geology and Hydrogeology	11
5.1 Geology	11
5.2 Hydrogeology	11
5.3 Hydrology	11
5.4 Soils and Acid Sulfate Soil Risk	11
6. Preliminary Conceptual Site Model	12
6.1 Areas of Environmental Concern	12
6.2 Contaminants of Potential Concern.....	12
6.3 Exposure Pathways and Receptors	13
7. Assessment Criteria	15
7.1 Soil Assessment Criteria.....	15
8. Data Quality Objectives	18
9. Sampling, Analysis and Quality Plan	20
9.1 Chronology of Events	20
9.2 Sampling Plan.....	20
9.2.2 Quality Assurance / Quality Control	21

9.3	Analytical Plan.....	21
9.4	Decontamination procedures	21
10.	Methods.....	22
10.1	Soil Investigation	22
11.	Quality Assurance (QA) and Quality Control (QC) Plan	23
11.1	Field QA/QC.....	23
11.2	Laboratory QA/QC.....	23
12.	Results	25
12.1	Visual Observations / Field Measurements	25
12.2	Analytical Results	25
	TRH, BTEX, OPP/OCP, PAH, PCB and Asbestos	25
	Heavy Metals	25
13.	Summary and Conclusions	26
14.	References	27
15.	Glossary	28

List of Tables

Table 1:	Summary of Site Details.....	7
Table 2:	Identified COPC and the associated AECs.....	12
Table 3:	Summary of Exposure Pathways.....	13
Table 4:	Measured Physicochemical properties.....	15
Table 5:	Soil Assessment Criteria.....	16
Table 6:	DQOs derived for the Investigation	18
Table 7:	Summary of the Chronology of Works	20
Table 8:	Rationale for soil sampling locations	20
Table 9:	Analytical plan for the investigation	21
Table 10:	Matrix spike samples that Exceed the Laboratory QA/QC criteria.....	24

Appendices

Appendix A	Figures
Appendix B	Results Summary Tables
Appendix C	Laboratory Reports and Chain of Custody Documentation
Appendix D	Bore Logs
Appendix E	EIL Calculations
Appendix F	Photographs

Executive Summary

Catalyze Property Consulting Pty Ltd (Catalyze) engaged Lanterra Consulting Pty Ltd (Lanterra) to complete a detailed site investigation (DSI) for Lots 2, 3 and 4 of DP 1185025 and Lot 1 of DP 1007355, Yass, NSW (herein referred to as the site).

It is understood that there is a proposal to redevelop the site for residential purposes. A preliminary site investigation (PSI) was completed by Murrang Earth Sciences (Murrang) in June 2021 to assess potential contamination risks across the site, the results of which indicated that further investigation, including the sampling of soil would be required to assess the suitability of the site for future residential land uses.

Murrang's PSI concluded that further environmental investigation including soil sampling was recommended to examine the contamination risks identified across the site

The objective of this investigation was to assess the suitability of the site for the land uses permitted under the R5: Large Lot Residential Zone and adequately characterise the condition of the site including soil sampling from a contamination perspective.

From the results of the PSI by Murrang and the soil sampling completed as a part of this investigation are summarised below:

- The majority of the site was used for agricultural purposes. Two (2) existing residential properties are located on the site.
- Sources of potential contamination that had been identified included herbicides that may have been used as a part of pasture improvement, possible lead that may have been deposited at the surface by vehicular traffic along Wee Jasper Road.
- Soil across the site comprised of a sandy silt at the surface while a silty clay was encountered below the sandy silt.
- Based on the analytical results of soil samples, COPCs were below the adopted criteria in all soil samples analysed while no traces of anthropogenic materials were observed in soil across the site.
- A small stockpile of 3 m³ was located in the north-western section of the site. The stockpile had traces of asphalt and concrete, however concentrations of COPCs in soil were below the adopted assessment criteria. Based on the results, the soil is considered suitable to remain on the site, while the amount of concrete and asphalt is not prevent the use of the soil from an aesthetic perspective.

Based on the results of the investigation and the current setting of the site, the risk of contamination that may pose a risk to the future land uses is low. Therefore, Lanterra concludes the that the site is suitable for future residential land use.

While no contamination was identified across the site, a construction environment management plan (CEMP) which includes an unexpected finds protocol (UFP) to manage any unexpected occurrences of contamination should they be encountered is recommended.

1. Introduction

Catalyze Property Consulting Pty Ltd (Catalyze) engaged Lanterra Consulting Pty Ltd (Lanterra) to complete a detailed site investigation (DSI) for Lots 2, 3 and 4 of DP 1185025 and Lot 1 of DP 1007355, Yass, NSW (herein referred to as the site).

The site is zoned R5: Large Lot Residential under the Yass Valley Local Environmental Plan 2013 and has an estimated area of 43 hectares (ha).

It is understood that a development application for a proposed residential development would be submitted for the site and that a preliminary site investigation (PSI) was completed by Murrang Earth Sciences (Murrang) in June 2021 to assess potential contamination risks across the site.

Murrang's PSI concluded that further environmental investigation including soil sampling is recommended to examine the contamination risks identified across the site (see **Section 3**).

This DSI addresses the recommendation for further intrusive investigation across the site.

The location and layout of the site are illustrated on **Figure 1** and **Figure 2, Appendix A**.

1.1 Objectives

The objective of this investigation is to assess the suitability of the site for the land uses permitted under the R5: Large Lot Residential Zone and adequately characterise the condition of the site including soil sampling from a contamination perspective.

1.2 Scope of Work

The scope of work for the investigation was as follows:

- A suitably qualified environmental consultant identified the sampling locations, and a Telstra Accredited Service Locator cleared each location of underground services.
- Undertake intrusive site investigation across the site including constructing eighteen (18) boreholes for soil sampling.
- Undertake soil analysis at a National Association of Testing Authorities (NATA) accredited laboratory for the analyses of contaminants of potential concern (COPCs; **Section 6.2**).
- Assess laboratory results obtained from the investigation against the applicable land use criteria.
- Prepare a detailed investigation report presenting:
 - The results of the intrusive investigation.
 - Recommendation if further investigation / remediation is required.

1.3 Regulatory Guidelines / Legislations

The investigation and preparation of this report was undertaken with reference to (but not limited to) the following regulatory guidance documents and standards:

- *National Environmental Protection Council (NEPC) (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended April 2013) (hereafter ASC NEPM 2013);*
- *NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Ed.) (2017);*
- *NSW EPA (1995) Sampling Design Guidelines;*

- *NSW EPA (2020) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites; and*
- *Standards Australia (2005). Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (2005).*

1.4 Limitations

The findings of the report are based on the Scope of Work outlined above. Lanterra has performed services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties express or implied, are made.

The assessment was limited strictly to identifying typical environmental conditions associated with the subject property area and does not include evaluation of any other issues.

The absence of any identified hazardous or toxic materials on the subject property should not be interpreted as a guarantee that such materials do not exist on the site.

The results of this assessment are based upon the site inspection specified above conducted by Lanterra personnel and information from the Client or regulatory agencies. All conclusions and recommendations regarding the property area will be the professional opinions of the Lanterra personnel involved with the project, subject to the qualifications made above.

While normal assessments of data reliability are made, Lanterra will not assume responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Lanterra, or developments resulting from situations outside the scope of this project.

2. Site Characteristics

2.1 Site Location and Description

The site location and a detailed site plan are presented in **Figure 1** and **Figure 2, Appendix A**.

Table 1: *Summary of Site Details*

Site Characteristics	Detail
Street Address	16-21 Cusack Place, Yass, NSW
Approximate Easting and Northing (centre of the site) (GDA2020 / MGA zone 55)	Easting: 675697 Northing: 6140444
Approximate Elevation (m AHD)	530 – 564 m
Lot and Plan Number	Lots 2, 3 and 4 of DP 1185025 and Lot 1 of DP 1007355
Land Zoning	R5: Large Lot Residential
Site Owner	Judith Hanrahan and Michael Hanrahan
Current Land Use	Agricultural (Improved Pasture and Livestock)
Site Area	430,000 square metres (m ²)

The following description is based on observations made during the site visits conducted on 1 and 2 September 2021 by a suitably qualified environmental scientist from Lanterra:

- The site is primarily vacant paddock. Rows of trees, presumably placed as a wind break are situated in the vicinity of two residential dwellings. It was noted that prior to fieldwork, heavy rain had fallen and the ground was soft and wet.
- Two residential dwellings (Karoo and Ironwood) were observed in the eastern section of the site. Both dwellings were located on topographically higher points of the site.
- Wee Jasper Road is located adjacent to the western boundary of the site.
- Access to the site is via Cusack Place located in the south-eastern section of the site. Access to the houses is via unsealed tracks from the gate a Cusack Place to each residential building.
- The metal sheeting and animal burrows that were observed by Murrang was still present in the southern section of the site.
- Shallow outcropping rock was observed across the site.
- No above-ground or underground fuel infrastructure was observed.

A detailed site plan is presented in **Figure 2, Appendix A** while photographs of the site are provided in **Appendix F**.

2.2 Surrounding Land Uses

A summary of the land uses that surround the site are as follows:

- **North:** Residential properties along Clayton Street and Lumsden Avenue are located immediately north of the site.
- **South:** Cusack Place is located in the eastern portion of the southern boundary. Adjacent to the central and western portions of the site are rural residential properties.

- **East:** Rural residential properties accessed from Craig Close are located along the eastern boundary.
- **West:** Wee Jasper Road is located along the western boundary of the site. The opposite side of Wee Jasper Road is occupied by agricultural paddocks.

2.3 Sensitive Environments

The following sensitive environment receptors were identified across the site and its surroundings:

- Residents and users of the site.
- Future workers developing the site.
- A small creek is located 300 m to the west of the site approximately. This creek is eventually discharges in Yass River, 3.5 km to the northwest.

2.4 Proposed Land Use

The Site is to be developed for a range of uses including residential dwellings. The development proposal is not presently known, but it may include plans for schools, childcare centres or recreational facilities/areas.

3. Previous Investigations

One previous investigation has been completed by Murrang Earth Sciences titled '*Preliminary Site Investigation of 16-21 Cusack Place, Yass*' which was made available for Lanterra to review. A summary of this investigation is presented below.

A rural and residential subdivision is proposed on the property located at 16 – 21 Cusack Place, Yass, NSW. The is comprised of Lots 3 and 4 of DP 1185025, owned by Michael Hanrahan, and Lot 2 of DP 1185025 and Lot 1 of DP1007355 which is owned by Judy Hanrahan.

The objective of the preliminary site investigation was to assess the potential risks to human health and the environment by contamination associated with present and prior land uses for submission with a future development application.

The National Environment Protection (Assessment of Site Contamination) Measure 1999 was used as a framework to undertake a preliminary investigation of the Site. A desktop review and site inspection found activities that may introduce contaminants of concern into the environment. These were identified as areas of environmental concern (AEC) as the following:

General Site Area: Soil affected by naturally occurring metals that may be associated with the geology of the site.

Land Adjacent to Roads: Soil that may be affected by lead from vehicular use, particularly before the introduction of unleaded fuels and residual herbicides from weed mitigation programs.

Western Paddocks: Soil affected by cadmium and possibly other heavy metals from pasture improvement activities.

A hole of unknown origin: The purpose and origin of the hole was not known, however there was concern that the contaminants may have been deposited in or around the hole.

Based on the identified AECs and their contaminants of concern, the potential impact on human health and/or the environment could be constrained.

It was therefore recommended that the sampling of soil be undertaken to assess whether the site may be suitable for the proposed development.

4. Site Condition and Environmental Setting

4.1 Topography

The digital topographic map presented on the sixmaps website (available at <http://www.six.nsw.gov.au/>) indicates the site has an elevation of approximately 540 – 560 m above Australian Height Datum (m AHD).

The general topography of the investigation site and the surrounding area is relatively flat and gently slopes from south to north.

4.2 Visible Signs of Contamination

There were no major visible indications of contamination observed during the site visit conducted on 1 September and 2 September 2021. Traces of anthropogenic materials were observed in a 3 m³ stockpile located in the northwest corner of the site.

No signs of contamination were noted during soil (12 July) and groundwater well sampling (19 to 21 July).

4.3 Odours

There were no olfactory indicators of possible contamination noted during soil sampling.

4.4 Fill Material

No obvious fill material was observed.

4.5 Staining

There was no evidence of hydrocarbon staining was observed during the sampling completed on 1 and 2 September 2021

4.6 Vegetation

No vegetation stress was observed across the site.

5. Geology and Hydrogeology

5.1 Geology

Based on the NSW Government website www.minview.nsw.gov.au, the site is underlain by the following geological units:

- Yanawe Formation which comprises of a medium-grained, quartz lithic volcanic sandstone, interbedded with very fine grained volcanic sandstone.
- Douro Group comprising of coarse grained porphyritic, rhyodacitic ignimbrite.
- Barrandella Shale Member comprising of shaly mudstone with thin beds of siltstone, calcareous siltstone and shale.

5.2 Hydrogeology

Groundwater is considered likely to occur in extensive aquifers of low to moderate productivity beneath the Site, where two bores are recorded (Appendix B). These are GW055660 and GW404259, with depths of 31 and 90 m below ground surface respectively. Numerous other bores with depths of between 24 and 105 m and yields of between 0.3 and 50 L/s occur in the area surrounding the Site. The variability in groundwater depth is indicative of the complex groundwater flow and occurrence in the area, where groundwater occurs within connected fractures and fissures of rock at variable depths (Appendix B). During the site visit by Murrang during the preliminary site investigation found minor occurrences of groundwater discharging at the surface in a number of locations.

5.3 Hydrology

Surface water on the site is expected to follow the topographic contours of the site. Several agricultural dams receive surface water from the site. No named water bodies or tributaries of named water bodies are present on the site.

5.4 Soils and Acid Sulfate Soil Risk

Soils are defined by the Boorowa soil landscape is recorded as being present at the Site, with the soil type being a sodosol. Sodosols are texture contrast soils, whereby a coarse soil layer occurs at the top of the soil profile (A horizon) and a finer layer (silts or clays) occurs beneath (B horizon).

The Boorowa landscape unit is characterised by hard-setting soil with moderate permeability. Salinity is not present, there is a low to moderate erosion hazard and low to moderate shrink-swell potential. There inferred to be nitrogen, phosphorous, potassium, and sulfur deficiencies.

Based on the Atlas of Australian Acid Sulfate Soils, the site has a low risk of acid sulfate soil.

6. Preliminary Conceptual Site Model

Conceptual site models (CSM) are a method of presenting site contamination information and the relationships between sources of contamination, how it may have been introduced to the site, possible pathways for contaminant migration and exposure and the receptors that may be affected by contaminants.

The following conceptual site model has been prepared based on the information presented in the Murrang PSI report with the included Lotsearch Report.

6.1 Areas of Environmental Concern

The areas of environmental concern (AECs) as identified by the Murrang PSI for the site are summarised below.

On-site AEC

AEC 1 – General Site Area

Based on the geology of the site, there was potential for risk naturally occurring elevated concentrations of metals that may be associated with mineral deposits in the area.

AEC 2 – Road verges of Wee Jasper Road

Potential for elevated concentrations of lead may be present from historical use of the road during a time when leaded fuels were common.

AEC 3 – Agricultural Paddocks

Agricultural paddocks may have been improved where the use of pesticides and herbicides for the control of weeds and pests.

AEC 4 – Hole of unknown use

A hole was located in the southern section of the site, covered with sheets of tin. The purpose of the hole was not known.

AEC 5 – Stockpiled Material located adjacent to Wee Jasper Road

During the collection of samples along Wee Jasper Road, a soil stockpile which contained fragments of concrete and bitumen was located to the north of sample location LC17. The stockpile was approximately 3 m³ in volume and was covered with grass.

6.2 Contaminants of Potential Concern

To comprehensively characterise the site and based on some of the activities associated within the site and its surroundings and respective AEC the following contaminants of potential concern (COPC) were identified by the PSI.

Table 2: *Identified COPC and the associated AECs*

AECs	COPC
<i>AEC 1 - General Site Area</i>	Heavy metals including arsenic, cadmium, copper, chromium, lead, mercury, nickel, zinc, silver, fluoride and barium
<i>AEC 2 - Wee Jasper Road Verge</i>	Heavy metals including arsenic, cadmium, copper, chromium, lead, mercury, nickel, zinc

AECs	COPC
	• Herbicides
AEC 3 - Western Paddocks	• Heavy metals including arsenic, cadmium, copper, chromium, lead, mercury nickel and zinc
AEC 4 - Metal Sheet Covered Hole	• Total Recoverable Hydrocarbons (TRH) • Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) • Polycyclic Aromatic Hydrocarbons (PAH) • Organochlorine and Organophosphate Pesticides (OCP/OPP) • Polychlorinated Biphenyls (PCB) • Heavy metals • Asbestos
AEC 5 - Stockpile	• TRH • BTEX • PAH • OCP/OPP • PCB • Heavy Metals • Asbestos

6.3 Exposure Pathways and Receptors

For a contaminant to pose a risk to either human health and/or the environment, there must be a potentially complete or complete pathway between the contaminant and the receptor. Identified receptors at the site are as follows:

- On-site workers associated with the future use of the site.
- Current users of the site.
- Future construction workers engaged as part as the development.
- Future users of the development.
- Ecological receptors.
- Groundwater.

Common pathways for which contaminants may migrate through the environment on the site and result in exposure to receptors are summarised in **Table 3** below.

Table 3: Summary of Exposure Pathways

Pathway	Contaminants of Concern	Exposure Pathway Complete or Potentially Complete (Yes/No)	Comments
Direct Contact with Soil including dermal contact and ingestion	TRH, BTEX, PAH, PCB, OCP/OPP, Heavy Metals.	Potentially Complete	If these contaminants were present in the environment at concentrations that may pose a risk to human health or environmental receptors, then the exposure pathway could be considered as potentially complete.
Direct Contact with Groundwater including dermal contact and ingestion	TRH, BTEX, PAH, Heavy Metals	Incomplete	No abstraction bores are located on or near the site and therefore exposure to groundwater is not possible and the pathway is incomplete.

Pathway	Contaminants of Concern	Exposure Pathway Complete or Potentially Complete (Yes/No)	Comments
Inhalation of gasses and vapour	TRH, BTEX, PAH	Incomplete	No fuel storage facilities have been identified on the site and the concentration of volatile compounds required that may pose a vapour inhalation risk is considered unlikely to occur from general leaks and spills of these compounds.

In its current condition, the only potentially complete contaminant exposure pathway, being direct contact with contaminated soil is dependent on whether COPC are present at concentrations that may pose a risk to human health and/or the environment.

7. Assessment Criteria

The assessment criteria that would be adopted for the investigation will be based on the proposed land uses, which is understood to be low density residential. Therefore, the site would be assessed with the consideration for residential land use, the most stringent criteria under the following applicable guidelines/legislation:

- National Environment Protection Council (1999) '*National Environment Protection (Assessment of Site Contamination) Measure 1999*' (amended 2013) (ASC NEPM 2013).
- NSW EPA (1995) 'Sampling Design Guidelines'
- NSW EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*'.

7.1 Soil Assessment Criteria

Given that the site is to be redeveloped for low density residential purposes which would also include garden accessible soil, the adopted assessment criteria are as follows:

- *NEPC (1999) National Environment Protection (Assessment of Site Contamination Measure 1999' as amended 2013* (hereafter ASC NEPM 2013).
 - Health Investigation Levels for Residential Sites (HIL A);
 - Health Screening Levels for Residential Sites (HSL A) based on clay lithology at 0-1m depth (most conservative soil and depth criteria);
 - Ecological Investigation Levels (EIL) for aged contaminants Urban Residential and Public Open Space; and
 - Ecological Screening Levels (ESL) for Urban Residential and Public Open Space based on fine texture.

EIL criteria was derived based on site-specific physicochemical properties (pH, cation exchange capacity (CEC) and clay content). These properties were not measured directly, however the parameters have been assumed using a conservative set of values that are considered to be indicative of soil types in the Yass region.

Table 4: *Measured Physicochemical properties*

Physicochemical Property	Unit	Average (LC9 0.5-0.6)
pH	pH Unit	5.5
CEC	meq / 100g	5.5
Clay content	% w / w	10

The EIL criteria was calculated using the ASC NEPM 2013 EIL Interactive (Excel) Calculation Spreadsheet using values for aged contaminants. Results of the EIL calculations are presented in **Appendix H**.

These criteria are shown in **Table 5**.

Table 5: Soil Assessment Criteria

Contaminant Group	HIL/HSL – A (mg/kg)	EIL – Urban Residential and Public Open Space (mg/kg)	ESL-Urban Residential and Public Open Space (mg/kg)
Heavy Metals			
Arsenic	100	100	-
Cadmium	20	-	-
Chromium (III)	100	460	-
Copper	6,000	180	-
Lead	300	1,100	-
Nickel	400	120	-
Zinc	7,400	430	-
Mercury	40	-	-
Pesticides			
Aldrin and Dieldrin	6	-	-
Chlordane	50	-	-
DDT	-	180	-
DDT+DDD+DDE	240	-	-
Endrin	10	-	-
HCB	10	-	-
Heptachlor	6	-	-
Methoxychlor	300	-	-
Mirex	10		
Toxaphene	20	-	-
Chlorpyrifos	160		
TRH and BTEX			
TRH C ₆ -C ₁₀ – BTEX (F1)	50	-	180
TRH >C ₁₀ -C ₁₆ – Naphthalene (F2)	280	-	120
TRH >C ₁₆ -C ₃₄ (F3)	-	-	1,300

Contaminant Group	HIL/HSL – A (mg/kg)	EIL – Urban Residential and Public Open Space (mg/kg)	ESL-Urban Residential and Public Open Space (mg/kg)
TRH >C ₃₄ -C ₄₀ (F4)	-	-	5,600
Benzene	0.7	-	65
Toluene	480	-	105
Ethylbenzene	NL	-	125
Xylenes	110	-	45
PAHs and PCBs			
Total PAH	300	-	-
Benzo(a)pyrene	-	-	0.7
Carcinogenic PAHs as B(a)P TEQ	3	-	-
Naphthalene	5	170	-
Total PCB	1	-	-

8. Data Quality Objectives

This section outlines the data quality objectives (DQOs) applied to the investigation.

The DQO process is a planning tool that relies on scientific methods for establishing criteria for data quality and for designing data collection programs. The DQO defines the experimental process required to test a hypothesis. The DQO process aims to ensure that efforts relating to data collection are cost-effective, by eliminating unnecessary, duplicative or overly precise data whilst at the same time, ensuring the data collected is of sufficient quality and quantity to support defensible decision making.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The seven-step DQO process adopted for this investigation is as follows:

Step 1: State the Problem – concisely describe the problem to be studied. Review prior studies and existing information to gain a sufficient understanding to define the problem;

Step 2: Identify the Decision – identify what questions the study will attempt to resolve, and what actions may result;

Step 3: Identify the Inputs to the Decision – identify the information that needs to be obtained and the measurements that need to be taken to resolve the decision statement;

Step 4: Define the Study Boundaries – specify the time periods and spatial area to which decisions will apply. Determine when and where data should be collected;

Step 5: Develop a Decision Rule – define the statistical parameter of interest, specify the action level, and integrate the previous DQO outputs into a single statement that describes the logical basis for choosing among alternative actions;

Step 6: Specify Tolerable Limits on Decision Errors – define the decision maker's tolerable decision error rates based on a consideration of the consequences of making an incorrect decision; and

Step 7: Optimise the Design –evaluate information from the previous steps and generate alternative data collection designs. Choose the most resource-effective design that meets all DQOs.

The DQOs derived for the investigation are presented in Table 6.

Table 6: DQOs derived for the Investigation

Step	Details
Step 1: State the Problem	The PSI completed for the site identified a potential contamination risk associated with the potential presence of naturally occurring heavy metals and herbicide use across the site. The purpose of the investigation was to assess whether contaminants from these potential sources are present that may pose a risk to human health and/or the environment for future residential use.
Step 2: Identify the Decision	The purpose of the investigation is to characterise the contamination status of the site to assess the site's suitability for low density residential use.
Step 3: Identify the Inputs into the Decision	The COPCs selected are based on the review of previous investigations and based on former site activities as described in Section 3 and Section 4. The site is proposed to be used for low density residential purposes with accessible soil for gardens. Therefore, the site would be assessed the most stringent criteria for residential use.

Step	Details
	Values for each criteria are presented in Section 7 .
Step 4: Define the Site Boundaries	The lateral site boundary is shown in Figure 1 and Figure 2, Appendix A. The vertical boundary of the site is approximately 0.5 m below ground level which was the maximum depth of from which soil samples were collected. The site investigation work was completed on 1 and 2 September 2021 with the results of the assessment limited to the condition of the site as of the date sampling was completed.
Step 5: Develop a Decision Rule	• If analytical results for COPCs are below the adopted criteria for residential sites, then the site would be considered suitable for the land uses permitted under the current zone and no further management or remediation would be required. • However, should the concentration of one or more COPC exceed the adopted criteria value then further investigation may be required to delineate the lateral and vertical extent of the impact and/or recommendations for the remediation/management of contamination that may be required. • If the laboratory quality assurance / quality control data are within acceptable ranges, the results will be considered suitable for use. • If the COPC is reported below the laboratory detection limit in the samples applicable to a specific pathway, then it will be considered that there is no evidence of a potential complete source-pathway-receptor linkage and therefore inclusion of that pathway in further assessment may not be required.
Step 6: Specify Tolerable Limits	The tolerable limits for the investigation adopted for quality assurance/quality control (QA/QC) purposes are as follows: • The relative percentage difference (RPD) for laboratory duplicates is as per the laboratory's quality assurance targets accepted under their NATA accreditation. • Recovery of matrix spikes and surrogate spikes is as per the laboratory's Quality Assurance targets accepted under their NATA accreditation. The tolerable limits for field QA/QC and duplicates data are as follows: • RPD criteria of 30% or less, for concentrations > or = 5 times PQL.
Step 7: Optimise the Design	The investigation program for this assessment is detailed in Section 9 to adequately characterise the identified risks of contamination across the site (Section 3). As a summary, eighteen (18) boreholes were advanced across the site to assess the potential of finding contaminated imported fill material. The spacing between sample locations was determined by the level of risk and potential heterogeneity of the identified COPCs. Based on the conceptual site model, the risk to groundwater was considered negligible and therefore groundwater sampling was not considered necessary.

9. Sampling, Analysis and Quality Plan

Details of the sampling and analytical plan adopted to meet the project objectives are presented in the following sections.

9.1 Chronology of Events

The chronology of key project events is summarised in **Table 7** below:

Table 7: *Summary of the Chronology of Works*

Date	Event
12 August 2021	Lanterra was engaged by Catalyze to undertake a detailed site investigation.
1-2 September 2021	Fieldwork and collection of soil samples
20 September 2021	Receipt of Laboratory Results. It was noted that results were delayed due to the effect COVID-19 had on couriers and laboratory resources.
5 October 2021	Issue of DSI report to the client.

9.2 Sampling Plan

9.2.1 Soil Sampling Plan

A systematic grid based sampling plan was implemented to assess the site for potential COPCs in each AEC to characterise the potential contamination status of soil. The soil sampling investigation with the associated sampling locations and the rationale are presented in the table below and in **Figure 4, Appendix A**.

The rationale for each sample across the site is summarised in **Table 8** below.

Table 8: *Rationale for soil sampling locations*

Sample Location	Target Location	Rationale
LC1, LC9 and LC18	AEC 1 – General Site Area	Boreholes distributed across the eastern section of the site in a general systematic sampling pattern. As the primary COPCs were heavy metals associated with naturally occurring metals, the distribution of metals is anticipated to be homogenous and the distribution and number of samples was considered appropriate.
LC13 – LC17	AEC 2 – Wee Jasper Road Verge	Boreholes placed along the site boundary and road verge of Wee Jasper Road. The number of samples and their locations were considered appropriate based on the anticipated contaminant distribution associated with the road.
LC9 – LC12	AEC 3 – Western Paddocks	Boreholes distributed across the western paddock in a systematic sampling pattern. As the primary COPCs were herbicides, the distribution of these is anticipated to be homogenous and the distribution and number of samples was considered appropriate.
Hole	AEC 4 – Metal Covered Hole	One sample was collected and analysed for a broad range of contaminants including TRH, BTEX, PAH, OCP/OPP, PCB and metals. Other than

Sample Location	Target Location	Rationale
		the metal sheets covering the hole, no other anthropogenic materials were observed and the risk of asbestos in soil was considered to be low.

9.2.2 Quality Assurance / Quality Control

For quality assurance / quality control (QA/QC) purposes, the following samples were collected in accordance with AS4482.1 (2005).

The following field QA/QC samples were collected during sampling:

- QC1 was a field duplicate collected with primary sample LC2 0.0-0.1
- QC2 was a field triplicate collected with primary sample LC2 0.0-0.1

9.3 Analytical Plan

From the samples collected across the site, the analytical plan presented in **Table 9** was executed to assess the identified COPCs.

Table 9: *Analytical plan for the investigation*

Sample Type	Sample Media	TRH	BTEX	PAH	Phenols	OCP/OPP	Heavy Metals	Herbicides
Primary	Soil	2	2	2	2	2	19	5
Duplicate	Soil	0	0	0	0	0	1	0
Triplicate	Soil	0	0	0	0	0	1	0

9.4 Decontamination procedures

The following decontamination procedures were undertaken for the investigation:

- Single-use disposable nitrile gloves were used to extract the samples from each sampling location to prevent cross-contamination.
- The sampling equipment above that was reused for sampling different groundwater wells was rinsed with a decontamination solution (2% Decon 90 and tap water), followed by a secondary rinse with free deionised water between collecting each sample.
- Samples collected were placed in laboratory prepared containers for each media.

10. Methods

10.1 Soil Investigation

A suitably qualified environmental scientist was mobilised to the site with appropriate equipment to undertake the soil investigation required. Methodology as below:

- A review of dial before you dig documentation was completed to assess for possible underground services.
- Samples were collected with the aid of a hand held auger and were advanced to a depth of approximately 0.6 m below ground level (bgl).
- Borehole samples were collected at the surface (0.0-0.1 m), 0.5m below ground level.
- Single-use disposable nitrile gloves were used to extract the samples from each sampling location to prevent cross-contamination.
- Samples were collected directly from the auger with care taken to not collect soil that was in contact with the auger.
- Samples were placed in a laboratory prepared 250 millilitre (mL) glass jar with a Teflon lined screw top lid and zip lock bags for asbestos analysis. Details of the sample, including project number, sample number, sample depth and date of the sample were written on each sample container.
- Each soil sample was described in general accordance with the Unified Soil Classification System (USCS) and details of any discolouration, staining, odours or other indicators of contamination noted.
- Each sample was field screened with a PID for volatile organic compounds (VOCs).
- All samples were immediately placed and stored in an ice-filled esky to keep them chilled. Samples were transported to a NATA accredited laboratory with the signed chain of custody (COC) form with the required analysis (**Appendix C**).
- The auger was cleaned and rinsed between sampling locations to prevent cross contamination between samples.

11. Quality Assurance (QA) and Quality Control (QC) Plan

11.1 Field QA/QC

Field duplicate and field triplicate samples were collected for calculating the relative percent difference (RPD) and assess the precision and accuracy of the laboratory. An RPD of less than 50% is considered acceptable where the analyte concentration is greater than five (5) times the laboratory LOR. Should the RPD be greater than 50%, then further investigation as to the reason for high RPD would occur.

The duplicate and triplicate samples were collected with the following primary samples:

- QC1 and QC2 were collected with primary sample LC2 0.0-0.1 on 1 September 2021 and analysed for heavy metals.

The calculated RPDs (where applicable) for detectable concentrations of COPCs was less than 50% for all samples between QC1 and the primary sample.

Arsenic and copper exceeded the acceptable criteria between QC2 and the primary sample with RPDs of 67% and 52% respectively. These exceedances were attributed to sample heterogeneity and as both the primary and QC samples were below the adopted assessment criteria, the RPD exceedances do not alter the outcomes of the assessment.

Therefore, analytical data is considered suitable for the purpose of the assessment.

The QA/QC results and calculated RPDs are presented on **Table 1 and Table 2 of Appendix B.**

11.2 Laboratory QA/QC

A review of the laboratory QA/QC data is summarised below (**Appendix C**).

Holding Times

Overall the holding times of each sample were within the required holding times with the exception of the following:

Volatile organic compounds (VOC) in samples Hole 1 0.0-0.1 and SP2. This was attributed to delays that were experienced with the courier during COVID-19 lockdowns. However, as concentrations of VOCs (in the form of TRH and BTEX) were below the laboratory limit of reporting, the exceedance of holding times is not considered to affect the outcome of the investigation.

Laboratory Accreditation

All analysis was performed in NATA accredited laboratory as follow:

- **Primary Laboratory:** SGS Australia Pty Ltd (NATA accreditation No. 2562)
- **Secondary Laboratory:** Envirolab Services Pty Ltd (NATA accreditation No. 2901)

Surrogate and Spike Recoveries

All surrogate recoveries were within the tolerable limits.

Matrix Spike

All matrix spike recoveries were within tolerable limits with the exception of the following:

Table 10: Matrix spike samples that Exceed the Laboratory QA/QC criteria

Report Number	Media	QC sample	Sample Number	Analyte	Recovery (%)	Laboratory Comment
SE223496	Soil	SE223638.001	LB232813.004	Lead	-145	Recovery failed acceptance due to matrix interference
				Zinc	-1	Recovery failed acceptance due to matrix interference
		SE223496.014	LB232762.004	Bromofluoro benzene	69	At least 2 of 3 surrogates are within acceptance criteria

Based on the comments provided by the laboratory, the nature of the site, and the fact that the exceedance was reached in a surrogate sample, the exceedance is not considered to have impacted the outcome of this investigation.

Laboratory Control Sample Results

All laboratory control sample results were within the tolerable limits.

Laboratory Duplicate Results

The duplicate sample RPDs were within the tolerable range for each sample.

Laboratory Blank Results

All method laboratory blanks were below the laboratory LOR and therefore within tolerable limits.

12. Results

The findings from site inspection and laboratory analytical results of the investigation are presented in the following sections.

12.1 Visual Observations / Field Measurements

The site investigation identified fill and natural material across the site during sampling, with the exception of the sample collected from the stockpile.

Soil material comprised predominantly of a brown sandy silt at the surface. Topographically high areas had exposed rock at the surface which also had gravel in the near surface soil. Sample locations advanced at these locations generally encountered refusal on rock at approximately 0.1-0.2 m.

Where refusal was not encountered, a red-brown coloured silty clay was encountered at approximately 0.2-0.3 m.

Other than the stockpile, no visual or olfactory indicators were detected in any of the soil samples collected. The stockpile located in the north-western section of the site had fragments of bitumen and concrete. No other indicators of contamination were noted in the stockpile.

Field screening of each sample with a calibrated photoionisation detector (PID) was completed for each sample. PID measurements ranged from 0.0 to 1.1 indicating a negligible potential for ionisable volatile organic compounds.

Copies of the borehole logs are presented in **Appendix E**.

12.2 Analytical Results

A total of nineteen (19) primary soil samples were collected for analysis. A summary of the analytical results is presented in **Tables 1 and 2, Appendix B**, while copies of the laboratory reports, sample receipt and COCs are presented in **Appendix C**.

A brief summary of the results is presented below.

TRH, BTEX, OPP/OCP, PAH, PCB and Asbestos

One (1) soil sample collected from the hole beneath the metal sheeting was analysed for TRH, BTEX, OPP/OCP, PAH, PCB, Phenols, and Asbestos. The concentration of each of these COPCs was below the laboratory limit of reporting (LOR) and therefore the adopted assessment criteria.

Heavy Metals

Heavy metals were detected in each sample analysed, however these concentrations were below the adopted assessment criteria for each metal.

Based on the consistency of metal concentrations measured across the site, the recorded concentrations were considered indicative of natural background levels.

13. Summary and Conclusions

Catalyze engaged Lanterra to complete a detailed site investigation (DSI) for Lots 2, 3 and 4 of DP 1185025 and Lot 1 of DP 1007355, Yass, NSW.

The objective of the investigation was to assess the suitability of the site for the land uses permitted under the R5: Large Lot Residential Zone and adequately characterise the condition of the site including soil sampling from a contamination perspective.

The results of the PSI by Murrang and the soil sampling completed as a part of this investigation are summarised below:

- The majority of the site was used for agricultural purposes. Two (2) existing residential properties are located on the site.
- Sources of potential contamination that had been identified included herbicides that may have been used as a part of pasture improvement, possible lead that may have been deposited at the surface by vehicular traffic along Wee Jasper Road.
- Soil across the site comprised of a sandy silt at the surface while a silty clay was encountered below the sandy silt.
- Based on the analytical results of soil samples, COPCs were below the adopted criteria in all soil samples analysed while no traces of anthropogenic materials were observed in soil across the site.
- A small stockpile of 3 m³ was located in the north-western section of the site. The stockpile had traces of asphalt and concrete, however concentrations of COPCs in soil were below the adopted assessment criteria. Based on the results, the soil is considered suitable to remain on the site, while the amount of concrete and asphalt is not prevent the use of the soil from an aesthetic perspective.

Based on the results of the investigation and the current setting of the site, the risk of contamination that may pose a risk to the future land uses is low. Therefore, Lanterra concludes the that the site is suitable for future residential land use.

While no contamination was identified across the site, a construction environment management plan (CEMP) which includes an unexpected finds protocol (UFP) to manage any unexpected occurrences of contamination should they be encountered is recommended.

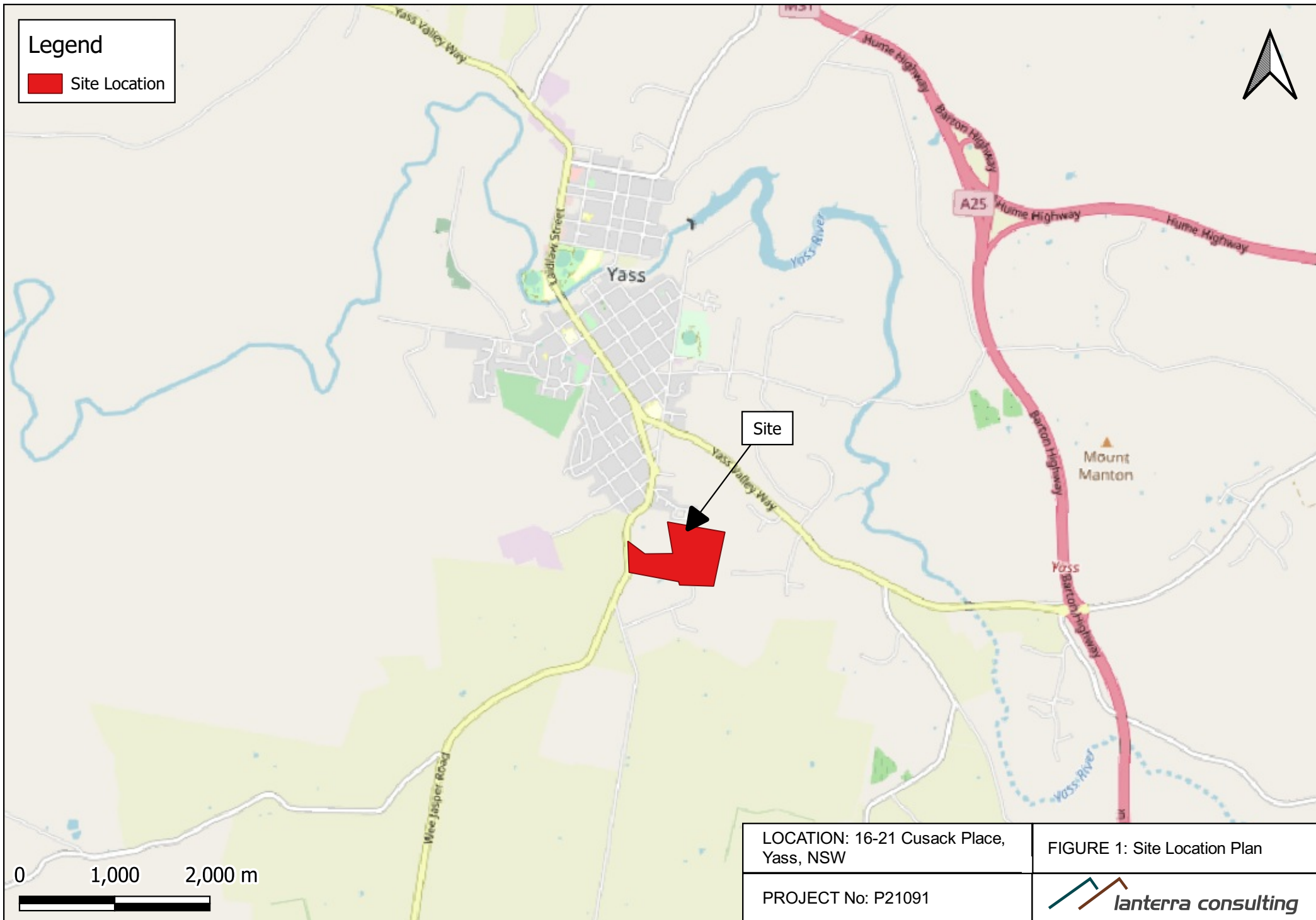
14. References

- Murrang (2021) 'Preliminary Site Investigation of 16-21 Cusack Place, Yass'
- National Environmental Protection Council (NEPC) (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended April 2013) (hereafter ASC NEPM 2013)
- ADWG (2011) NHRMC 2011, Australian Drinking Water Guideline – Version 3.6 (March 2021)
- NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Ed.) (2017)
- NSW EPA (1995) Sampling Design Guidelines (1995)
- NSW EPA (2020) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites
- Standards Australia (2005). Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (2005).

15. Glossary

ACM	Asbestos-containing material
ACT	Australian Capital Territory
AHD	Australian Height Datum
AEC	Area of Environmental Concern
ASC NEPM 2013	National Environment Protection (Assessment of Site Contamination Measure 1999' as amended 2013.
Bgl	Below ground level
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene
CEC	Cation Exchange Capacity
EMP	Environmental Management Plan
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
EIL	Ecological Investigation Level
EPSDD	Environment, Planning and Sustainable Development Directorate
ESL	Ecological Screening Level
EPA	Environment Protection Authority
GIL	Groundwater Investigation Level
HIL	Health Investigation Level
HDPE	High-density polyethylene
HSL	Health Screening Level
kg	Kilogram
Lanterra	Lanterra Consulting Pty Limited
LOR	Limit of Reporting
mg	Milligram
µg	Microgram
µg/L	Microgram per litre
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NSW	New South Wales
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling, Analysis and Quality Plan
TRH	Total Recoverable Hydrocarbon
UFP	Unexpected Finds Protocol
USCS	Unified Soil Classification System
UST	Underground Storage Tank

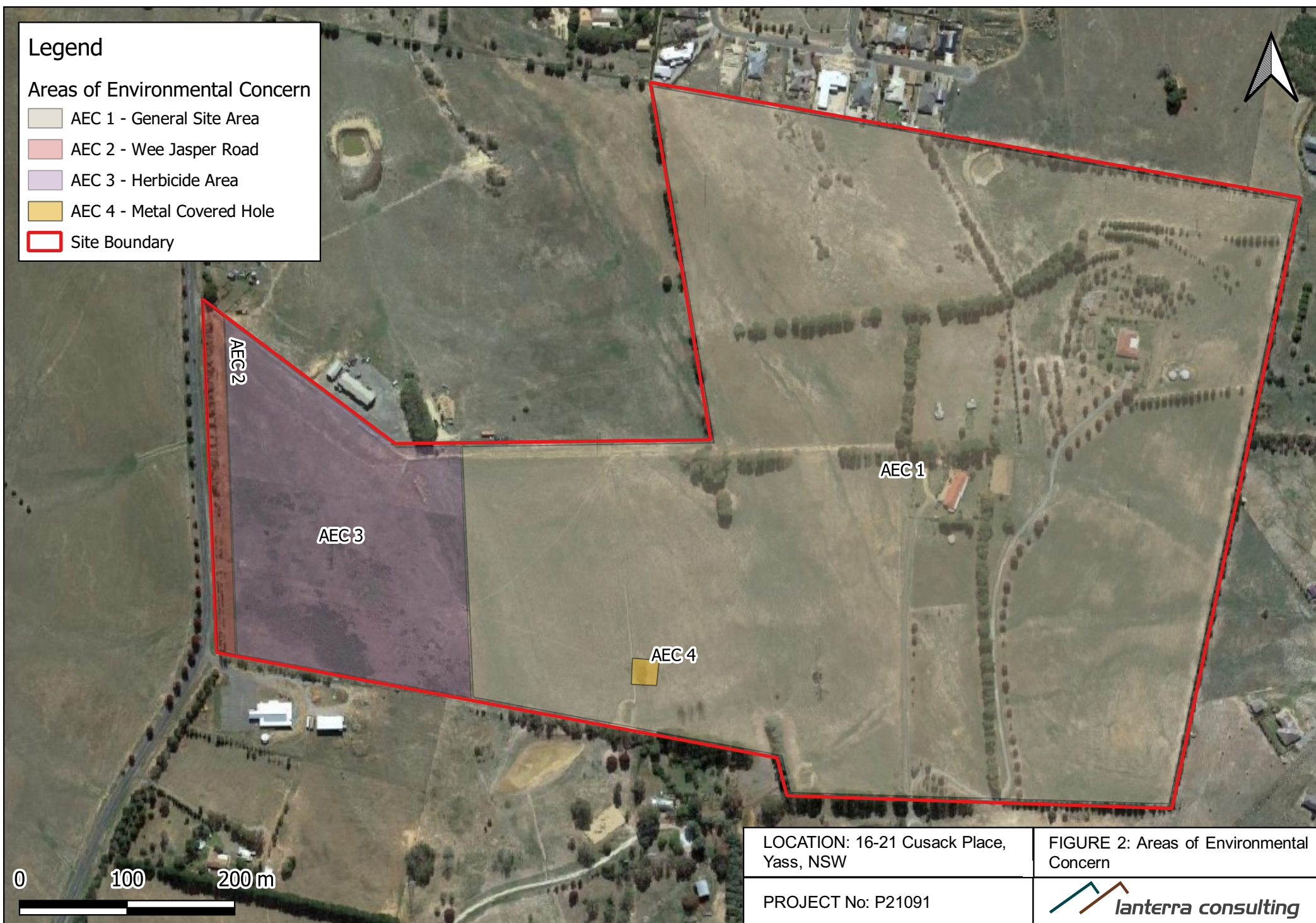
Figures



Legend

Areas of Environmental Concern

-  AEC 1 - General Site Area
-  AEC 2 - Wee Jasper Road
-  AEC 3 - Herbicide Area
-  AEC 4 - Metal Covered Hole
-  Site Boundary



LOCATION: 16-21 Cusack Place,
Yass, NSW

PROJECT No: P21091

FIGURE 2: Areas of Environmental
Concern

 **lanterra consulting**

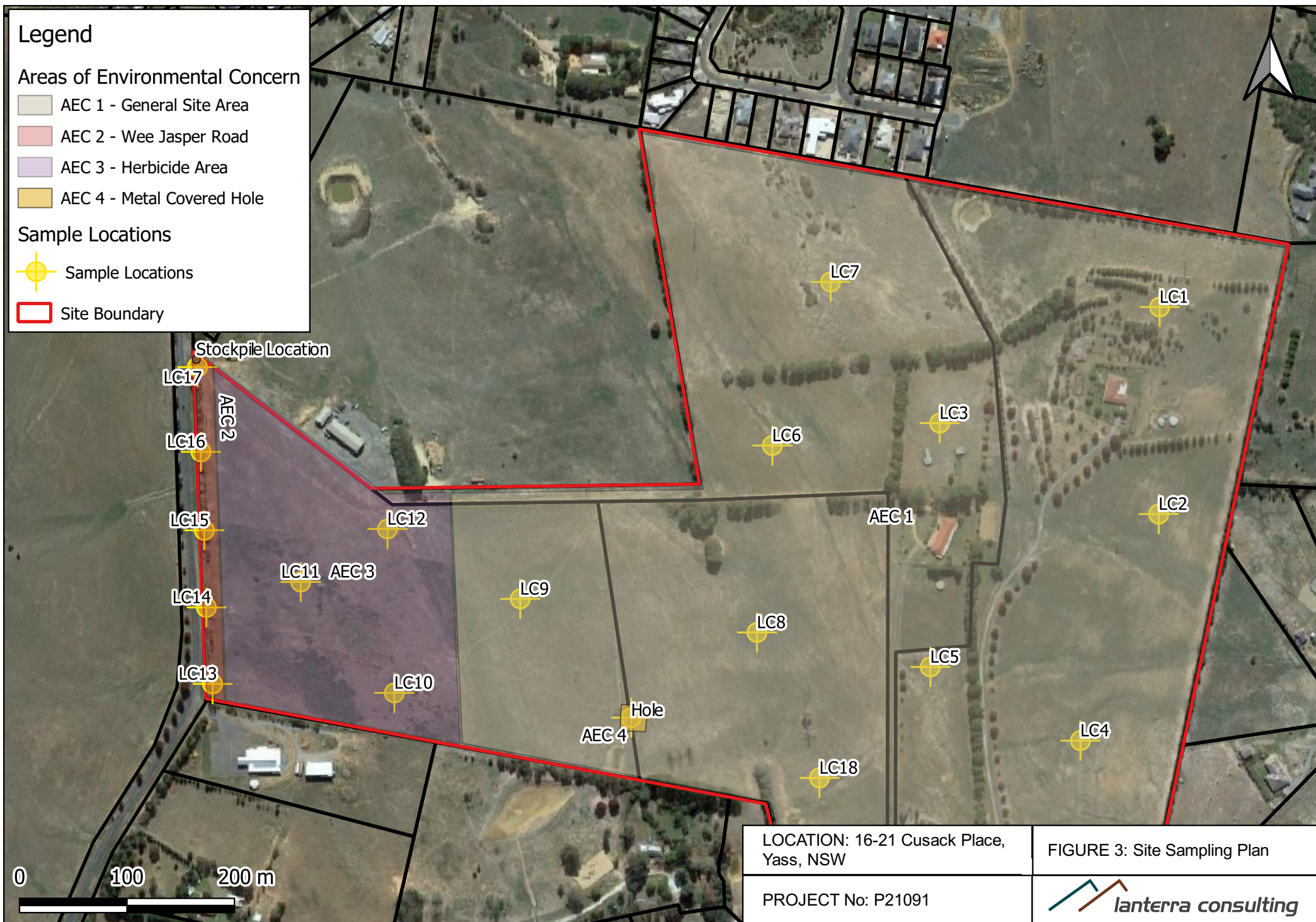
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Areas of Environmental Concern

- AEC 1 - General Site Area
- AEC 2 - Wee Jasper Road
- AEC 3 - Herbicide Area
- AEC 4 - Metal Covered Hole

Sample Locations

- Sample Locations
- Site Boundary



Results Summary Tables

P21091 - Detailed Site Investigation, Cusack Place, Yass

Table 1: Analytical Results - Heavy Metals

				Field_ID	LC1 0.0-0.1	LC2 0.0-0.1	LC3 0.2-0.3	LC4 0.0-0.1	LC5 0.0-0.1
				Depth m	0.0-0.1	0.0-0.1	0.2-0.3	0.0-0.1	0.0-0.1
				Sampled-date	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
				Fill/Natural					
				ASC NEPM (2013) HIL A					
Method_Type	ChemName	Units	EQL	ASC NEPM (2013) E1/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0- 1.0m/1.0-2.0m/2.0- 4.0m				
Metals in soil	Arsenic, As	mg/kg	1	100	100	3	3	7	6
	Cadmium, Cd	mg/kg	0.3		20	<0.3	<0.3	<0.3	<0.3
	Chromium, Cr	mg/kg	0.3	490	100	13	30	6.6	6.8
	Copper, Cu	mg/kg	0.5	180	6000	6.2	4.1	1.2	2.2
	Lead, Pb	mg/kg	1	1100	300	13	11	16	12
	Nickel, Ni	mg/kg	0.5	120	400	4.5	3.3	1.2	1.3
	Zinc, Zn	mg/kg	2	430	7400	24	7.7	12	8.3
	Mercury	mg/kg	0.05		40	<0.05	<0.05	<0.05	<0.05

P21091 - Detailed Site Investigation, Cusack Place, Yass

Table 1: Analytical Results - Heavy Metals

				Field_ID																	Hole 0.0-0.1		QC1
				LC6 0.0-0.1	LC7 0.0-0.1	LC8 0.25-0.35	LC9 0.0-0.1	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1							
				Depth m	0.0-0.1	0.0-0.1	0.25-0.3	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1				
				Sampled-date	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020				
				Fill/Natural																			
				ASC NEPM (2013) EIL/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0-1.0m/1.0-2.0m/2.0-4.0m	ASC NEPM (2013) HIL A																	
Method_Type	ChemName	Units	EQL																				
Metals in soil	Arsenic, As	mg/kg	1	100		100	4	4	3	2	2	3	3	7	6	5	4	4	5	3	2		
	Cadmium, Cd	mg/kg	0.3		20	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		
	Chromium, Cr	mg/kg	0.3	490	100	5.4	3.2	7.2	7.9	19	38	25	19	21	19	34	22	32	14	21			
	Copper, Cu	mg/kg	0.5	180	6000	3.7	1.5	3.3	3.7	5.9	7.2	6.2	12	13	12	8.2	7.3	3.5	3.7	3.9			
	Lead, Pb	mg/kg	1	1100	300	13	12	12	11	9	11	9	17	20	16	16	23	16	13	14			
	Nickel, Ni	mg/kg	0.5	120	400	2.6	1.5	2	2.1	3.5	4.5	4.1	19	25	21	9	6.2	2.7	2.2	2.5			
	Zinc, Zn	mg/kg	2	430	7400	30	13	8.8	7.3	11	15	12	68	90	73	26	32	10	110	8			
	Mercurv	mg/kg	0.05		40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		

P21091 - Detailed Site Investigation, Cusack Place, Yass
Table 2: Analytical Results - TRH, BTEX, PAH, OCP,OPP, Herbicides, PCB, Asbestos

Method_Type	ChemName	Units	EQL	ASC NEPM (2013) E1/E2S Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0- 1.0m/1.0-2.0m/2.0- 4.0m	Field_ID	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1	
						Depth m	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
						Sampled-date	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
						Fill/Natural											
							ASC NEPM (2013) HIL A										
Organochlorine Pesticides	Hexachlorobenzene (HCB)	mg/kg	0.1			10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Alpha BHC	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Lindane	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Heptachlor	mg/kg	0.1			6	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Aldrin	mg/kg	0.1			6	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Beta BHC	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Delta BHC	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Heptachlor epoxide	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	o,p'-DDE	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Alpha Endosulfan	mg/kg	0.2			270	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Gamma Chlordane	mg/kg	0.1			50	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Alpha Chlordane	mg/kg	0.1			50	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	trans-Nonachlor	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	p,p'-DDE	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Dieldrin	mg/kg	0.2			6	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Endrin	mg/kg	0.2			10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	o,p'-DDD	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	o,p'-DDT	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Beta Endosulfan	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	p,p'-DDD	mg/kg	0.1			240	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	p,p'-DDT	mg/kg	0.1	180		240	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Endosulfan sulphate	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Endrin Aldehyde	mg/kg	0.1			10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Methoxychlor	mg/kg	0.1			300	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Endrin Ketone	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Isodrin	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Mirex	mg/kg	0.1			10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
Organophosphorus Pesticides	Dichlorvos	mg/kg	0.5				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	
	Dimethoate	mg/kg	0.5				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	
	Diazinon (Dimpylate)	mg/kg	0.5				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	
	Fenitrothion	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Malathion	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2			160	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Parathion-ethyl (Parathion)	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Bromophos Ethyl	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Methidathion	mg/kg	0.5				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	
	Ethion	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
	Azinphos-methyl (Guthion)	mg/kg	0.2				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	
Herbicides	4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	2,4-DB	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	2,6-D	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Bromoxynil	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Clopyralid	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Dicamba	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	Dichloroprop / Dichlorprop-P	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	Dinoseb	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Fluroxypyr	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Ioxynil	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	mecoprop	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	MCPA	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	MCPB	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	Picloram	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	Triclopyr	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	2,4,5-T	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	<0.01	N.A.	N.A.	N.A.	
	2,4,5-TP	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Simazine	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Atrazine	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Propazine	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Terbuthylazine	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Metribuzin	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Prometryn	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Terbutryn	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Cyanazine	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	N.A.	N.A.	
	Hexazinone	mg/kg	1				<1	<1	<1	<1	N.A.	N.A.	<1	N.A.	N.A.	N.A.	
PAHs in Soil	Naphthalene	mg/kg	0.1	170	5/NL/NL		<1	<1	<1	<1	N.A.	N.A.	<1	N.A.	N.A.	N.A.	
	2-methylnaphthalene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	1-methylnaphthalene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Acenaphthylene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Acenaphthene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Fluorene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Phenanthrene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Anthracene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Fluoranthene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	
	Pyrene	mg/kg	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	

P21091 - Detailed Site Investigation, Cusack Place, Yass

Table 2: Analytical Results - TRH, BTEX, PAH, OCP,OPP, Herbicides, PCB, Asbestos

				Field_ID														LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1	
				Depth m														0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
				Sampled-date														24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
				Fill/Natural																								
				ASC NEPM (2013) HIL A																								
				ASC NEPM (2013) EIL/ESL Urban Residential and Public Open Space																								
				ASC NEPM (2013) HSL A (mg/kg) 0.0- 1.0m/1.0-2.0m/2.0- 4.0m																								
Method_Type	ChemName	Units	EQL																									
	Benzo[a]anthracene	mg/kg	0.1																									
	Chrysene	mg/kg	0.1																									

P21091 - Detailed Site Investigation, Cusack Place, Yass
Table 2: Analytical Results - TRH, BTEX, PAH, OCP,OPP, Herbicides, PCB, Asbestos

Method_Type	ChemName	Units	EQL	ASC NEPM (2013) EIL/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0- 1.0m/1.0-2.0m/2.0- 4.0m	Field_ID	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1
						Depth m	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
						Sampled-date	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
						Fill/Natural										
Method_Type	ChemName	Units	EQL	ASC NEPM (2013) EIL/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0- 1.0m/1.0-2.0m/2.0- 4.0m	ASC NEPM (2013) HIL A										
	Benzo[b]fluoranthene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Benzo[a]fluoranthene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Benzo[a]pyrene	mg/kg	0.1	0.7		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Indeno[1,2,3-cd]pyrene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Dibenzo[ah]anthracene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Benzo[ghi]perylene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2			3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3			3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.3
	Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2			3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Total PAH (18)	mg/kg	0.8			300	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.8
PCBs in Soil	Arochlor 1016	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1221	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1232	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1242	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1248	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1254	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1260	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1262	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Arochlor 1268	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	Total PCBs (Arochlors)	mg/kg	1			1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<1
TRH Soil C10-C40 NEPM	TRH C10-C14	mg/kg	20			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<20
	TRH C15-C28	mg/kg	45			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<45
	TRH C29-C36	mg/kg	45			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<45
	TRH C37-C40	mg/kg	100			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<100
	TRH >C10-C16	mg/kg	25			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<25
	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	120	280/NL/NL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<25
	TRH >C16-C34 (F3)	mg/kg	90	1300		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<90
	TRH >C34-C40 (F4)	mg/kg	120	5600		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<120
	TRH C10-C36 Total	mg/kg	110			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<110
	TRH >C10-C40 Total (F bands)	mg/kg	210			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<210
BTEX + VOC	Benzene	mg/kg	0.1	65	0.7/1/2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Toluene	mg/kg	0.1	105	480/NL/NL/NL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Ethylbenzene	mg/kg	0.1	125	NL/NL/NL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	m/p-xylene	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2
	o-xylene	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1
	Total Xylenes	mg/kg	0.3	45	110/310/NL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.3
	Total BTEX	mg/kg	0.6			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.6
	Benzene (F0)	mg/kg	20		0.7/1/2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<20
	TRH C6-C9	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<20
	TRH C6-C10	mg/kg	25			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<25
	TRH C6-C10 minus BTEX (F1)	mg/kg	25	180	50/90/150	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<25

Laboratory Reports and Chain of Custody Documentation

CLIENT DETAILS

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Email Chris.Gunton@lanterra.com.au
Project **P21091 - Cusack PI Yass**
Order Number **P21091**
Samples 21

LABORATORY DETAILS

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SGS Reference **SE223496 R0**
Date Received 10/9/2021
Date Reported 20/9/2021

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.

Sample # 19; A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures.

We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

17 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

Phenoxy Acid Herbicides subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Number 2562/14420. Report Number ME322581

SIGNATORIES



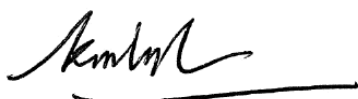
Akheeque BENIAAMEEN
Chemist



Bennet LO
Senior Chemist



Kamrul AHSAN
Senior Chemist



Ly Kim HA
Organic Section Head



Shane MCDERMOTT
Inorganic/Metals Chemist



Teresa NGUYEN
Organic Chemist

VOC's in Soil [AN433] Tested: 15/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL - 2/9/2021 SE223496.019	SOIL - 2/9/2021 SE223496.021
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 15/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL - 2/9/2021 SE223496.019	SOIL - 2/9/2021 SE223496.021
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 14/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL - 2/9/2021 SE223496.019	SOIL - 2/9/2021 SE223496.021
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 14/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL - 2/9/2021 SE223496.019	SOIL - 2/9/2021 SE223496.021
Naphthalene	mg/kg	0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 14/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL - 2/9/2021 SE223496.019	SOIL - 2/9/2021 SE223496.021
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	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
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
Endrin	mg/kg	0.2	<0.2	<0.2
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	<0.1	<0.1
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

OP Pesticides in Soil [AN420] Tested: 14/9/2021

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL	SOIL
			-	-
			2/9/2021 SE223496.019	2/9/2021 SE223496.021
Dichlorvos	mg/kg	0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5
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	<0.2	<0.2
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	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 14/9/2021

PARAMETER	UOM	LOR	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC16 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			1/9/2021 SE223496.010	1/9/2021 SE223496.011	1/9/2021 SE223496.012	2/9/2021 SE223496.013	2/9/2021 SE223496.016
Arochlor 1016	mg/kg	0.2	-	-	-	-	-
Arochlor 1221	mg/kg	0.2	-	-	-	-	-
Arochlor 1232	mg/kg	0.2	-	-	-	-	-
Arochlor 1242	mg/kg	0.2	-	-	-	-	-
Arochlor 1248	mg/kg	0.2	-	-	-	-	-
Arochlor 1254	mg/kg	0.2	-	-	-	-	-
Arochlor 1260	mg/kg	0.2	-	-	-	-	-
Arochlor 1262	mg/kg	0.2	-	-	-	-	-
Arochlor 1268	mg/kg	0.2	-	-	-	-	-
Total PCBs (Arochlors)	mg/kg	1	-	-	-	-	-

PARAMETER	UOM	LOR	Hole 0.0-0.1	SP2
			SOIL	SOIL
			2/9/2021 SE223496.019	2/9/2021 SE223496.021
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 [MA1569] Tested: 20/9/2021

PARAMETER	UOM	LOR	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC16 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			1/9/2021 SE223496.010	1/9/2021 SE223496.011	1/9/2021 SE223496.012	2/9/2021 SE223496.013	2/9/2021 SE223496.016
4-Chlorophenoxy acetic acid (4-CPA)*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D [(2,4-Dichlorophenoxy) acetic acid]*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4-DB*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-D*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoxynil*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Clopyralid*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dicamba*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichloroprop / Dichlorprop-P*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dinoseb*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluroxypyr*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ioxynil*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
mecoprop*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MCPA*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MCPB*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Picloram*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4,5-T*	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4,5-TP*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenoxy acetic acid*	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Triazines in Soil [AN420] Tested: 14/9/2021

PARAMETER	UOM	LOR	LC10 0.0-0.1	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC16 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			- 1/9/2021 SE223496.010	- 1/9/2021 SE223496.011	- 1/9/2021 SE223496.012	- 2/9/2021 SE223496.013	- 2/9/2021 SE223496.016
Simazine	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Atrazine	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Propazine	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Terbutylazine	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Metribuzin	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prometryn	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Terbutryn	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cyanazine	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexazinone	mg/kg	1	<1	<1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 16/9/2021

PARAMETER	UOM	LOR	LC1 0.0-0.1	LC2 0.0-0.1	LC3 0.2-0.3	LC4 0.0-0.1	LC5 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			1/9/2021 SE223496.001	1/9/2021 SE223496.002	1/9/2021 SE223496.003	1/9/2021 SE223496.004	1/9/2021 SE223496.005
Arsenic, As	mg/kg	1	3	3	7	6	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	13	30	6.6	6.8	15
Copper, Cu	mg/kg	0.5	6.2	4.1	1.2	2.2	2.3
Lead, Pb	mg/kg	1	13	11	16	12	14
Nickel, Ni	mg/kg	0.5	4.5	3.3	1.2	1.3	1.8
Zinc, Zn	mg/kg	2	24	7.7	12	8.3	11

PARAMETER	UOM	LOR	LC6 0.0-0.1	LC7 0.0-0.1	LC8 0.25-0.35	LC9 0.0-0.1	LC10 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			1/9/2021 SE223496.006	1/9/2021 SE223496.007	1/9/2021 SE223496.008	1/9/2021 SE223496.009	1/9/2021 SE223496.010
Arsenic, As	mg/kg	1	4	4	3	2	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	5.4	3.2	7.2	7.9	19
Copper, Cu	mg/kg	0.5	3.7	1.5	3.3	3.7	5.9
Lead, Pb	mg/kg	1	13	12	12	11	9
Nickel, Ni	mg/kg	0.5	2.6	1.5	2.0	2.1	3.5
Zinc, Zn	mg/kg	2	30	13	8.8	7.3	11

PARAMETER	UOM	LOR	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			1/9/2021 SE223496.011	1/9/2021 SE223496.012	2/9/2021 SE223496.013	2/9/2021 SE223496.014	2/9/2021 SE223496.015
Arsenic, As	mg/kg	1	3	3	7	6	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	38	25	19	21	19
Copper, Cu	mg/kg	0.5	7.2	6.2	12	13	12
Lead, Pb	mg/kg	1	11	9	17	20	16
Nickel, Ni	mg/kg	0.5	4.5	4.1	19	25	21
Zinc, Zn	mg/kg	2	15	12	68	90	73

PARAMETER	UOM	LOR	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1	QC1
			SOIL	SOIL	SOIL	SOIL	SOIL
			2/9/2021 SE223496.016	2/9/2021 SE223496.017	2/9/2021 SE223496.018	2/9/2021 SE223496.019	1/9/2021 SE223496.020
Arsenic, As	mg/kg	1	4	4	5	3	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	34	22	32	14	21
Copper, Cu	mg/kg	0.5	8.2	7.3	3.5	3.7	3.9
Lead, Pb	mg/kg	1	16	23	16	13	14
Nickel, Ni	mg/kg	0.5	9.0	6.2	2.7	2.2	2.5
Zinc, Zn	mg/kg	2	26	32	10	110	8.0

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 16/9/2021 (continued)

			SP2
			SOIL
			-
			2/9/2021
			SE223496.021
PARAMETER	UOM	LOR	
Arsenic, As	mg/kg	1	4
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	11
Copper, Cu	mg/kg	0.5	6.8
Lead, Pb	mg/kg	1	17
Nickel, Ni	mg/kg	0.5	6.7
Zinc, Zn	mg/kg	2	28

Mercury in Soil [AN312] Tested: 16/9/2021

PARAMETER	UOM	LOR	LC1 0.0-0.1	LC2 0.0-0.1	LC3 0.2-0.3	LC4 0.0-0.1	LC5 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021	1/9/2021	1/9/2021	1/9/2021	1/9/2021
			SE223496.001	SE223496.002	SE223496.003	SE223496.004	SE223496.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	LC6 0.0-0.1	LC7 0.0-0.1	LC8 0.25-0.35	LC9 0.0-0.1	LC10 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021	1/9/2021	1/9/2021	1/9/2021	1/9/2021
			SE223496.006	SE223496.007	SE223496.008	SE223496.009	SE223496.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021	1/9/2021	2/9/2021	2/9/2021	2/9/2021
			SE223496.011	SE223496.012	SE223496.013	SE223496.014	SE223496.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1	QC1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			2/9/2021	2/9/2021	2/9/2021	2/9/2021	1/9/2021
			SE223496.016	SE223496.017	SE223496.018	SE223496.019	SE223496.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	SP2
			SOIL
			-
			2/9/2021
			SE223496.021
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 15/9/2021

PARAMETER	UOM	LOR	LC1 0.0-0.1	LC2 0.0-0.1	LC3 0.2-0.3	LC4 0.0-0.1	LC5 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021 SE223496.001	1/9/2021 SE223496.002	1/9/2021 SE223496.003	1/9/2021 SE223496.004	1/9/2021 SE223496.005
% Moisture	%w/w	1	25.2	22.2	17.4	28.5	24.2

PARAMETER	UOM	LOR	LC6 0.0-0.1	LC7 0.0-0.1	LC8 0.25-0.35	LC9 0.0-0.1	LC10 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021 SE223496.006	1/9/2021 SE223496.007	1/9/2021 SE223496.008	1/9/2021 SE223496.009	1/9/2021 SE223496.010
% Moisture	%w/w	1	26.7	22.8	19.7	23.2	23.5

PARAMETER	UOM	LOR	LC11 0.0-0.1	LC12 0.0-0.1	LC13 0.0-0.1	LC14 0.0-0.1	LC15 0.0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			1/9/2021 SE223496.011	1/9/2021 SE223496.012	2/9/2021 SE223496.013	2/9/2021 SE223496.014	2/9/2021 SE223496.015
% Moisture	%w/w	1	25.3	24.9	17.3	19.0	21.9

PARAMETER	UOM	LOR	LC16 0.0-0.1	LC17 0.0-0.1	LC18 0.0-0.1	Hole 0.0-0.1	QC1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			2/9/2021 SE223496.016	2/9/2021 SE223496.017	2/9/2021 SE223496.018	2/9/2021 SE223496.019	1/9/2021 SE223496.020
% Moisture	%w/w	1	22.7	26.4	17.6	15.9	20.7

PARAMETER	UOM	LOR	SP2
			SOIL
			-
			2/9/2021 SE223496.021
% Moisture	%w/w	1	8.7

Fibre Identification in soil [AN602] Tested: 16/9/2021

			Hole 0.0-0.1	SP2
			SOIL	SOIL
			-	-
			2/9/2021	2/9/2021
			SE223496.019	SE223496.021
PARAMETER	UOM	LOR		
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602

The sample can be reported "no asbestos found at the reporting limit (RL) of 0.1 g/kg" (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if-

- (a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres);
- (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg; and
- (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

MA-1569

This method is intended for the analysis of a diverse range of pesticides and herbicides by Liquid Chromatography using a Tandem Mass Spectrometry detector (LC-MS/MS). Due to the diverse nature of the analytes covered in this method each analyte requires its own analytical acquisition method thus the sample is run multiple times according to the analyte list requested.

Soil and solid samples are extracted with ACN and extracts are filtered then directly injected onto LC-MS/MS using selective ion monitoring.

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.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
***	Indicates that both * and ** apply.	LNR	Sample listed, but not received.		

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

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

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

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

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

Note that in terms of units of radioactivity:

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

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

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

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STATEMENT OF QA/QC PERFORMANCE

SE223496 R0

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Project **P21091 - Cusack PI Yass**
Order Number **P21091**
Samples 21

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SGS Reference **SE223496 R0**
Date Received 10 Sep 2021
Date Reported 20 Sep 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:

Analysis Date	VOC's in Soil	2 items
	Volatile Petroleum Hydrocarbons in Soil	2 items
Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	3 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items
	VOC's in Soil	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	21 Soil
Date documentation received	10/9/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	10.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

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

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

Fibre Identification in soil

Method: ME-(AU)-ENVJAN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Hole 0.0-0.1	SE223496.019	LB232787	02 Sep 2021	10 Sep 2021	02 Sep 2022	16 Sep 2021	02 Sep 2022	17 Sep 2021
SP2	SE223496.021	LB232787	02 Sep 2021	10 Sep 2021	02 Sep 2022	16 Sep 2021	02 Sep 2022	17 Sep 2021

Mercury in Soil

Method: ME-(AU)-ENVJAN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC1 0.0-0.1	SE223496.001	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC2 0.0-0.1	SE223496.002	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC3 0.2-0.3	SE223496.003	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC4 0.0-0.1	SE223496.004	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC5 0.0-0.1	SE223496.005	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC6 0.0-0.1	SE223496.006	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC7 0.0-0.1	SE223496.007	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC8 0.25-0.35	SE223496.008	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC9 0.0-0.1	SE223496.009	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC10 0.0-0.1	SE223496.010	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232817	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
LC14 0.0-0.1	SE223496.014	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
LC15 0.0-0.1	SE223496.015	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
LC17 0.0-0.1	SE223496.017	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
LC18 0.0-0.1	SE223496.018	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232817	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021
QC1	SE223496.020	LB232819	01 Sep 2021	10 Sep 2021	29 Sep 2021	16 Sep 2021	29 Sep 2021	17 Sep 2021
SP2	SE223496.021	LB232819	02 Sep 2021	10 Sep 2021	30 Sep 2021	16 Sep 2021	30 Sep 2021	17 Sep 2021

Moisture Content

Method: ME-(AU)-ENVJAN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC1 0.0-0.1	SE223496.001	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC2 0.0-0.1	SE223496.002	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC3 0.2-0.3	SE223496.003	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC4 0.0-0.1	SE223496.004	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC5 0.0-0.1	SE223496.005	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC6 0.0-0.1	SE223496.006	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC7 0.0-0.1	SE223496.007	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC8 0.25-0.35	SE223496.008	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC9 0.0-0.1	SE223496.009	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC10 0.0-0.1	SE223496.010	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC14 0.0-0.1	SE223496.014	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC15 0.0-0.1	SE223496.015	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC17 0.0-0.1	SE223496.017	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
LC18 0.0-0.1	SE223496.018	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
QC1	SE223496.020	LB232766	01 Sep 2021	10 Sep 2021	15 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021
SP2	SE223496.021	LB232766	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	20 Sep 2021	17 Sep 2021

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	17 Sep 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
LC1 0.0-0.1	SE223496.001	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC2 0.0-0.1	SE223496.002	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC3 0.2-0.3	SE223496.003	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC4 0.0-0.1	SE223496.004	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC5 0.0-0.1	SE223496.005	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC6 0.0-0.1	SE223496.006	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC7 0.0-0.1	SE223496.007	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC8 0.25-0.35	SE223496.008	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC9 0.0-0.1	SE223496.009	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC10 0.0-0.1	SE223496.010	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232812	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
LC14 0.0-0.1	SE223496.014	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
LC15 0.0-0.1	SE223496.015	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
LC17 0.0-0.1	SE223496.017	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
LC18 0.0-0.1	SE223496.018	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232812	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 2021
QC1	SE223496.020	LB232813	01 Sep 2021	10 Sep 2021	28 Feb 2022	16 Sep 2021	28 Feb 2022	17 Sep 2021
SP2	SE223496.021	LB232813	02 Sep 2021	10 Sep 2021	01 Mar 2022	16 Sep 2021	01 Mar 2022	17 Sep 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
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	20 Sep 2021

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

Triazines in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
LC10 0.0-0.1	SE223496.010	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
LC11 0.0-0.1	SE223496.011	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
LC12 0.0-0.1	SE223496.012	LB232660	01 Sep 2021	10 Sep 2021	15 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
LC13 0.0-0.1	SE223496.013	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
LC16 0.0-0.1	SE223496.016	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
Hole 0.0-0.1	SE223496.019	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021
SP2	SE223496.021	LB232660	02 Sep 2021	10 Sep 2021	16 Sep 2021	14 Sep 2021	24 Oct 2021	18 Sep 2021

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Hole 0.0-0.1	SE223496.019	LB232762	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	16 Sep 2021	17 Sep 2021†
SP2	SE223496.021	LB232762	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	16 Sep 2021	17 Sep 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
Hole 0.0-0.1	SE223496.019	LB232762	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	16 Sep 2021	17 Sep 2021†
SP2	SE223496.021	LB232762	02 Sep 2021	10 Sep 2021	16 Sep 2021	15 Sep 2021	16 Sep 2021	17 Sep 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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	94
	SP2	SE223496.021	%	60 - 130%	100

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	88
	SP2	SE223496.021	%	60 - 130%	82
d14-p-terphenyl (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	98
	SP2	SE223496.021	%	60 - 130%	98

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Hole 0.0-0.1	SE223496.019	%	70 - 130%	88
	SP2	SE223496.021	%	70 - 130%	82
d14-p-terphenyl (Surrogate)	Hole 0.0-0.1	SE223496.019	%	70 - 130%	98
	SP2	SE223496.021	%	70 - 130%	98
d5-nitrobenzene (Surrogate)	Hole 0.0-0.1	SE223496.019	%	70 - 130%	78
	SP2	SE223496.021	%	70 - 130%	74

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	94
	SP2	SE223496.021	%	60 - 130%	100

Triazines in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	LC10 0.0-0.1	SE223496.010	%	70 - 130%	74
	LC11 0.0-0.1	SE223496.011	%	70 - 130%	76
	LC12 0.0-0.1	SE223496.012	%	70 - 130%	76
	LC13 0.0-0.1	SE223496.013	%	70 - 130%	74
	LC16 0.0-0.1	SE223496.016	%	70 - 130%	74

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	73
	SP2	SE223496.021	%	60 - 130%	66
d4-1,2-dichloroethane (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	96
	SP2	SE223496.021	%	60 - 130%	88
d8-toluene (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	97
	SP2	SE223496.021	%	60 - 130%	90

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	73
	SP2	SE223496.021	%	60 - 130%	66
d4-1,2-dichloroethane (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	96
	SP2	SE223496.021	%	60 - 130%	88
d8-toluene (Surrogate)	Hole 0.0-0.1	SE223496.019	%	60 - 130%	97
	SP2	SE223496.021	%	60 - 130%	90

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

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

Mercury in Soil

Method: ME-(AU)-ENVJAN312

Sample Number	Parameter	Units	LOR	Result
LB232817.001	Mercury	mg/kg	0.05	<0.05
LB232819.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB232660.001	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
Surrogates	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

OP Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB232660.001	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)	%	-	76
	d14-p-terphenyl (Surrogate)	%	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB232660.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB232660.001	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	74
	2-fluorobiphenyl (Surrogate)	%	-	76
	d14-p-terphenyl (Surrogate)	%	-	88

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB232660.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates			
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

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

Method: ME-(AU)-[ENV]AN40/AN320

Sample Number	Parameter	Units	LOR	Result
LB232812.001	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
LB232813.001	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
LB232660.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

Triazines in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB232660.001	Simazine	mg/kg	0.5	<0.5
	Atrazine	mg/kg	0.5	<0.5
	Propazine	mg/kg	0.5	<0.5
	Terbutylazine	mg/kg	0.5	<0.5
	Metribuzin	mg/kg	0.5	<0.5
	Prometryn	mg/kg	0.5	<0.5
	Terbutryn	mg/kg	0.5	<0.5
	Cyanazine	mg/kg	0.5	<0.5
	Hexazinone	mg/kg	1	<1
	Surrogates			
	d14-p-terphenyl (Surrogate)	%	-	84

VOC's in Soil

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

Sample Number	Parameter	Units	LOR
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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.

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB232762.001	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)	%	-	89
		d8-toluene (Surrogate)	%	-	89
		Bromofluorobenzene (Surrogate)	%	-	78
	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
LB232762.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	89

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

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

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

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

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

Mercury in Soil

Method: ME-(AU)-ENVJAN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223439.007	LB232819.014	Mercury	mg/kg	0.05	0.07	<0.05	118	39
SE223496.010	LB232817.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE223496.019	LB232817.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE223496.021	LB232819.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-ENVJAN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.010	LB232766.011	% Moisture	%w/w	1	23.5	24.6	34	4
SE223496.020	LB232766.022	% Moisture	%w/w	1	20.7	20.3	35	2
SE223496.021	LB232766.024	% Moisture	%w/w	1	8.7	9.5	41	8

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.024	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
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	30	3
SE223504.038	LB232660.022	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: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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

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

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223504.038	LB232660.022	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
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	30	3

OP Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.027	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
	d14-p-terphenyl (Surrogate)		mg/kg	-	0.5	0.5	30	2
	SE223504.038	LB232660.022	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200
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
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.027	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.027	Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
		Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	3
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.024	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	3

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

Method: ME-(AU)-[ENV]JAN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223439.007	LB232813.014	Arsenic, As	mg/kg	1	2	1	94	46
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	7.2	6.3	37	14
		Copper, Cu	mg/kg	0.5	44	34	31	26
		Nickel, Ni	mg/kg	0.5	77	68	31	12
		Lead, Pb	mg/kg	1	150	110	31	33 @
		Zinc, Zn	mg/kg	2	170	110	31	40 @
SE223496.010	LB232812.014	Arsenic, As	mg/kg	1	2	2	76	5
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	19	19	33	1
		Copper, Cu	mg/kg	0.5	5.9	5.6	39	5
		Nickel, Ni	mg/kg	0.5	3.5	3.5	44	0
		Lead, Pb	mg/kg	1	9	10	40	11
		Zinc, Zn	mg/kg	2	11	11	48	1
SE223496.019	LB232812.024	Arsenic, As	mg/kg	1	3	4	58	27
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	14	18	33	27
		Copper, Cu	mg/kg	0.5	3.7	4.2	43	14
		Nickel, Ni	mg/kg	0.5	2.2	2.7	50	18
		Lead, Pb	mg/kg	1	13	15	37	9
		Zinc, Zn	mg/kg	2	110	150	32	32 @
SE223496.021	LB232813.024	Arsenic, As	mg/kg	1	4	3	60	23
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	11	12	34	8
		Copper, Cu	mg/kg	0.5	6.8	6.7	37	1
		Nickel, Ni	mg/kg	0.5	6.7	6.5	38	4
		Lead, Pb	mg/kg	1	17	25	35	38 @
		Zinc, Zn	mg/kg	2	28	32	37	15

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]JAN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.025	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
		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

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

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223496.021	LB232660.025	TRH F Bands						
		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

Triazines in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223504.038	LB232660.022	Simazine	mg/kg	0.5	<0.5	<0.5	200	0
		Atrazine	mg/kg	0.5	<0.5	<0.5	200	0
		Propazine	mg/kg	0.5	<0.5	<0.5	200	0
		Terbutylazine	mg/kg	0.5	<0.5	<0.5	200	0
		Metribuzin	mg/kg	0.5	<0.5	<0.5	200	0
		Prometryn	mg/kg	0.5	<0.5	<0.5	200	0
		Terbutryn	mg/kg	0.5	<0.5	<0.5	200	0
		Cyanazine	mg/kg	0.5	<0.5	<0.5	200	0
		Hexazinone	mg/kg	1	<1	<1	200	0
	Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	6

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE223597.002	LB232762.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			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	-	9.2	8.9	50	3
			d8-toluene (Surrogate)	mg/kg	-	9.3	9.2	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.9	6.9	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
		SE223597.004	LB232762.017	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1
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	-	8.7	8.8	50	1
	d8-toluene (Surrogate)			mg/kg	-	8.9	8.9	50	0
	Bromofluorobenzene (Surrogate)			mg/kg	-	6.6	6.5	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 %	
SE223597.002	LB232762.014	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	-	9.2	8.9	30	3
			d8-toluene (Surrogate)	mg/kg	-	9.3	9.2	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.9	6.9	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
SE223597.004	LB232762.017	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	-	8.7	8.8	30	1
			d8-toluene (Surrogate)	mg/kg	-	8.9	8.9	30	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.6	6.5	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 %
LB232817.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	110
LB232819.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	98

OC Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	120
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	104
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	111
	Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	108
	Endrin	mg/kg	0.2	0.3	0.2	60 - 140	128
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	123
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.15	40 - 130

OP Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	Dichlorvos	mg/kg	0.5	1.3	2	60 - 140	66
	Diazinon (Dimpylate)	mg/kg	0.5	1.5	2	60 - 140	76
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.5	2	60 - 140	76
	Ethion	mg/kg	0.2	1.4	2	60 - 140	70
Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	80
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	Naphthalene	mg/kg	0.1	4.1	4	60 - 140	104
	Acenaphthylene	mg/kg	0.1	4.2	4	60 - 140	104
	Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	111
	Phenanthrene	mg/kg	0.1	4.1	4	60 - 140	103
	Anthracene	mg/kg	0.1	4.1	4	60 - 140	101
	Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	105
	Pyrene	mg/kg	0.1	4.4	4	60 - 140	111
	Benzo(a)pyrene	mg/kg	0.1	4.5	4	60 - 140	111
Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	72
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	80
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	117

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 %
LB232812.002	Arsenic, As	mg/kg	1	370	318.22	80 - 120	118
	Cadmium, Cd	mg/kg	0.3	4.9	4.81	70 - 130	101
	Chromium, Cr	mg/kg	0.5	39	38.31	80 - 120	103
	Copper, Cu	mg/kg	0.5	340	290	80 - 120	116
	Nickel, Ni	mg/kg	0.5	200	187	80 - 120	106
	Lead, Pb	mg/kg	1	97	89.9	80 - 120	108
	Zinc, Zn	mg/kg	2	300	273	80 - 120	111
LB232813.002	Arsenic, As	mg/kg	1	340	318.22	80 - 120	108
	Cadmium, Cd	mg/kg	0.3	4.2	4.81	70 - 130	88
	Chromium, Cr	mg/kg	0.5	33	38.31	80 - 120	86
	Copper, Cu	mg/kg	0.5	330	290	80 - 120	114
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	103
	Lead, Pb	mg/kg	1	97	89.9	80 - 120	108
	Zinc, Zn	mg/kg	2	300	273	80 - 120	109

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR
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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.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	TRH C10-C14	mg/kg	20	52	40	60 - 140	130
	TRH C15-C28	mg/kg	45	49	40	60 - 140	123
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	103
	TRH F Bands						
	TRH >C10-C16	mg/kg	25	51	40	60 - 140	128
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	118
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	100

Triazines in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232660.002	Atrazine	mg/kg	0.5	3.5	4	70 - 130	88
	Propazine	mg/kg	0.5	3.4	4	70 - 130	85
	Terbutylazine	mg/kg	0.5	3.4	4	70 - 130	85
	Prometryn	mg/kg	0.5	3.1	4	70 - 130	78
	Terbutryn	mg/kg	0.5	3.2	4	70 - 130	79

VOC's in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232762.002	Monocyclic						
	Benzene	mg/kg	0.1	4.5	5	60 - 140	89
	Aromatic						
	Toluene	mg/kg	0.1	4.3	5	60 - 140	86
	Ethylbenzene	mg/kg	0.1	4.7	5	60 - 140	93
	m/p-xylene	mg/kg	0.2	9.3	10	60 - 140	93
	o-xylene	mg/kg	0.1	4.7	5	60 - 140	93
	Surrogates						
	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
	d8-toluene (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
	Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	10	70 - 130	76

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB232762.002	TRH C6-C10	mg/kg	25	88	92.5	60 - 140	95
	TRH C6-C9	mg/kg	20	75	80	60 - 140	94
	Surrogates						
	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
	Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	10	70 - 130	76
	VPH F Bands						
	TRH C6-C10 minus BTEX (F1)	mg/kg	25	60	62.5	60 - 140	97

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

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

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE223496.001	LB232817.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	107

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE223504.031	LB232660.029	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	0.2	118
		Aldrin	mg/kg	0.1	<0.1	0.2	103
		Beta BHC	mg/kg	0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	<0.1	0.2	117
		Heptachlor epoxide	mg/kg	0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	<0.2	0.2	111
		Endrin	mg/kg	0.2	<0.2	0.2	128
		o,p'-DDD	mg/kg	0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	<0.1	0.2	106
		Endosulfan sulphate	mg/kg	0.1	<0.1	-	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	-	-
		Endrin Ketone	mg/kg	0.1	<0.1	-	-
		Isodrin	mg/kg	0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	-	-
		Total CLP OC Pesticides	mg/kg	1	<1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	-	100

OP Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE223504.031	LB232660.028	Dichlorvos	mg/kg	0.5	<0.5	2	77
		Dimethoate	mg/kg	0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	2	87
		Fenitrothion	mg/kg	0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	2	89
		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	2	79
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	-
		Total OP Pesticides*	mg/kg	1.7	<1.7	-	-
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	-	96

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%
SE223496.001	LB232812.004	Arsenic, As	mg/kg	1	50	3	50	94
		Cadmium, Cd	mg/kg	0.3	45	<0.3	50	90
		Chromium, Cr	mg/kg	0.5	56	13	50	86
		Copper, Cu	mg/kg	0.5	54	6.2	50	96
		Nickel, Ni	mg/kg	0.5	49	4.5	50	90
		Lead, Pb	mg/kg	1	55	13	50	85
		Zinc, Zn	mg/kg	2	68	24	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 identifier 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%
SE223638.001	LB232813.004	Arsenic, As	mg/kg	1	55	3	50	105
		Cadmium, Cd	mg/kg	0.3	50	0.4	50	100
		Chromium, Cr	mg/kg	0.5	55	5.4	50	99
		Copper, Cu	mg/kg	0.5	100	47	50	110
		Nickel, Ni	mg/kg	0.5	54	3.2	50	102
		Lead, Pb	mg/kg	1	290	360	50	-145 @
		Zinc, Zn	mg/kg	2	260	260	50	-1 @

Triazines in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE223504.031	LB232660.026	Simazine	mg/kg	0.5	<0.5	-	-
		Atrazine	mg/kg	0.5	<0.5	4	71
		Propazine	mg/kg	0.5	<0.5	4	77
		Terbutylazine	mg/kg	0.5	<0.5	4	76
		Metribuzin	mg/kg	0.5	<0.5	-	-
		Prometryn	mg/kg	0.5	<0.5	4	72
		Terbutryn	mg/kg	0.5	<0.5	4	75
		Cyanazine	mg/kg	0.5	<0.5	-	-
		Hexazinone	mg/kg	1	<1	-	-
		Surrogates	d14-p-terphenyl (Surrogate)	%	-	0.4	72
	LB232660.028	Surrogates	d14-p-terphenyl (Surrogate)	%	-	0.4	96

VOC's in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE223496.019	LB232762.004	Monocyclic	Benzene	mg/kg	0.1	<0.1	5	80
			Toluene	mg/kg	0.1	<0.1	5	79
		Aromatic	Ethylbenzene	mg/kg	0.1	<0.1	5	85
			m/p-xylene	mg/kg	0.2	8.6	10	86
			o-xylene	mg/kg	0.1	4.3	5	85
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.1	9.6	10
			d8-toluene (Surrogate)	mg/kg	-	9.2	9.7	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.9	7.3	69 @
		Totals	Total Xylenes	mg/kg	0.3	13	<0.3	-
			Total BTEX	mg/kg	0.6	25	<0.6	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE223496.019	LB232762.004	TRH C6-C10	TRH C6-C10	mg/kg	25	80	<25	92.5
			TRH C6-C9	mg/kg	20	70	<20	80
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.1	9.6	10
			d8-toluene (Surrogate)	mg/kg	-	9.2	9.7	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.9	7.3	69
		VPH F	Benzene (F0)	mg/kg	0.1	4.0	<0.1	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	55	<25	62.5
								88

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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Company Name:	Lanterra Consulting Pty Ltd	Project Name/No:	P21091 – Cusack PI Yass
Address:	Unit 4, 19 Trenerry Street	Purchase Order No:	
	Weston, ACT, 2611	Results Required By:	Standard turnaround
		Telephone:	0432 324 348
Contact Name:	Chris Gunton	Facsimile:	
		Email Results:	Chris.gunton@lanterra.com.au

[illegible]

Relinquished By: K Lockwood	Date/Time: 6/9/2021 14.30	Received By: 	Date/Time 10.9.21 1230
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/No 	Temperature: Ambient / Chilled 10.0 	Sample Cooler Sealed: Yes/No 	Laboratory Quotation No:
Comments:			SGS EHS Sydney COC SE223496



CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 2 of 5

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email:

Company Name:	Lanterra Consulting Pty Ltd
Address:	Unit 4, 19 Trenerry Street Weston, ACT, 2611

Project Name/No: P21091 – Cusack PI Yass

Purchase Order No:

Results Required By: Standard turnaround

Telephone: 0432 324 348

Facsimile:

Email Results: Chris.gunton@lanterra.com.au

[illegible]

Relinquished By: K Lockwood

Date/Time: 6/9/2021 14.30

Received By:

Date/Time 10-9-21 10:30

Relinquished By:

Date/Time:

Received By:

Date/Time	
-----------	--

Samples Intact: Yes/ No

Temperature: Ambient / Chilled

Sample Cooler Sealed: Yes/ No

Laboratory Quotation No:

Comments:

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 3 of 5

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email:

Company Name: Lanterra Consulting Pty Ltd

Project Name/No: P21091 – Cusack PI Yass

Address: Unit 4, 19 Trenerry Street

Purchase Order No:

Weston, ACT, 2611

Results Required By:	Standard turnaround
----------------------	---------------------

Contact Name: Chris Gunton

Telephone: 0432 324 348

Facsimile:

Email Results: Chris.gunton@lanterra.com.au

[illegible]

Relinquished By: K Lockwood

Date/Time: 6/9/2021 14.30

Received By:

Date/Time	10-9-21	10:30
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Relinquished By:

Date/Time:

Received By:

	Date/Time
--	-----------

Samples Intact: Yes/No

Temperature: Ambient / Chilled

Sample Cooler Sealed: Yes/No

Laboratory Quotation No:

Comments:

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 4 of 5

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email:

Company Name:	Lanterra Consulting Pty Ltd
Address:	Unit 4, 19 Trenerry Street Weston, ACT, 2611

Project Name/No: P21091 – Cusack PI Yass

Purchase Order No:

Results Required By:	Standard turnaround
----------------------	---------------------

Telephone: 0432 324 348

Facsimile:

Email Results: Chris.gunton@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Metals	CL17, TRH, BTEX, PAH, OCP, OPP, PCB, 8 Metals	Phenoxy Acid Herbicides and Triazine	HOLD	Asbestos ID	4-17 Metals Group 1									
LC15 0.3-0.4	2/9/2021			X		1				X											
LC16 0.0-0.1	2/9/2021	16		X		1	X		X												
LC16 0.4-0.5	2/9/2021			X		1				X											
LC17 0.0-0.1	2/9/2021	17		X		1	X														
LC18 0.0-0.1	2/9/2021	18		X		1	X														
LC18 0.4-0.5	2/9/2021			X		1				X											
Hole 0.0-0.1	2/9/2021	19		X		2		X			X										
QC1	1/9/2021	20		X		1	X														
QC2	1/9/2021			X		1						X									Please forward to Enviro-Guardian

Please forward to Env

Relinquished By: K Lockwood

Date/Time: 6/9/2021 14.30

Received By: [Signature]

Date/Time	10-7-21	10:30
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Relinquished By:

Date/Time:

Received By:

Date/Time	
-----------	--

Samples Intact: Yes/No

Temperature: Ambient / Chilled 10.0

Sample Cooler Sealed: Yes/ No

	Laboratory Quotation No:
--	--------------------------

Comments:

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 5 of 5

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email:

Company Name: Lanterra Consulting Pty Ltd

Project Name/No: P21091 – Cusack PI Yass

Address: Unit 4, 19 Trenerry Street

Purchase Order No:

Weston, ACT, 2611

Results Required By:	Standard turnaround
----------------------	---------------------

Contact Name: Chris Gunton

Telephone: 0432 324 348

Facsimile:

Email Results: Chris.gunton@lanterra.com.au

[illegible]

Relinquished By: K Lockwood

Date/Time: 6/9/2021 14.30

Received By:

Date/Time	10.9.21	10.13.20
-----------	---------	----------

Relinquished By:

Date/Time:

Received By:

	Date/Time
--	-----------

Samples Intact: Yes No

Temperature: Ambient / Chilled

Sample Cooler Sealed: Yes/ No

Laboratory Quotation No:

Comments:

CLIENT DETAILS

Contact Chris Gunton
Client LANTERRA CONSULTING PTY LTD
Address PO BOX 3626
WESTON ACT 2611

Telephone 0432 324 348
Facsimile (Not specified)
Email Chris.Gunton@lanterra.com.au

Project **P21091 - Cusack PI Yass**
Order Number **P21091**
Samples 2

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 **SE223496 R0**
Date Received 10 Sep 2021
Date Reported 20 Sep 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.

Sample # 19; A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

17 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed. Phenoxo Acid Herbicides subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Number 2562/14420. Report Number ME322581

SIGNATORIES



Akheeque BENIAMEEN
Chemist



Bennet LO
Senior Chemist



Kamrul AHSAN
Senior Chemist



Ly Kim HA
Organic Section Head



Yusuf KUTHPUDIN
Asbestos Analyst

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE223496.019	Hole 0.0-0.1	Soil	87g Clay,Rocks	02 Sep 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE223496.021	SP2	Soil	244g Clay,Sand,Rocks	02 Sep 2021	No Asbestos Found at RL of 0.1g/kg	<0.01

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 unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states: "Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported "no asbestos found at the reporting limit (RL) of 0.1 g/kg" (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres); (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg; and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

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

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

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.

Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.

Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

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

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

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ANALYTICAL REPORT

CLIENT DETAILS

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Client **SGS I&E SYDNEY**
Address **Unit 16, 33 Maddox Street
Alexandria
NSW 2015**

Telephone **02 8594 0400**
Facsimile **02 8594 0499**
Email **au.environmental.sydney@sgs.com**

Project **P21091 - Cusack PI Yass**
Order Number **SE223496**
Samples **21**

LABORATORY DETAILS

Manager **Adam Atkinson**
Laboratory **SGS Melbourne EH&S**
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Telephone **+61395743200**
Facsimile **+61395743399**
Email **Au.SampleReceipt.Melbourne@sgs.com**

SGS Reference **ME322581 R0**
Date Received **14 Sep 2021**
Date Reported **17 Sep 2021**

COMMENTS

Whilst SGS laboratories conform to ISO:17025 standards, results of analysis in this report fall outside of the current scope of NATA accreditation.

SIGNATORIES

Susan WAN
Senior Chemist

			Sample Number	ME322581.001	ME322581.002	ME322581.003	ME322581.004
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	09 Jan 2021	09 Jan 2021	09 Jan 2021	09 Jan 2021
			Sample Name	SE223496.001	SE223496.002	SE223496.003	SE223496.004
Parameter	Units	LOR					

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 17/9/2021

Bromoxynil	mg/kg	0.5	-	-	-	-
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	-	-	-	-
Clopyralid	mg/kg	0.5	-	-	-	-
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	-	-	-	-
2,4-DB	mg/kg	0.5	-	-	-	-
2,6-D	mg/kg	0.5	-	-	-	-
Dicamba	mg/kg	0.01	-	-	-	-
Dichloroprop / Dichlorprop-P	mg/kg	0.01	-	-	-	-
Dinoseb	mg/kg	0.5	-	-	-	-
Fluroxypyr	mg/kg	0.5	-	-	-	-
Ioxynil	mg/kg	0.5	-	-	-	-
MCPA	mg/kg	0.01	-	-	-	-
MCPB	mg/kg	0.01	-	-	-	-
mecoprop	mg/kg	0.01	-	-	-	-
Picloram	mg/kg	0.01	-	-	-	-
2,4,5-T	mg/kg	0.01	-	-	-	-
2,4,5-TP	mg/kg	0.5	-	-	-	-
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	-	-	-	-
Triclopyr	mg/kg	0.01	-	-	-	-

	Sample Number	ME322581.005	ME322581.006	ME322581.007	ME322581.008
	Sample Matrix	Soil	Soil	Soil	Soil
	Sample Date	09 Jan 2021	09 Jan 2021	09 Jan 2021	09 Jan 2021
	Sample Name	SE223496.005	SE223496.006	SE223496.007	SE223496.008
Parameter	Units	LOR			

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 17/9/2021

Bromoxynil	mg/kg	0.5	-	-	-	-
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	-	-	-	-
Clopyralid	mg/kg	0.5	-	-	-	-
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	-	-	-	-
2,4-DB	mg/kg	0.5	-	-	-	-
2,6-D	mg/kg	0.5	-	-	-	-
Dicamba	mg/kg	0.01	-	-	-	-
Dichloroprop / Dichlorprop-P	mg/kg	0.01	-	-	-	-
Dinoseb	mg/kg	0.5	-	-	-	-
Fluroxypyr	mg/kg	0.5	-	-	-	-
Ioxynil	mg/kg	0.5	-	-	-	-
MCPA	mg/kg	0.01	-	-	-	-
MCPB	mg/kg	0.01	-	-	-	-
mecoprop	mg/kg	0.01	-	-	-	-
Picloram	mg/kg	0.01	-	-	-	-
2,4,5-T	mg/kg	0.01	-	-	-	-
2,4,5-TP	mg/kg	0.5	-	-	-	-
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	-	-	-	-
Triclopyr	mg/kg	0.01	-	-	-	-

		Sample Number	ME322581.009	ME322581.010	ME322581.011	ME322581.012
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	09 Jan 2021	01 Sep 2021	01 Sep 2021	01 Sep 2021
		Sample Name	SE223496.009	SE223496.010	SE223496.011	SE223496.012
Parameter	Units	LOR				

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 17/9/2021

Bromoxynil	mg/kg	0.5	-	<0.5	<0.5	<0.5
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	-	<0.5	<0.5	<0.5
Clopyralid	mg/kg	0.5	-	<0.5	<0.5	<0.5
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	-	<0.01	<0.01	<0.01
2,4-DB	mg/kg	0.5	-	<0.5	<0.5	<0.5
2,6-D	mg/kg	0.5	-	<0.5	<0.5	<0.5
Dicamba	mg/kg	0.01	-	<0.01	<0.01	<0.01
Dichloroprop / Dichlorprop-P	mg/kg	0.01	-	<0.01	<0.01	<0.01
Dinoseb	mg/kg	0.5	-	<0.5	<0.5	<0.5
Fluroxypyr	mg/kg	0.5	-	<0.5	<0.5	<0.5
Ioxynil	mg/kg	0.5	-	<0.5	<0.5	<0.5
MCPA	mg/kg	0.01	-	<0.01	<0.01	<0.01
MCPB	mg/kg	0.01	-	<0.01	<0.01	<0.01
mecoprop	mg/kg	0.01	-	<0.01	<0.01	<0.01
Picloram	mg/kg	0.01	-	<0.01	<0.01	<0.01
2,4,5-T	mg/kg	0.01	-	<0.01	<0.01	<0.01
2,4,5-TP	mg/kg	0.5	-	<0.5	<0.5	<0.5
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	-	<0.5	<0.5	<0.5
Triclopyr	mg/kg	0.01	-	<0.01	<0.01	<0.01

		Sample Number	ME322581.013	ME322581.014	ME322581.015	ME322581.016
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	02 Sep 2021	09 Feb 2021	09 Feb 2021	02 Sep 2021
		Sample Name	SE223496.013	SE223496.014	SE223496.015	SE223496.016
Parameter	Units	LOR				

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 14/9/2021

Bromoxynil	mg/kg	0.5	<0.5	-	-	<0.5
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	<0.5	-	-	<0.5
Clopyralid	mg/kg	0.5	<0.5	-	-	<0.5
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	<0.01	-	-	<0.01
2,4-DB	mg/kg	0.5	<0.5	-	-	<0.5
2,6-D	mg/kg	0.5	<0.5	-	-	<0.5
Dicamba	mg/kg	0.01	<0.01	-	-	<0.01
Dichloroprop / Dichloroprop-P	mg/kg	0.01	<0.01	-	-	<0.01
Dinoseb	mg/kg	0.5	<0.5	-	-	<0.5
Fluroxypyr	mg/kg	0.5	<0.5	-	-	<0.5
Ioxynil	mg/kg	0.5	<0.5	-	-	<0.5
MCPA	mg/kg	0.01	<0.01	-	-	<0.01
MCPB	mg/kg	0.01	<0.01	-	-	<0.01
mecoprop	mg/kg	0.01	<0.01	-	-	<0.01
Picloram	mg/kg	0.01	<0.01	-	-	<0.01
2,4,5-T	mg/kg	0.01	<0.01	-	-	<0.01
2,4,5-TP	mg/kg	0.5	<0.5	-	-	<0.5
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	<0.5	-	-	<0.5
Triclopyr	mg/kg	0.01	<0.01	-	-	<0.01

	Sample Number	ME322581.017	ME322581.018	ME322581.019	ME322581.020
	Sample Matrix	Soil	Soil	Soil	Soil
	Sample Date	09 Feb 2021	09 Feb 2021	09 Feb 2021	09 Jan 2021
	Sample Name	SE223496.017	SE223496.018	SE223496.019	SE223496.020
Parameter	Units	LOR			

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 17/9/2021

Bromoxynil	mg/kg	0.5	-	-	-	-
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	-	-	-	-
Clopyralid	mg/kg	0.5	-	-	-	-
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	-	-	-	-
2,4-DB	mg/kg	0.5	-	-	-	-
2,6-D	mg/kg	0.5	-	-	-	-
Dicamba	mg/kg	0.01	-	-	-	-
Dichloroprop / Dichlorprop-P	mg/kg	0.01	-	-	-	-
Dinoseb	mg/kg	0.5	-	-	-	-
Fluroxypyr	mg/kg	0.5	-	-	-	-
Ioxynil	mg/kg	0.5	-	-	-	-
MCPA	mg/kg	0.01	-	-	-	-
MCPB	mg/kg	0.01	-	-	-	-
mecoprop	mg/kg	0.01	-	-	-	-
Picloram	mg/kg	0.01	-	-	-	-
2,4,5-T	mg/kg	0.01	-	-	-	-
2,4,5-TP	mg/kg	0.5	-	-	-	-
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	-	-	-	-
Triclopyr	mg/kg	0.01	-	-	-	-

Sample Number ME322581.021
Sample Matrix Soil
Sample Date 09 Feb 2021
Sample Name SE223496.021

Parameter Units LOR

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569 Tested: 17/9/2021

Bromoxynil	mg/kg	0.5	-
4-Chlorophenoxy acetic acid (4-CPA)	mg/kg	0.5	-
Clopyralid	mg/kg	0.5	-
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	mg/kg	0.01	-
2,4-DB	mg/kg	0.5	-
2,6-D	mg/kg	0.5	-
Dicamba	mg/kg	0.01	-
Dichloroprop / Dichlorprop-P	mg/kg	0.01	-
Dinoseb	mg/kg	0.5	-
Fluroxypyr	mg/kg	0.5	-
Ioxynil	mg/kg	0.5	-
MCPA	mg/kg	0.01	-
MCPB	mg/kg	0.01	-
mecoprop	mg/kg	0.01	-
Picloram	mg/kg	0.01	-
2,4,5-T	mg/kg	0.01	-
2,4,5-TP	mg/kg	0.5	-
2,4,6-Trichlorophenoxy acetic acid	mg/kg	0.5	-
Triclopyr	mg/kg	0.01	-

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Pesticides / Herbicides in Soils by LC-MS/MS MA-1569.SL.01 Method: MA1569

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Bromoxynil	LB044454	mg/kg	0.5	<0.5	0%	NA		
4-Chlorophenoxy acetic acid (4-CPA)	LB044454	mg/kg	0.5	<0.5	0%	NA		
Clopyralid	LB044454	mg/kg	0.5	<0.5	0%	NA		
2,4-D [(2,4-Dichlorophenoxy) acetic acid]	LB044454	mg/kg	0.01	<0.01	0%	NA	NA	NA
2,4-DB	LB044454	mg/kg	0.5	<0.5	0%	NA		
2,6-D	LB044454	mg/kg	0.5	<0.5	0%	NA		
Dicamba	LB044454	mg/kg	0.01	<0.01	0%	NA		
Dichloroprop / Dichlorprop-P	LB044454	mg/kg	0.01	<0.01	0%	NA		
Dinoseb	LB044454	mg/kg	0.5	<0.5	0%	NA		
Fluroxypyr	LB044454	mg/kg	0.5	<0.5	0%	NA		
Ioxynil	LB044454	mg/kg	0.5	<0.5	0%	NA		
MCPA	LB044454	mg/kg	0.01	<0.01	0%	NA		
MCPB	LB044454	mg/kg	0.01	<0.01	0%	NA		
mecoprop	LB044454	mg/kg	0.01	<0.01	0%	NA		
Picloram	LB044454	mg/kg	0.01	<0.01	0%	NA		
2,4,5-T	LB044454	mg/kg	0.01	<0.01	0%	NA		
2,4,5-TP	LB044454	mg/kg	0.5	<0.5	0%	NA		
2,4,6-Trichlorophenoxy acetic acid	LB044454	mg/kg	0.5	<0.5	0%	NA		
Triclopyr	LB044454	mg/kg	0.01	<0.01	0%	NA		

METHOD

METHODOLOGY SUMMARY

MA-1569

This method is intended for the analysis of a diverse range of pesticides and herbicides by Liquid Chromatography using a Tandem Mass Spectrometry detector (LC-MS/MS). Due to the diverse nature of the analytes covered in this method each analyte requires its own analytical acquisition method thus the sample is run multiple times according to the analyte list requested.

Soil and solid samples are extracted with ACN and extracts are filtered then directly injected onto LC -MS/MS using selective ion monitoring.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
***	Indicates that both * and ** apply.	-	The sample was not analysed for this analyte
		NVL	Not Validated

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:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

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

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

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SAMPLE RECEIPT ADVICE

SE223496

CLIENT DETAILS

Contact Chris Gunton
Client LANTERRA CONSULTING PTY LTD
Address PO BOX 3626
WESTON ACT 2611

Telephone 0432 324 348
Facsimile (Not specified)
Email Chris.Gunton@lanterra.com.au

Project **P21091 - Cusack PI Yass**
Order Number **P21091**
Samples 21

LABORATORY DETAILS

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

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

Samples Received Fri 10/9/2021
Report Due Fri 17/9/2021
SGS Reference **SE223496**

SUBMISSION DETAILS

This is to confirm that 21 samples were received on Friday 10/9/2021. Results are expected to be ready by COB Friday 17/9/2021. Please quote SGS reference SE223496 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	21 Soil
Date documentation received	10/9/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	10.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

17 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.
Phenoxy Acid Herbicides subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Number 2562/14420.

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



SAMPLE RECEIPT ADVICE

SE223496

CLIENT DETAILS

Client **LANTERRA CONSULTING PTY LTD**

Project **P21091 - Cusack PI Yass**

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Pesticides / Herbicides in Soils by LC-MS/MS	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
010	LC10 0.0-0.1	-	-	-	-	19	-	-	-
011	LC11 0.0-0.1	-	-	-	-	19	-	-	-
012	LC12 0.0-0.1	-	-	-	-	19	-	-	-
013	LC13 0.0-0.1	-	-	-	-	19	-	-	-
016	LC16 0.0-0.1	-	-	-	-	19	-	-	-
019	Hole 0.0-0.1	29	14	26	11	-	10	11	7
021	SP2	29	14	26	11	-	10	11	7

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client **LANTERRA CONSULTING PTY LTD**

Project **P21091 - Cusack PI Yass**

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste	Triazines in Soil
001	LC1 0.0-0.1	-	1	1	7	-
002	LC2 0.0-0.1	-	1	1	7	-
003	LC3 0.2-0.3	-	1	1	7	-
004	LC4 0.0-0.1	-	1	1	7	-
005	LC5 0.0-0.1	-	1	1	7	-
006	LC6 0.0-0.1	-	1	1	7	-
007	LC7 0.0-0.1	-	1	1	7	-
008	LC8 0.25-0.35	-	1	1	7	-
009	LC9 0.0-0.1	-	1	1	7	-
010	LC10 0.0-0.1	-	1	1	7	10
011	LC11 0.0-0.1	-	1	1	7	10
012	LC12 0.0-0.1	-	1	1	7	10
013	LC13 0.0-0.1	-	1	1	7	10
014	LC14 0.0-0.1	-	1	1	7	-
015	LC15 0.0-0.1	-	1	1	7	-
016	LC16 0.0-0.1	-	1	1	7	10
017	LC17 0.0-0.1	-	1	1	7	-
018	LC18 0.0-0.1	-	1	1	7	-
019	Hole 0.0-0.1	2	1	1	7	-
020	QC1	-	1	1	7	-
021	SP2	2	1	1	7	-

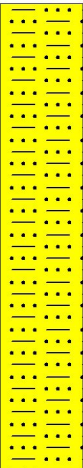
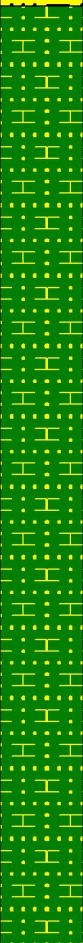
The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.

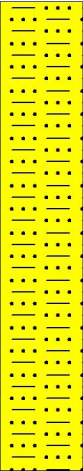
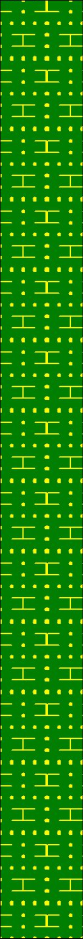
The numbers shown in the table indicate the number of results requested in each package.

Please indicate as soon as possible should your request differ from these details .

Testing as per this table shall commence immediately unless the client intervenes with a correction .

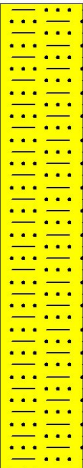
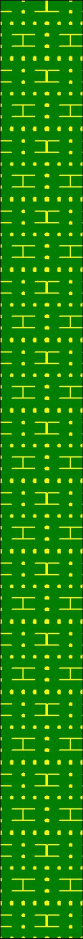
Borelogs

			BORE LOG LC1			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.3						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 676,070.0 mE NORTHING: 6,140,698.0 mN ELEVATION: 576.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC1 0.0-0.1	0			SM	(0.0) Gravelly sandy Silt: brown, moist-wet.		576
						CL	(0.1) Sandy silty Clay: orange-pale brown, wet.		
		LC1 0.2-0.3	0						
Comments							LOGGED BY KL CHECKED BY Edit-Text		

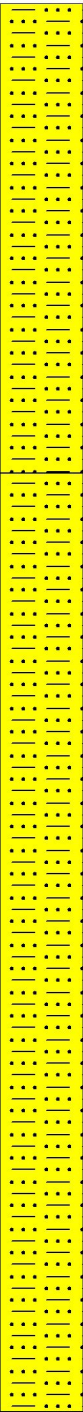
			BORE LOG LC2			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.3						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 67,079.0 mE NORTHING: 6,140,483.0 mN ELEVATION: 557.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC2 0.0-0.1	0			SM	(0.0) Gravelly sandy Silt: brown, moist-wet.		557
						CL	(0.1) Sandy silty Clay: orange-pale brown, moist.		
		LC2 0.2-0.3	0						
Comments							LOGGED BY KL CHECKED BY Edit-Text		

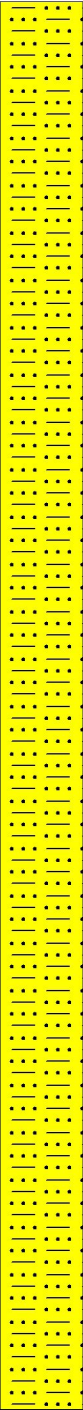
	BORE LOG LC3	PROJECT NUMBER: P21091
		CLIENT NAME: Catalyze Property Consulting
		ADDRESS: 16-21 Cusack Place, Yass NSW

PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.3	COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,886.0 mE NORTHING: 6,140,585.0 mN ELEVATION: 563.0 m AHD DATE DRILLED: 1/9/2021
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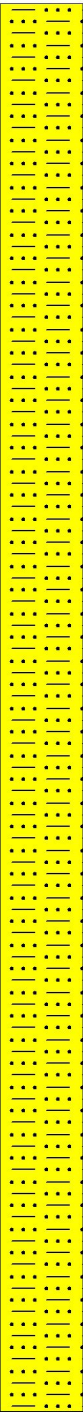
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC3 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist.		563
						CL	(0.1) Clayey sandy Silt: grey-brown, moist.		
		LC3 0.2-0.3	0					Rock @ 0.3 m.	

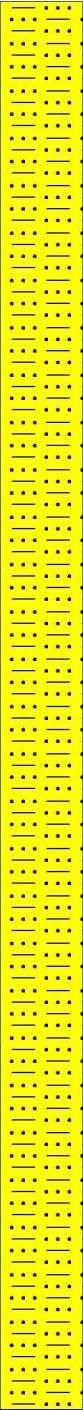
Comments	LOGGED BY KL
	CHECKED BY Edit-Text

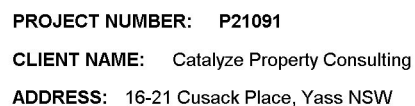
		BORE LOG LC4		PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW					
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.3				COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,985.0 mE NORTHING: 6,140,264.0 mN ELEVATION: 551.0 m AHD DATE DRILLED: 1/9/2021					
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC4 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist-wet.		551
						SM	(0.1) Sandy Silt: brown, wet.		
		LC4 0.2-0.3	0						
Comments							LOGGED BY KL CHECKED BY Edit-Text		

			BORE LOG LC5				PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW		
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.2						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,881.0 mE NORTHING: 6,140,351.0 mN ELEVATION: 554.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC5 0.0-0.1	0			SM	(0.0) Gravelly sandy Silt: brown, moist-wet.		554
		LC5 0.1-0.2	0					Rock @ 0.2 m.	

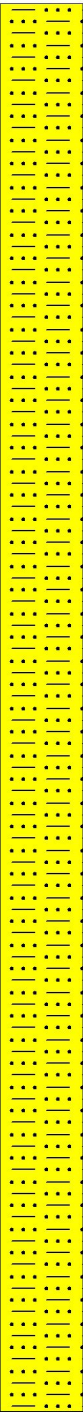
Comments	LOGGED BY	KL
	CHECKED BY	Edit-Text

			BORE LOG LC6			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.1						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,720.0 mE NORTHING: 6,140,547.0 mN ELEVATION: 552.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC6 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist-dry.	Rock @ 0.1 m.	552
Comments							LOGGED BY KL CHECKED BY Edit-Text		

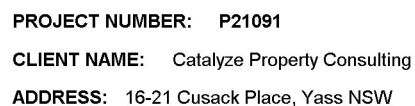
			BORE LOG LC7			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.1						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,774.0 mE NORTHING: 6,140,698.0 mN ELEVATION: 555.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC7 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist-dry.	Rock @ 0.1 m.	555
Comments							LOGGED BY KL CHECKED BY Edit-Text		



Comments	LOGGED BY KL CHECKED BY Edit-Text
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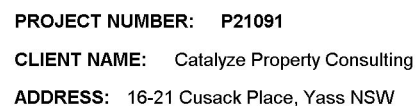
			BORE LOG LC9			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.3						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,530.0 mE NORTHING: 6,140,449.0 mN ELEVATION: 531.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC9 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist-wet.		531
		LC9 0.2-0.3	0.3						

Comments	LOGGED BY KL
	CHECKED BY Edit-Text



PROJECT NAME:	Catalyze DSI - Cusack Place	COORDINATE SYSTEM:	MGA/GDA 94
CONTRACTOR:	Lanterra Consulting	EASTING:	675,415.0 mE
DRILL METHOD:	Hand auger	NORTHING:	6,190,311.0 mN
DIAMETER:	100 mm	ELEVATION:	526.0 m AHD
HOLE DEPTH:	0.35	DATE DRILLED:	1/9/2021

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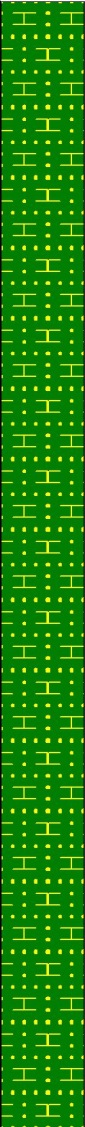


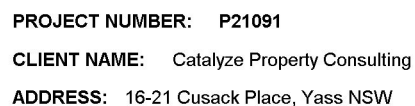
PROJECT NAME:	Catalyze DSI - Cusack Place	COORDINATE SYSTEM:	MGA/GDA 94
CONTRACTOR:	Lanterra Consulting	EASTING:	675,316.0 mE
DRILL METHOD:	Hand auger	NORTHING:	6,140,433.0 mN
DIAMETER:	100 mm	ELEVATION:	527.0 m AHD
HOLE DEPTH:	0.4	DATE DRILLED:	1/9/2021

Comments

LOGGED BY KL
CHECKED BY Edit-Text

			BORE LOG LC12			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW			
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.4						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,373.0 mE NORTHING: 6,140,476.0 mN ELEVATION: 523.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC12 0.0-0.1	0.5			SM	(0.0) Sandy Silt: brown, moist-wet.		523
		LC12 0.3-0.4	1.1			CL	(0.3) Sandy silty Clay: red-brown, moist-wet.		
Comments							LOGGED BY KL CHECKED BY Edit-Text		

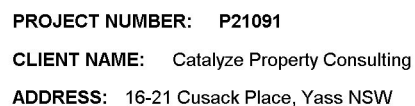
				BORE LOG LC13			PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW		
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.5						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,212.0 mE NORTHING: 6,140,582.0 mN ELEVATION: 523.0 m AHD DATE DRILLED: 2/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC13 0.0-0.1				ML	(0.0) Clayey Silt: brown, moist-wet.		523
		LC13 0.4-0.5				CL	(0.4) Gravelly silty Clay: brown, soft-hard, dry-moist, fragments of volcanics.	Fill?	
0.5									
Comments								LOGGED BY KL CHECKED BY Edit-Text	



PROJECT NAME:	Catalyze DSI - Cusack Place	COORDINATE SYSTEM:	MGA/GDA 94
CONTRACTOR:	Lanterra Consulting	EASTING:	675,211.0 mE
DRILL METHOD:	Hand auger	NORTHING:	6,140,536.0 mN
DIAMETER:	100 mm	ELEVATION:	523.0 m AHD
HOLE DEPTH:	0.4	DATE DRILLED:	2/9/2021

Comments	LOGGED BY KL CHECKED BY Edit-Text
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			BORE LOG LC15				PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW		
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.4						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,206.0 mE NORTHING: 6,140,464.0 mN ELEVATION: 523.0 m AHD DATE DRILLED: 2/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC15 0.0-0.1				CL	(0.0) Silty Clay: brown, moist, soft, plastic.		523
		LC15 0.3-0.4					(0.3) Clay and Silt: brown, moist-wet, soft, plastic.		
Comments							LOGGED BY KL CHECKED BY Edit-Text		

[illegible]

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CHECKED BY Edit-Text



BORE LOG

LC17

PROJECT NUMBER: P21091

CLIENT NAME: Catalyze Property Consulting

ADDRESS: 16-21 Cusack Place, Yass NSW

PROJECT NAME: Catalyze DSI - Cusack Place

CONTRACTOR: Lanterra Consulting

DRILL METHOD: Hand auger

DIAMETER: 100 mm

HOLE DEPTH: 0.2

COORDINATE SYSTEM: MGA/GDA 94

EASTING: 675,211.0 mE

NORTHING: 6,140,332.0 mN

ELEVATION: 523.0 m AHD

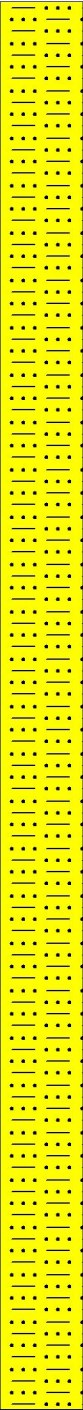
DATE DRILLED: 2/9/2021

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		LC17 0.0-0.1				CL	(0.0) Clayey Silt: brown, dry-moist, soft.		523
								Refusal @ 0.2 m - tree root.	

Comments

LOGGED BY KL

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			BORE LOG Hole				PROJECT NUMBER: P21091 CLIENT NAME: Catalyze Property Consulting ADDRESS: 16-21 Cusack Place, Yass NSW		
PROJECT NAME: Catalyze DSI - Cusack Place CONTRACTOR: Lanterra Consulting DRILL METHOD: Hand auger DIAMETER: 100 mm HOLE DEPTH: 0.1						COORDINATE SYSTEM: MGA/GDA 94 EASTING: 675,600.0 mE NORTHING: 6,140,290.0 mN ELEVATION: 536.0 m AHD DATE DRILLED: 1/9/2021			
Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		Hole 0.0-0.1	0			SM	(0.0) Sandy Silt: brown, moist-wet, soft.	Rabbit warren under tin sheets and wood.	536
Comments							LOGGED BY KL CHECKED BY Edit-Text		

EIL Calculations

Inputs
Select contaminant from list below
As
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Arsenic generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	40
Urban residential and open public spaces	50	100
Commercial and industrial	80	160

Inputs
Select contaminant from list below
DDT
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	DDT generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	3	3
Urban residential and open public spaces	180	180
Commercial and industrial	640	640

Inputs	
Select contaminant from list below	
Cr_III	
Below needed to calculate fresh and aged ACLs	
Enter % clay (values from 0 to 100%)	
10	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
7	
or for aged ABCs only	
Enter State (or closest State)	
NSW	
Enter traffic volume (high or low)	
low	

Outputs		
Land use	Cr III soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	130	140
Urban residential and open public spaces	230	410
Commercial and industrial	340	670

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5.5
Enter soil pH (calcium chloride method) (values from 1 to 14)
5.5
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	45	50
Urban residential and open public spaces	75	120
Commercial and industrial	100	170

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	30	10
Urban residential and open public spaces	40	45
Commercial and industrial	50	75

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5.5
Enter soil pH (calcium chloride method) (values from 1 to 14)
5.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	50	120
Urban residential and open public spaces	110	270
Commercial and industrial	150	380

Inputs
Select contaminant from list below
Naphthalene
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Naphthalene generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	10	10
Urban residential and open public spaces	170	170
Commercial and industrial	370	370

Inputs
Select contaminant from list below
Pb
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Lead generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	470
Urban residential and open public spaces	270	1100
Commercial and industrial	440	1800

Photographs

Client Name
Catalyze

Site Location
Cusack Place

Project No.
P21091

Photo No.	Date	
1.	1/09/2021	
Description Paddock ares		
2.	1/09/2021	
Description Paddock ares		

Client Name
Catalyze

Site Location
Cusack Place

Project No.
P21091

Photo No.	Date	
3.	1/09/2021	
Description Paddock ares		
4.	1/09/2021	
Description Paddock ares		

Client Name
Catalyze

Site Location
Cusack Place

Project No.
P21091

Photo No.	Date	
5.	20/01/2021	
Description Example of paddock area where exposed rock is present at the surface		
6.	20/01/2021	
Description View of hole covered with metal sheet		

Client Name
Catalyze

Site Location
Cusack Place

Project No.
P21091

Photo No.	Date	
7.	20/01/2021	
Description Stockpile of soil with concrete and asphalt located in the northwest corner of the site.		
Photo No.	Date	
Description		