



# Environmental Site Assessment

## Eastern Precinct Community Centre Project Heritage Drive, Chisholm

Report Ref: E0098-ESA-001-Rev0

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**Project Details**

<b>Site Address:</b>	Whitewater Park, Heritage Drive, Chisholm
<b>Project Type:</b>	Environmental Site Assessment

Project no	Report type	Report no
E0098	ESA	001

**Report Register**

Revision Number	Reported By	Reviewed By	Date
Rev0	FH	JD	22/8/2023

We confirm that the following report has been produced for Maitland City Council based on the described methods and conditions within.

For and on behalf of Hunter Environmental Consulting,



**Jake Duck**

Environmental Scientist

## Table of Contents

1	Introduction .....	4
1.1	Background .....	4
2	Site Works .....	4
2.1	Soil Sampling & Contaminants of Concern .....	4
3	Quality Assurance / Quality Control.....	5
4	Results .....	5
4.1	Assessment Criteria .....	5
4.2	Targeted Sampling Results, Observations & Interpretation .....	6
5	Discussion & Conclusion.....	6
6	Report Limitations.....	6
	References.....	8

### Annex List:

- Annex A** Site Features Plan
- Annex B** Borehole Logs
- Annex C** Tabulated Soil Results
- Annex D** Laboratory Reports

## 1 Introduction

### 1.1 Background

Hunter Environmental Consulting (HEC) was engaged by Maitland City Council to complete an Environmental Site Assessment (ESA) at Whitewater Park, Heritage Drive, Chisholm (here-in referred to as the Site). The proposed development comprises of the construction of a community centre building with associated car parking with possible future development including public playing courts and a community garden.

It is understood that this investigation is required to address data gaps relating to potential contamination sources at the Site as identified within Douglas Partners (DP) Preliminary Site Investigation conducted in July 2023. The findings of this PSI noted that the Site was historically used for general agricultural/grazing purposes as well as part of the larger Site area being used as a poultry farm in which may include burial pits and possible agricultural chemical use.

The subject site was located within a greater site area that contained potential sources of contamination together with potentially contaminating activities that required site remediation. It is uncertain if specific subsurface investigations were conducted within the subject site during previous investigations, or if specific remediation or validation occurred within the subject site (DP, 2023).

The Site works discussed in the following sections were conducted during Hunter Civilab's geotechnical investigation conducted at the Site on the 27<sup>th</sup> of July 2023.

## 2 Site Works

### 2.1 Soil Sampling & Contaminants of Concern

Collection of a total of seven (7) soil samples from four (4) borehole locations for determining the Site's suitability for the proposed development.

Samples were analysed for the presence of the following contaminants of potential concern (CoPC);

- Benzene, Toluene, Ethyl-Benzene & Xylene (BTEX)
- Total Recoverable Hydrocarbons (TRH)
- Polycyclic Aromatic Hydrocarbons (PAH)
- Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)
- Organochlorine Pesticides (OCP) & Organophosphorus Pesticides (OPP)
- Polychlorinated Biphenyls (PCB)
- Phenols
- Asbestos ID
- E. Coli, Faecal Coliforms and Salmonella.

A Site features plan including sampling locations is presented in **Figure 1 of Annex A**.

### **3 Quality Assurance / Quality Control**

Quality assurance measures for sampling within this assessment were adopted to provide confidence in the analytical results to support determinations on material categorization and to facilitate satisfaction of project-specific objectives. Adopted measures included complimentary regimes of field and laboratory-based quality assurance techniques and quality control sampling / analysis. Quality assurance measures, results and implications for data quality associated with this assessment are broadly defined within the following categories:

1. Sample collection, storage transport and analysis
2. Laboratory quality control procedures and results
3. The occurrence of apparently unusual and anomalous results

Sampling was completed by suitably qualified engineers experienced in soil sampling. All field equipment was decontaminated between sampling locations using a triple rinse procedure by washing with an approximately 5% solution of DeCon 90 phosphate-free detergent, followed by tap water and finally rinsed with deionized water between sampling locations. Disposable nitrile gloves were worn during sampling and changed between locations. Samples were stored in jars provided by the NATA accredited laboratory sub-contracted to complete analysis (SGS) and were specific to targeted analytes. Samples were labelled with unique identifiers referencing the sampling location, depth and date of sampling then stored on ice during delivery to the Laboratory. Samples were transported under chain of custody to the laboratory and then analysed according to NATA accredited test methods.

Assessment of laboratory quality control is presented within the laboratory reports presented as **Annex D**.

## **4 Results**

### **4.1 Assessment Criteria**

Analytical data were screened against relevant Tier 1 Trigger Values for Residential A land use in which is the most sensitive land use criteria as defined or referenced within *Schedule B1* of the *NEPM 2013* (National Environmental Protection Council (NEPC), 2013). Specifically:

1. The CRC CARE (2011) health screening levels (HSLs) for petroleum hydrocarbons at 0 to <1m below ground level in sand/silt/clay, adopted to assess potential vapour risks to human receptors
2. The ASC NEPM (2013) health investigation levels (HILs), adopted to evaluate potential direct contact risks associated with the presence of other CoPC in soil (i.e. metals and PAH)
3. The CRC CARE (2011) assessment criteria for direct contact with petroleum hydrocarbons by future receptors
4. The NEPM (2013) ecological investigation levels (EILs) for inorganics to assess risks to ecological receptors
5. The NEPM (2013) ecological screening levels for coarse soil for hydrocarbon compounds to assess risks to ecological receptors

HIL and HSL assessment criteria address potential health risks to receptors associated with potential contamination.

## **4.2 Targeted Sampling Results, Observations & Interpretation**

The results of the analysis of the seven (7) primary soils samples indicate that all analytes were below the Limit of Reporting (LOR) for TRH, BTEX, PAH, OC/OP Pesticides, PCBs. All heavy metals results were below the HIL-A criteria.

Asbestos was reported as absent in all samples.

Salmonella was reported as non-detect and E. Coli/Thermotolerant Coliforms were reported below the LOR.

Soil analytical results are included in **Table 1** and **Table 2** of **Annex D**.

All samples returned results which were acceptable under the adopted assessment criteria (HIL-A).

## **5 Discussion & Conclusion**

HEC was engaged by Maitland City Council to complete an Environmental Site Assessment (ESA) with targeted sampling, at Whitewater Park, Heritage Drive, Chisholm.

A total of seven (7) soil samples were collected from four (4) borehole locations for determining the Site's suitability for the proposed development. Given that analytical results were found to be acceptable under NEPM (2013) HIL-A criteria in which is the most sensitive assessment criteria, the Site is considered suitable for the proposed development under the applicable land use criteria (HIL-C).

## **6 Report Limitations**

HEC considers that the objectives of the original scope as presented in quote EQ0233-Rev1 of the investigation have been achieved.

The analytical data and recommendations within the above report are subjected to the specific sampling and testing that was undertaken at the time of the current investigation. It should be noted that underlying site soil conditions can vary significantly across a site and the environment can change over time. If conditions encountered during intrusive works are different to those contained in this report HEC should be contacted immediately for site reassessment.

If you have any further questions about this report, please contact the undersigned.

For and on behalf of

Hunter Environmental Consulting

**Reported by:**



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*Environmental Scientist*

Bachelor of Environmental Science and  
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**Reviewed by:**



**Jake Duck**

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## References

- Douglas Partners (2023). *Report on Preliminary Site Investigation Proposed Community Centre – 221538.00.R.001.Rev0*
- Friebel, E., & Nadebaum, P. (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater. Summary*. Adelaide: CRC CARE Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment.
- National Environmental Protection Council (NEPC). (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Canberra: Office of Parliamentary Council.





# Annex A

# Borehole Location Plan



*Note: Overhead image taken from Nearmaps*

**Figure 1** – Overhead image at Heritage Drive, Chisholm (Whitewater Park) showing the approximate location of the Geotechnical boreholes.



# Annex B



**Hunter Civilab**

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**Geotechnical Log - Borehole**

**BH1**

UTM : 56H	Driller Rig : 4WD Mounted Drill Rig	Job Number : G0244
Easting (m)	Driller Supplier : Hunter Civilab	Client : Maitland City Council
Northing (m)	Logged By : JR	Project : Eastern Precinct Community Centres Project, Chisholm
Ground Elevation : Not Surveyed	Reviewed By : KS	Location : Heritage Drive, Chisholm (Whitewater Park)
Total Depth : 2.2 m BGL	Date : 27/07/2023	Loc Comment :

Drilling Method	Water	DCP graph	Samples		Depth (m)	Graphic Log	Classification Code	Material Description	Moisture	Consistency/Density	Soil Origin	Remarks	
			Disturbed										
Auger Drilling					0.1		SM	Silty SAND, fine grained, dark grey / brown, (with organics)	M-D		Topsoil		
							SW	FILL: gravelly SAND, fine to medium grained, fine to medium sized gravel, pale grey / brown.	M		Fill		
			ES		0.3			SC	FILL: clayey to gravelly SAND, fine to medium grained, fine to medium sized gravel, low plasticity clay, pale grey / brown, (floater).	M-D		Fill	
			5										
			5										
			6										
			2	ES		0.7		CI-CH	Silty CLAY, medium to high plasticity, dark brown / dark grey, trace fine grained sand.	w > PL	St	Residual	
			4										
			4			1		CI-CH	As above, but pale grey / brown.		St-VSt	Residual	
			4										
			6										
			5										
			7										
			6			1.4		CL-CI	Sandy CLAY, low to medium plasticity, pale grey / white / mottled orange / red, fine grained sand, trace fine sized gravel, (with extremely weathered sandstone inclusions ).	w < PL		Residual	
			13										
			11										
			8										
		12			1.8		SC SP	Clayey SAND, fine to medium grained, pale grey / brown / red, low plasticity clay, trace fine sized gravel, (extremely weathered sandstone material )	D	VD	Residual		
		12											
		15			2								
		R											
								<b>BH1 refusal at 2.2 m</b>					
					3								







**Hunter Civilab**

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**Geotechnical Log - Borehole**

**BH4**

UTM : 56H	Driller Rig : Ute Mounted Drill Rig	Job Number : G0244
Easting (m)	Driller Supplier : Hunter Civilab	Client : Maitland City Council
Northing (m)	Logged By : JR	Project : Eastern Precinct Community Centres Project, Chisholm
Ground Elevation : Not Surveyed	Reviewed By : KS	Location : Heritage Drive, Chisholm (Whitewater Park)
Total Depth : 1.2 m BGL	Date : 27/07/2023	Loc Comment :

Drilling Method	Water	DCP graph	Samples		Depth (m)	Graphic Log	Classification Code	Material Description	Moisture	Consistency/Density	Soil Origin	Remarks	
			Disturbed	Bulk									
Auger Drilling		2	ES		0.1		OL	Clayey to sandy SILT, low plasticity, dark grey / brown, fine grained sand, with fine to medium sized gravel.	w < PL		Topsoil		
		2					CL-CI	Silty to sandy CLAY, low to medium plasticity, dark grey / brown, mottled orange, fine grained sand, with fine to medium sized gravel.	w ≈ PL	St-VSt	Residual		
		3											
		11											
		3											
		4											
		7											
		3		ES									
		3											
		3											
		12/20mm			CBR	1							
		R											
									<b>BH4 refusal at 1.2 m</b>				
					2								
					3								



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**Geotechnical Log - Borehole**

**BH5**

UTM : 56H	Driller Rig : Ute Mounted Drill Rig	Job Number : G0244
Easting (m)	Driller Supplier : Hunter Civilab	Client : Maitland City Council
Northing (m)	Logged By : JR	Project : Eastern Precinct Community Centres Project, Chisholm
Ground Elevation : Not Surveyed	Reviewed By : KS	Location : Heritage Drive, Chisholm (Whitewater Park)
Total Depth : 1.1 m BGL	Date : 27/07/2023	Loc Comment :

Drilling Method	Water	DCP graph	Samples		Depth (m)	Graphic Log	Classification Code	Material Description	Moisture	Consistency/Density	Soil Origin	Remarks
			Disturbed	Bulk								
Auger Drilling		2	ES		0.1		OL	Clayey to sandy SILT, low plasticity, dark grey / brown, fine grained sand, (with organics).	w < PL		Topsoil	
		2					CL-CI		Silty to sandy CLAY, low to medium plasticity, dark grey / brown, mottled orange, fine grained sand.	w > PL	S-F	
		1										
		2										
		0										
		12	ES									
		20										
		R										
					0.9		CL-CI	As above, but trace fine sized gravel.	w < PL	VSt	Residual	
					1							
								<b>BH5 refusal at 1.1 m</b>				
					2							
					3							





# Annex C

Soil Screening Criteria




	Metals								TRH NEPM (2013)							BTEX				ASB	PAH					
	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	TRH C6-C10 Fraction	TRH C6-C10 minus BTEX (F1)	TRH >C10-C16 Fraction	TRH >C10-C16 - Naphthalene (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	Asbestos Present (P) / Absent (A)	Naphthalene	Benzo(a)pyrene	Carcinogenic PAHs, BaP TEQ <LOR=0	Carcinogenic PAHs, BaP TEQ <LOR=LOR	Carcinogenic PAHs, BaP TEQ <LOR=LOR/Z	Total PAH
Limit of Reporting	1	0.3	0.5	0.5	1	0.5	2	0.05	25	25	25	25	90	120	0.1	0.1	0.1	0.1	0.3	---	0.1	0.1	0.2	0.3	0.2	0.8
HIL A (NEPM 2013)	100	20	100	6000	300	400	7400	40														3	3	3	300	
HSL A - Soil Vapour Sand 0 - <1m (NEPM 2013)									45		110			3	0.5	160	55	40								
HSL A - Soil Vapour Silt 0 - <1m (NEPM 2013)									40		230			4	0.6	390	NL	95								
HSL A - Soil Vapour Clay 0 - <1m (NEPM 2013)									50		280			5	0.7	480	NL	110								
HSL A - Direct Contact (CRC Care 2011)									4,400		3,300		4,500	6,300	1,400	100	14,000	4,500	12,000		1400					
Intrusive Maintenance Worker - Direct Contact (CRC Care 2011)									82,000		62,000		85,000	120,000	29,000	1,100	120,000	85,000	130,000		29,000					
EILs (NEPM 2013)	100				1100									170							170					
ESLs - Fine (NEPM 2013)									180		120	1300	5600		65	105	125	105								
ESLs - Coarse (NEPM 2013)									180		120	300	2800		50	85	70	45			0.7					
Management Limits - Fine Soil (NEPM 2013)									800		1,000	3,500	10,000													
Management Limits - Coarse Soil (NEPM 2013)									700		1,000	2,500	10,000													

Sample ID	Sampled Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	TRH C6-C10 Fraction	TRH C6-C10 minus BTEX (F1)	TRH >C10-C16 Fraction	TRH >C10-C16 - Naphthalene (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	Asbestos Present (P) / Absent (A)	Naphthalene	Benzo(a)pyrene	Carcinogenic PAHs, BaP TEQ <LOR=0	Carcinogenic PAHs, BaP TEQ <LOR=LOR	Carcinogenic PAHs, BaP TEQ <LOR=LOR/Z	Total PAH
BH1 0.2-0.3	27/7/2023	3	<0.3	3.0	1.1	6	0.8	7.1	<0.05	<25	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH1 0.7-0.8	27/7/2023	3	<0.3	3.2	3.6	8	3.4	15	<0.05	<25	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH3 0.1-0.3	27/7/2023	5	<0.3	3.7	3.3	11	2.6	17	<0.05	<25	<25	<25	<25	120	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH3 0.7-0.9	27/7/2023	11	<0.3	4.3	<0.5	8	0.7	6.0	<0.05	<25	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH4 0.0-0.1	27/7/2023	4	<0.3	3.2	3.0	11	2.0	19	<0.05	<25	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH4 0.7-0.8	27/7/2023	9	<0.3	4.7	<0.5	10	0.6	6.6	<0.05	<25	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8
BH5 0.1-0.2	27/7/2023	5	<0.3	3.8	2.3	12	1.2	15	<0.05	<25	<25	<25	<25	99	<120	<0.1	<0.1	<0.1	<0.1	<0.3	A	<0.1	<0.1	<0.2	<0.3	<0.2	<0.8

Statistical Summary		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	TRH C6-C10 Fraction	TRH C6-C10 minus BTEX (F1)	TRH >C10-C16 Fraction	TRH >C10-C16 - Naphthalene (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	Asbestos Present (P) / Absent (A)	Naphthalene	Benzo(a)pyrene	Carcinogenic PAHs, BaP TEQ <LOR=0	Carcinogenic PAHs, BaP TEQ <LOR=LOR	Carcinogenic PAHs, BaP TEQ <LOR=LOR/Z	Total PAH
Number of Results	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Number of Detects	7	0	7	5	7	7	7	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Detect	3	0	3	1.1	6	0.6	6	0	0	0	0	0	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Detect	11	0	4.7	3.6	12	3.4	19	0	0	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average Concentration	5.71429	-	3.7	2.66	9.42857	1.61429	12.2429	-	-	-	-	-	109.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Soil Screening Criteria

	OCP														OPP	PCB
	Aldrin	o,p'-DDE	o,p'-DDD	o,p'-DDT	Gamma Chlordane	Alpha Chlordane	Dieldrin	Alpha Endosulfan	Beta Endosulfan	Endrin	Heptachlor	Hexachlorobenzene (HCB)	Methoxychlor	Toxaphene	Chlorpyrifos (Chlorpyrifos Ethyl)	Total PCBs (Arochlors)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Reporting	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	1	0.2	1
HIL A (NEPM 2013)	6	240	240	240	50	50	6	270	270	10	6	10	300	20	160	1
HSL A - Direct Contact (CRC Care 2011)																
Intrusive Maintenance Worker - Direct Contact (CRC Care 2011)																
EILs (NEPM 2013)				180												
ESLs - Coarse/Fine (NEPM 2013)																

Sample ID	Sampled Date	Aldrin	o,p'-DDE	o,p'-DDD	o,p'-DDT	Gamma Chlordane	Alpha Chlordane	Dieldrin	Alpha Endosulfan	Beta Endosulfan	Endrin	Heptachlor	Hexachlorobenzene (HCB)	Methoxychlor	Toxaphene	Chlorpyrifos (Chlorpyrifos Ethyl)	Total PCBs (Arochlors)
BH1 0.2-0.3	27/7/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<1	<0.2	<1
BH1 0.7-0.8	27/7/2023	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH3 0.1-0.3	27/7/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<1	<0.2	<1
BH3 0.7-0.9	27/7/2023	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH4 0.0-0.1	27/7/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<1	<0.2	<1
BH4 0.7-0.8	27/7/2023	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH5 0.1-0.2	27/7/2023	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<1	<0.2	<1

Statistical Summary	Aldrin	o,p'-DDE	o,p'-DDD	o,p'-DDT	Gamma Chlordane	Alpha Chlordane	Dieldrin	Alpha Endosulfan	Beta Endosulfan	Endrin	Heptachlor	Hexachlorobenzene (HCB)	Methoxychlor	Toxaphene	Chlorpyrifos (Chlorpyrifos Ethyl)	Total PCBs (Arochlors)
Number of Results	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average Concentration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Note:**
- <sup>(1)</sup> The NEPM presents a cumulative HIL for DDD, DDE and DDT (240 mg/kg). Concentrations for each of these compounds are presented separately above and conservatively assessed against the HIL.
  - <sup>(2)</sup> The NEPM presents a cumulative HIL for Aldrin and Dieldrin (6 mg/kg). Concentrations for each of these compounds are presented separately above and conservatively assessed against the HIL.
  - <sup>(3)</sup> The NEPM presents one HIL for Endosulfan (270 mg/kg). Concentrations for Alpha Endosulfan and Beta Endosulfan are presented separately above and conservatively assessed against the HIL.



# Annex D

CLIENT DETAILS

LABORATORY DETAILS

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Project **E0098 - Chisholm**  
 Order Number **HEC0196**  
 Samples **7**

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SGS Reference **SE251583 R0**  
 Date Received **1/8/2023**  
 Date Reported **8/8/2023**

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 #2,4,6: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.

Sample #1,3,5,7: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam

SIGNATORIES

**Akheeqar BENIAMEEN**  
 Chemist

**Dong LIANG**  
 Metals/Inorganics Team Leader

**Kamrul AHSAN**  
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 Inorganic/Metals Chemist

VOC's in Soil [AN433] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			- 27/7/2023 SE251583.001	- 27/7/2023 SE251583.002	- 27/7/2023 SE251583.003	- 27/7/2023 SE251583.004	- 27/7/2023 SE251583.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			- 27/7/2023 SE251583.006	- 27/7/2023 SE251583.007
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 (VOC)*	mg/kg	0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			27/7/2023	27/7/2023	27/7/2023	27/7/2023	27/7/2023
			SE251583.001	SE251583.002	SE251583.003	SE251583.004	SE251583.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			-	-
			27/7/2023	27/7/2023
			SE251583.006	SE251583.007
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: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			- 27/7/2023 SE251583.001	- 27/7/2023 SE251583.002	- 27/7/2023 SE251583.003	- 27/7/2023 SE251583.004	- 27/7/2023 SE251583.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<b>67</b>	<45	<b>87</b>	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<b>48</b>	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<b>120</b>	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<b>140</b>	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			- 27/7/2023 SE251583.006	- 27/7/2023 SE251583.007
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<b>78</b>
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	<b>99</b>
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: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			27/7/2023 SE251583.001	27/7/2023 SE251583.002	27/7/2023 SE251583.003	27/7/2023 SE251583.004	27/7/2023 SE251583.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			27/7/2023 SE251583.006	27/7/2023 SE251583.007
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: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH3 0.1-0.3	BH4 0.0-1.1	BH5 0.1-0.2
			SOIL	SOIL	SOIL	SOIL
			27/7/2023 SE251583.001	27/7/2023 SE251583.003	27/7/2023 SE251583.005	27/7/2023 SE251583.007
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH3 0.1-0.3	BH4 0.0-1.1	BH5 0.1-0.2
			SOIL	SOIL	SOIL	SOIL
			27/7/2023 SE251583.001	27/7/2023 SE251583.003	27/7/2023 SE251583.005	27/7/2023 SE251583.007
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH3 0.1-0.3	BH4 0.0-1.1	BH5 0.1-0.2
			SOIL	SOIL	SOIL	SOIL
			27/7/2023 SE251583.001	27/7/2023 SE251583.003	27/7/2023 SE251583.005	27/7/2023 SE251583.007
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			- 27/7/2023 SE251583.001	- 27/7/2023 SE251583.002	- 27/7/2023 SE251583.003	- 27/7/2023 SE251583.004	- 27/7/2023 SE251583.005
Arsenic, As	mg/kg	1	<b>3</b>	<b>3</b>	<b>5</b>	<b>11</b>	<b>4</b>
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	<b>3.0</b>	<b>3.2</b>	<b>3.7</b>	<b>4.3</b>	<b>3.2</b>
Copper, Cu	mg/kg	0.5	<b>1.1</b>	<b>3.6</b>	<b>3.3</b>	<0.5	<b>3.0</b>
Lead, Pb	mg/kg	1	<b>6</b>	<b>8</b>	<b>11</b>	<b>8</b>	<b>11</b>
Nickel, Ni	mg/kg	0.5	<b>0.8</b>	<b>3.4</b>	<b>2.6</b>	<b>0.7</b>	<b>2.0</b>
Zinc, Zn	mg/kg	2	<b>7.1</b>	<b>15</b>	<b>17</b>	<b>6.0</b>	<b>19</b>

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			- 27/7/2023 SE251583.006	- 27/7/2023 SE251583.007
Arsenic, As	mg/kg	1	<b>9</b>	<b>5</b>
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	<b>4.7</b>	<b>3.8</b>
Copper, Cu	mg/kg	0.5	<0.5	<b>2.3</b>
Lead, Pb	mg/kg	1	<b>10</b>	<b>12</b>
Nickel, Ni	mg/kg	0.5	<b>0.6</b>	<b>1.2</b>
Zinc, Zn	mg/kg	2	<b>6.6</b>	<b>15</b>

Mercury in Soil [AN312] Tested: 3/8/2023

			BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			27/7/2023	27/7/2023	27/7/2023	27/7/2023	27/7/2023
PARAMETER	UOM	LOR	SE251583.001	SE251583.002	SE251583.003	SE251583.004	SE251583.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

			BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			-	-
			27/7/2023	27/7/2023
PARAMETER	UOM	LOR	SE251583.006	SE251583.007
Mercury	mg/kg	0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 3/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL - 27/7/2023 SE251583.001	SOIL - 27/7/2023 SE251583.002	SOIL - 27/7/2023 SE251583.003	SOIL - 27/7/2023 SE251583.004	SOIL - 27/7/2023 SE251583.005
% Moisture	%w/w	1	<b>6.0</b>	<b>11.7</b>	<b>12.9</b>	<b>16.8</b>	<b>16.8</b>

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL - 27/7/2023 SE251583.006	SOIL - 27/7/2023 SE251583.007
% Moisture	%w/w	1	<b>14.7</b>	<b>14.8</b>

Fibre Identification in soil [AS4964/AN602] Tested: 7/8/2023

PARAMETER	UOM	LOR	BH1 0.2-0.3	BH1 0.7-0.8	BH3 0.1-0.3	BH3 0.7-0.9	BH4 0.0-1.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			- 27/7/2023 SE251583.001	- 27/7/2023 SE251583.002	- 27/7/2023 SE251583.003	- 27/7/2023 SE251583.004	- 27/7/2023 SE251583.005
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH4 0.7-0.8	BH5 0.1-0.2
			SOIL	SOIL
			- 27/7/2023 SE251583.006	- 27/7/2023 SE251583.007
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01



Sample Subcontracted  Tested: 4/8/2023

			BH1 0.2-0.3	BH4 0.7-0.8
			SOIL	SOIL
			-	-
			27/7/2023	27/7/2023
PARAMETER	UOM	LOR	SE251583.001	SE251583.006
Sample Subcontracted*	No unit	-	Subcontracted	Subcontracted

METHOD

METHODOLOGY SUMMARY

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

FOOTNOTES

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

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

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

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

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

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

Note that in terms of units of radioactivity:

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

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

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

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Project **E0098 - Chisholm**  
 Order Number **HEC0196**  
 Samples **7**

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SGS Reference **SE251583 R0**  
 Date Received **01 Aug 2023**  
 Date Reported **08 Aug 2023**

### COMMENTS

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

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

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

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
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### SAMPLE SUMMARY

Sample counts by matrix	7 Soil	Type of documentation received	COC
Date documentation received	1/8/2023	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	11.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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 sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

### Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287339	27 Jul 2023	01 Aug 2023	26 Jul 2024	07 Aug 2023	26 Jul 2024	08 Aug 2023

### Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287136	27 Jul 2023	01 Aug 2023	24 Aug 2023	03 Aug 2023	24 Aug 2023	07 Aug 2023

### Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287137	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	08 Aug 2023	04 Aug 2023

### OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023

### OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023

### PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	04 Aug 2023

### PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023

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 sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

### PCBs in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3 0.7-0.9	SE251583.004	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287135	27 Jul 2023	01 Aug 2023	23 Jan 2024	03 Aug 2023	23 Jan 2024	07 Aug 2023

### TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287129	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	12 Sep 2023	07 Aug 2023

### VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023

### Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.2-0.3	SE251583.001	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH1 0.7-0.8	SE251583.002	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH3 0.1-0.3	SE251583.003	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH3 0.7-0.9	SE251583.004	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH4 0.0-1.1	SE251583.005	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH4 0.7-0.8	SE251583.006	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023
BH5 0.1-0.2	SE251583.007	LB287134	27 Jul 2023	01 Aug 2023	10 Aug 2023	03 Aug 2023	10 Aug 2023	04 Aug 2023

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

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

**OC Pesticides in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	93
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	92
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	92
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	94

**OP Pesticides in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	82
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	87
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	82
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	83
d14-p-terphenyl (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	101
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	103
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	99
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	100

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 0.2-0.3	SE251583.001	%	70 - 130%	82
	BH1 0.7-0.8	SE251583.002	%	70 - 130%	82
	BH3 0.1-0.3	SE251583.003	%	70 - 130%	87
	BH3 0.7-0.9	SE251583.004	%	70 - 130%	81
	BH4 0.0-1.1	SE251583.005	%	70 - 130%	82
	BH4 0.7-0.8	SE251583.006	%	70 - 130%	80
	BH5 0.1-0.2	SE251583.007	%	70 - 130%	83
d14-p-terphenyl (Surrogate)	BH1 0.2-0.3	SE251583.001	%	70 - 130%	101
	BH1 0.7-0.8	SE251583.002	%	70 - 130%	99
	BH3 0.1-0.3	SE251583.003	%	70 - 130%	103
	BH3 0.7-0.9	SE251583.004	%	70 - 130%	98
	BH4 0.0-1.1	SE251583.005	%	70 - 130%	99
	BH4 0.7-0.8	SE251583.006	%	70 - 130%	96
	BH5 0.1-0.2	SE251583.007	%	70 - 130%	100
d5-nitrobenzene (Surrogate)	BH1 0.2-0.3	SE251583.001	%	70 - 130%	82
	BH1 0.7-0.8	SE251583.002	%	70 - 130%	84
	BH3 0.1-0.3	SE251583.003	%	70 - 130%	85
	BH3 0.7-0.9	SE251583.004	%	70 - 130%	83
	BH4 0.0-1.1	SE251583.005	%	70 - 130%	82
	BH4 0.7-0.8	SE251583.006	%	70 - 130%	82
	BH5 0.1-0.2	SE251583.007	%	70 - 130%	84

**PCBs in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	94
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	93
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	94
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	95

**VOC's in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	87
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	85
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	85
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	84
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	82
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	85
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	96
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	93
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	94
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	92
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	89
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	94
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	94

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.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	101
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	96
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	95
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	95
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	90
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	93
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	95

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	87
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	85
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	85
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	84
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	82
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	85
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	96
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	93
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	94
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	92
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	89
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	94
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	94
d8-toluene (Surrogate)	BH1 0.2-0.3	SE251583.001	%	60 - 130%	101
	BH1 0.7-0.8	SE251583.002	%	60 - 130%	96
	BH3 0.1-0.3	SE251583.003	%	60 - 130%	95
	BH3 0.7-0.9	SE251583.004	%	60 - 130%	95
	BH4 0.0-1.1	SE251583.005	%	60 - 130%	90
	BH4 0.7-0.8	SE251583.006	%	60 - 130%	93
	BH5 0.1-0.2	SE251583.007	%	60 - 130%	95



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
LB287136.001	Mercury	mg/kg	0.05	<0.05

**OC Pesticides in Soil**

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB287129.001	Alpha BHC	mg/kg	0.1	<0.1
	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Lindane (gamma BHC)	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Isodrin	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	Endrin aldehyde	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	
Methoxychlor	mg/kg	0.1	<0.1	
Mirex	mg/kg	0.1	<0.1	
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

**OP Pesticides in Soil**

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result	
LB287129.001	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	
	Bromophos Ethyl	mg/kg	0.2	<0.2	
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5	
	Dichlorvos	mg/kg	0.5	<0.5	
	Dimethoate	mg/kg	0.5	<0.5	
	Ethion	mg/kg	0.2	<0.2	
	Fenitrothion	mg/kg	0.2	<0.2	
	Malathion	mg/kg	0.2	<0.2	
	Methodathion	mg/kg	0.5	<0.5	
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	101

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

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB287129.001	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
LB287129.001	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)	%	-	85
	2-fluorobiphenyl (Surrogate)	%	-	82
	d14-p-terphenyl (Surrogate)	%	-	101

**PCBs in Soil**

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

Sample Number	Parameter	Units	LOR	Result
LB287129.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates	TCMX (Surrogate)	%	-	88

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

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

Sample Number	Parameter	Units	LOR	Result
LB287135.001	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
LB287129.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	
LB287134.001	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 (VOC)*	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	105
		Bromofluorobenzene (Surrogate)	%	-	95
	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
LB287134.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$   
 The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$   
 Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE251583.007	LB287136.023	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE251707.010	LB287136.014	Mercury	mg/kg	0.05	0.06655219780	1006269230	90	41

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE251583.007	LB287137.020	% Moisture	%w/w	1	14.8	16.6	36	11
SE251707.010	LB287137.011	% Moisture	%w/w	1	9.70072239429	3294460641	41	4

OC Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE251583.007	LB287129.023	Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0	
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0	
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0	
		Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	200	0	
		Delta BHC	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	
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0	
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	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	
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0	
		o,p'-DDE*	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	
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0	
		o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	200	0	
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0	
		Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	200	0	
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0	
		o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	200	0	
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0	
Endrin ketone	mg/kg	0.1	<0.1	<0.1	200	0			
Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0			
Mirex	mg/kg	0.1	<0.1	<0.1	200	0			
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0			
Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0			
Total OC VIC EPA	mg/kg	1	<1	<1	200	0			
SE251707.010	LB287129.014	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.14	30	2
		Alpha BHC	mg/kg	0.1	0.00040438490	0.0005808232	200	0	
SE251707.010	LB287129.014	Hexachlorobenzene (HCB)	mg/kg	0.1	0	0	200	0	
		Beta BHC	mg/kg	0.1	0.00015519996	9913305570	200	0	
		Lindane (gamma BHC)	mg/kg	0.1	0.00020409960	0.0001332114	200	0	
		Delta BHC	mg/kg	0.1	0.00028957202	9601856724	200	0	
		Heptachlor	mg/kg	0.1	0.00086766290	0.0011195682	200	0	
		Aldrin	mg/kg	0.1	0.00173606290	0.0025548151	200	0	
		Isodrin	mg/kg	0.1	0.00587165410	0.0060417998	200	0	
		Heptachlor epoxide	mg/kg	0.1	0.00159850990	0.0015591174	200	0	
		Gamma Chlordane	mg/kg	0.1	0.00690225100	0.0073531945	200	0	
		Alpha Chlordane	mg/kg	0.1	0.00156402970	0.0018954930	200	0	
		Alpha Endosulfan	mg/kg	0.2	0.00025120830	0.0007389016	200	0	
		o,p'-DDE*	mg/kg	0.1	0.00040100770	0.0011795202	200	0	
		p,p'-DDE	mg/kg	0.1	0.00181799890	0.0018642529	200	0	
		Dieldrin	mg/kg	0.2	0.00495809730	0.0046917079	200	0	
		Endrin	mg/kg	0.2	0.00028312440	0.0001869150	200	0	
		Beta Endosulfan	mg/kg	0.2	0.00326210650	0.0011535910	200	0	
		o,p'-DDD*	mg/kg	0.1	0.00019663140	0.0026951715	200	0	
		p,p'-DDD	mg/kg	0.1	0.00174864870	0.0011011828	200	0	

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$   
 The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$   
 Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-IENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE251707.010	LB287129.014	Endrin aldehyde	mg/kg	0.1	0.00051523360	0.0015197707	200	0	
		Endosulfan sulphate	mg/kg	0.1	0.00022981260	0.0003006077	200	0	
		o,p'-DDT*	mg/kg	0.1	0.00174864870	0.0011011828	200	0	
		p,p'-DDT	mg/kg	0.1	0.00255545050	0.0025138826	200	0	
		Endrin ketone	mg/kg	0.1	0.00157484900	0.0025363308	200	0	
		Methoxychlor	mg/kg	0.1	0.02603600195	0.0490572807	200	0	
		Mirex	mg/kg	0.1	0.00181450770	0.0067317317	200	0	
		trans-Nonachlor	mg/kg	0.1	0.00224634030	0.0024329341	200	0	
		Total CLP OC Pesticides	mg/kg	1	0	0	200	0	
		Total OC VIC EPA	mg/kg	1	0	0	200	0	
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14306840660	0.1394789301	30	3

OP Pesticides in Soil

Method: ME-(AU)-IENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE251583.007	LB287129.023	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0	
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0	
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0	
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0	
		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0	
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0	
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0	
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0	
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0	
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0	
		Parathion-ethyl (Parathion)	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	3
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
SE251707.010	LB287129.014	Azinphos-methyl (Guthion)	mg/kg	0.2	0.00410101580	0.0057325483	200	0	
		Bromophos Ethyl	mg/kg	0.2	0	0.0157395118	200	0	
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	0.00602836470	0.0066422313	200	0	
		Diazinon (Dimpylate)	mg/kg	0.5	0.0024006021	0	200	0	
		Dichlorvos	mg/kg	0.5	0	0	200	0	
		Dimethoate	mg/kg	0.5	0.00596019220	0.0101717433	200	0	
		Ethion	mg/kg	0.2	0	0	200	0	
		Fenitrothion	mg/kg	0.2	0.01164097390	0.0242585555	200	0	
		Malathion	mg/kg	0.2	0.00815432080	0.0154272526	200	0	
		Methidathion	mg/kg	0.5	0	0	200	0	
		Parathion-ethyl (Parathion)	mg/kg	0.2	0	0	200	0	
		Total OP Pesticides*	mg/kg	1.7	0	0	200	0	
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.41996979520	0.4215601119	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.49878247840	0.5005282105	30	0

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-IENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE251583.007	LB287129.023	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

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$   
 The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$   
 Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE251583.007	LB287129.023	Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0	
		Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	<0.2	200	0	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	<0.2	175	0	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	<0.3	134	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	1
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3	
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2	
SE251707.010	LB287129.014	Naphthalene	mg/kg	0.1	0.01096035750.0162097473		200	0	
		2-methylnaphthalene	mg/kg	0.1	0.01877092320.0215121475		200	0	
		1-methylnaphthalene	mg/kg	0.1	0.01635291700.0178054165		200	0	
		Acenaphthylene	mg/kg	0.1	0.00709874250.0094120860		200	0	
		Acenaphthene	mg/kg	0.1	0.00171669250.0022705003		200	0	
		Fluorene	mg/kg	0.1	0.00214370640.0013195344		200	0	
		Phenanthrene	mg/kg	0.1	0.04115123230.0444487802		200	0	
		Anthracene	mg/kg	0.1	0.00754344350.0107049170		200	0	
		Fluoranthene	mg/kg	0.1	0.04730306200.0576350687		200	0	
		Pyrene	mg/kg	0.1	0.05589582190.0692588380		190	0	
		Benzo(a)anthracene	mg/kg	0.1	0.03272234550.0402513423		200	0	
		Chrysene	mg/kg	0.1	0.04504550190.0549701319		200	0	
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.04641145430.0626441355		200	0	
		Benzo(k)fluoranthene	mg/kg	0.1	0.02037057920.0243997829		200	0	
		Benzo(a)pyrene	mg/kg	0.1	0.02992473260.0459184052		200	0	
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.02945299540.0441878878		200	0	
		Dibenzo(ah)anthracene	mg/kg	0.1	0.00246390800.0124348017		200	0	
		Benzo(ghi)perylene	mg/kg	0.1	0.04423312380.0606800455		200	0	
		Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	0	0	200	0	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	0.121	0.121	175	0	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	0.242	0.242	134	0	
		Total PAH (18)	mg/kg	0.8	0	0	200	0	
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.41318144520.4259191796		30	3
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.41996979520.4215601119		30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.49878247840.5005282105		30	0

PCBs in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %		
SE251583.007	LB287129.023	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	TCMX (Surrogate)	mg/kg	-	0	0	30	2	
		SE251707.010	LB287129.014	Arochlor 1016	mg/kg	0.2	0	0	200	0
				Arochlor 1221	mg/kg	0.2	0	0	200	0
Arochlor 1232	mg/kg			0.2	0	0	200	0		
Arochlor 1242	mg/kg			0.2	0	0	200	0		
Arochlor 1248	mg/kg			0.2	0	0	200	0		
Arochlor 1254	mg/kg			0.2	0	0	200	0		
Arochlor 1260	mg/kg			0.2	0	0	200	0		
Arochlor 1262	mg/kg			0.2	0	0	200	0		
Arochlor 1268	mg/kg			0.2	0	0	200	0		
Total PCBs (Arochlors)	mg/kg			1	0	0	200	0		
Surrogates	TCMX (Surrogate)			mg/kg	-	0.14372718960.1409273332		30	2	

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

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

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$   
 The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$   
 Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE251583.007	LB287135.023	Arsenic, As	mg/kg	1	5	5	50	1
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	3.8	3.6	44	5
		Copper, Cu	mg/kg	0.5	2.3	1.9	54	19
		Nickel, Ni	mg/kg	0.5	1.2	1.2	71	2
		Lead, Pb	mg/kg	1	12	12	38	1
SE251707.010	LB287135.014	Zinc, Zn	mg/kg	2	15	13	45	14
		Arsenic, As	mg/kg	1	5.01019142855.2193032786		50	4
		Cadmium, Cd	mg/kg	0.3	0.41667	0.3966670491	104	5
		Chromium, Cr	mg/kg	0.5	27.48637714281.3961515573		32	13
		Copper, Cu	mg/kg	0.5	58.91981428579.1930680327		31	18
		Nickel, Ni	mg/kg	0.5	45.68881142897.1598090163		31	3
		Lead, Pb	mg/kg	1	223.7421	25.877830327	30	1
		Zinc, Zn	mg/kg	2	66.00434285769.729054918		31	1

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE251583.007	LB287129.023	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	78	85	85	9
		TRH C29-C36	mg/kg	45	<45	<45	149	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	165	0
		TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH >C10-C16	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	99	110	117	9
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE251707.010	LB287129.014	TRH C10-C14	mg/kg	20	3.39611428575.3112494669		200	0
		TRH C15-C28	mg/kg	45	62.50354626801.404840938		44	42
		TRH C29-C36	mg/kg	45	92.37656972239.852997867		42	40
		TRH C37-C40	mg/kg	100	36.174471641719.902007675		127	18
		TRH C10-C36 Total	mg/kg	110	54.88011599141.257838805		46	41
		TRH >C10-C40 Total (F bands)	mg/kg	210	38.52898933957.082746268		56	40
		TRH >C10-C16	mg/kg	25	5.83355906189.3068076759		200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	0	200	0
		TRH >C16-C34 (F3)	mg/kg	90	67.79325543711.374649040		45	41
		TRH >C34-C40 (F4)	mg/kg	120	70.73573390145.708097228		88	36

**VOC's in Soil**

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %			
SE251583.007	LB287134.023	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 (VOC)*	mg/kg	0.1	<0.1	<0.1	200	0		
			Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.4	9.5	50	0	
		d8-toluene (Surrogate)		mg/kg	-	9.5	9.5	50	0		
		Bromofluorobenzene (Surrogate)		mg/kg	-	8.5	8.7	50	2		
		Totals	Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0		
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0		
			SE251707.010	LB287134.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	0.0015345640	0	200
		Toluene				mg/kg	0.1	0	0	200	0
Ethylbenzene	mg/kg	0.1				0.00072931540.0032411085		200	0		
m/p-xylene	mg/kg	0.2				0.00743955050.0099056837		200	0		
o-xylene	mg/kg	0.1				0.00441078930.0079873837		200	0		
Polycyclic	Naphthalene (VOC)*	mg/kg			0.1	0.00392510600.0040454416		200	0		
	Surrogates	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	9.29870421059.6052051165		50	3	
d8-toluene (Surrogate)		mg/kg			-	9.59924244339.9445961031		50	4		
Bromofluorobenzene (Surrogate)		mg/kg	-	8.88051955989.2481535781		50	4				
Totals	Total BTEX*	mg/kg	0.6	0	0	200	0				
	Total Xylenes*	mg/kg	0.3	0.01185033990.0178930675		200	0				

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$   
 The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$   
 Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

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

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

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-ENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE251583.007	LB287134.023	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	-	9.4	9.5	50	0	
		d8-toluene (Surrogate)	mg/kg	-	9.5	9.5	50	0	
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	8.7	50	2	
		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	
SE251707.010	LB287134.014	TRH C6-C10	mg/kg	25	1.1920416715	1.6518004269	200	0	
		TRH C6-C9	mg/kg	20	1.0185553889	1.3535479957	200	0	
		Surrogates							
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.29870421059	6.052051165	50	3	
		d8-toluene (Surrogate)	mg/kg	-	9.59924244339	9.445961031	50	4	
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.88051955989	2.481535781	50	4	
		VPH F Bands							
		Benzene (F0)	mg/kg	0.1	0.0015345640	0	200	0	
		TRH C6-C10 minus BTEX (F1)	mg/kg	25	1.1920416715	1.6518004269	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 %
LB287136.002	Mercury	mg/kg	0.05	0.20	0.2	80 - 120	101

**OC Pesticides in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB287129.002	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	82
	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	88
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	84
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	86
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	91
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	82
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	80

**OP Pesticides in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB287129.002	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	91	
	Diazinon (Dimpylate)	mg/kg	0.5	1.9	2	60 - 140	94	
	Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	78	
	Ethion	mg/kg	0.2	1.8	2	60 - 140	88	
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	98	

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB287129.002	Naphthalene	mg/kg	0.1	3.4	4	60 - 140	86	
	Acenaphthylene	mg/kg	0.1	4.0	4	60 - 140	99	
	Acenaphthene	mg/kg	0.1	3.7	4	60 - 140	93	
	Phenanthrene	mg/kg	0.1	3.8	4	60 - 140	95	
	Anthracene	mg/kg	0.1	3.8	4	60 - 140	94	
	Fluoranthene	mg/kg	0.1	3.7	4	60 - 140	93	
	Pyrene	mg/kg	0.1	3.8	4	60 - 140	96	
	Benzo(a)pyrene	mg/kg	0.1	3.7	4	60 - 140	92	
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82	
d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	98		

**PCBs in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB287129.002	Arochlor 1260	mg/kg	0.2	0.3	0.4	60 - 140	87

**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 %
LB287135.002	Arsenic, As	mg/kg	1	350	318.22	80 - 120	110
	Cadmium, Cd	mg/kg	0.3	4.8	4.81	70 - 130	100
	Chromium, Cr	mg/kg	0.5	42	38.31	80 - 120	108
	Copper, Cu	mg/kg	0.5	320	290	80 - 120	111
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	104
	Lead, Pb	mg/kg	1	93	89.9	80 - 120	104
	Zinc, Zn	mg/kg	2	280	273	80 - 120	103

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB287129.002	TRH C10-C14	mg/kg	20	47	40	60 - 140	118	
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	96	
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	77	
	TRH F Bands	TRH >C10-C16	mg/kg	25	46	40	60 - 140	114
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	79	
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	81	

**VOC's in Soil**

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

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.

VOC's in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB287134.002	Monocyclic	Benzene	mg/kg	0.1	4.7	5	60 - 140	95
	Aromatic	Toluene	mg/kg	0.1	4.9	5	60 - 140	98
		Ethylbenzene	mg/kg	0.1	5.0	5	60 - 140	101
		m/p-xylene	mg/kg	0.2	10	10	60 - 140	102
		o-xylene	mg/kg	0.1	5.2	5	60 - 140	104
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.9	10	70 - 130	109
		d8-toluene (Surrogate)	mg/kg	-	10.8	10	70 - 130	108
		Bromofluorobenzene (Surrogate)	mg/kg	-	10.4	10	70 - 130	104

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB287134.002	TRH C6-C10	TRH C6-C10	mg/kg	25	93	92.5	60 - 140	101
		TRH C6-C9	mg/kg	20	81	80	60 - 140	101
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.9	10	70 - 130	109
		Bromofluorobenzene (Surrogate)	mg/kg	-	10.4	10	70 - 130	104
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	63	62.5	60 - 140	101

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%
SE251707.001	LB287136.004	Mercury	mg/kg	0.05	0.26	0.05860957642	0.2	98

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE251707.001	LB287129.004	Alpha BHC	mg/kg	0.1	<0.1	0.00321399168	-	-
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	-	-
		Beta BHC	mg/kg	0.1	<0.1	0.00200588570	-	-
		Lindane (gamma BHC)	mg/kg	0.1	<0.1	0.00061673667	-	-
		Delta BHC	mg/kg	0.1	0.2	1.67085507283	0.2	87
		Heptachlor	mg/kg	0.1	0.2	6.77005533791	0.2	95
		Aldrin	mg/kg	0.1	0.2	0.00128063962	0.2	87
		Isodrin	mg/kg	0.1	<0.1	0.00303929063	-	-
		Heptachlor epoxide	mg/kg	0.1	<0.1	0.00161583267	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	0.00122647675	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	0.00109003760	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	0.00164541609	-	-
		o,p'-DDE*	mg/kg	0.1	<0.1	0.00262660339	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	0.00134548159	-	-
		Dieldrin	mg/kg	0.2	<0.2	0.00262956170	0.2	87
		Endrin	mg/kg	0.2	<0.2	0.00457702213	0.2	91
		Beta Endosulfan	mg/kg	0.2	<0.2	0.00088555607	-	-
		o,p'-DDD*	mg/kg	0.1	<0.1	0.00233793954	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	0.00181612630	-	-
		Endrin aldehyde	mg/kg	0.1	<0.1	0.00141650903	-	-
		Endosulfan sulphate	mg/kg	0.1	<0.1	0.01399959237	-	-
		o,p'-DDT*	mg/kg	0.1	<0.1	0.00181612630	-	-
		p,p'-DDT	mg/kg	0.1	0.2	0.00526587356	0.2	85
		Endrin ketone	mg/kg	0.1	<0.1	0.00103890869	-	-
		Methoxychlor	mg/kg	0.1	<0.1	0.00307832131	-	-
		Mirex	mg/kg	0.1	<0.1	0.00200883912	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	0.00544535906	-	-
		Total CLP OC Pesticides	mg/kg	1	1	0	-	-
		Total OC VIC EPA	mg/kg	1	1	0	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.14292971589	-	94

OP Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE251707.001	LB287129.004	Azinphos-methyl (Guthion)	mg/kg	0.2	2.0	0	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	0	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	0.00452657526	2	92
		Diazinon (Dimpylate)	mg/kg	0.5	1.9	0.00084731602	2	97
		Dichlorvos	mg/kg	0.5	1.6	0	2	81
		Dimethoate	mg/kg	0.5	<0.5	0.00078304822	-	-
		Ethion	mg/kg	0.2	1.8	0.01813049914	2	91
		Fenitrothion	mg/kg	0.2	<0.2	0.00925147486	-	-
		Malathion	mg/kg	0.2	<0.2	0.00622457379	-	-
		Methidathion	mg/kg	0.5	<0.5	0.00024487988	-	-
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0.02027774545	-	-
		Total OP Pesticides*	mg/kg	1.7	9.2	0	-	-
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.41051352509	-	83
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.49443133023	-	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE251707.001	LB287129.004	Naphthalene	mg/kg	0.1	3.7	0.01201114554	4	92
		2-methylnaphthalene	mg/kg	0.1	<0.1	0.00752580358	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	0.00757200333	-	-
		Acenaphthylene	mg/kg	0.1	4.1	0.03457309347	4	103
		Acenaphthene	mg/kg	0.1	3.9	0.00438805272	4	97
		Fluorene	mg/kg	0.1	<0.1	0.01550726767	-	-

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE251707.001	LB287129.004	Phenanthrene	mg/kg	0.1	4.0	0.25150026309	4	95	
		Anthracene	mg/kg	0.1	3.9	0.04602663458	4	95	
		Fluoranthene	mg/kg	0.1	4.2	0.50077684274	4	92	
		Pyrene	mg/kg	0.1	4.2	0.50164260567	4	91	
		Benzo(a)anthracene	mg/kg	0.1	0.1	0.19102353231	-	-	
		Chrysene	mg/kg	0.1	0.1	0.21039817204	-	-	
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	0.31154309376	-	-	
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.12203971102	-	-	
		Benzo(a)pyrene	mg/kg	0.1	3.7	0.24337229392	4	87	
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.1	0.18885505705	-	-	
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.02594900017	-	-	
		Benzo(ghi)perylene	mg/kg	0.1	0.1	0.17876184234	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	3.8	0.32734424384	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	3.8	0.37734424384	-	-	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	3.9	0.42734424384	-	-	
		Total PAH (18)	mg/kg	0.8	32	2.68725551758	-	-	
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.41733871915	-	84
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.41051352509	-	83
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.49443133023	-	99		

PCBs in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE251707.001	LB287129.004	Arochlor 1016	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1221	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1232	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1242	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1248	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1254	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1260	mg/kg	0.2	0.4	0	0.4	91
		Arochlor 1262	mg/kg	0.2	<0.2	0	-	-
		Arochlor 1268	mg/kg	0.2	<0.2	0	-	-
		Total PCBs (Arochlors)	mg/kg	1	<1	0	-	-
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0.14447838035	-

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%
SE251707.001	LB287135.004	Arsenic, As	mg/kg	1	54	5.18320178900	50	97
		Cadmium, Cd	mg/kg	0.3	42	0.24765851091	50	83
		Chromium, Cr	mg/kg	0.5	64	12.9809194948E	50	102
		Copper, Cu	mg/kg	0.5	71	25.3673704288E	50	92
		Nickel, Ni	mg/kg	0.5	61	12.32034990791	50	97
		Lead, Pb	mg/kg	1	220	0.9559326493	50	37 @
		Zinc, Zn	mg/kg	2	190	43.1175348592	50	87

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE251707.001	LB287129.004	TRH C10-C14	mg/kg	20	52	2.16731485036	40	124	
		TRH C15-C28	mg/kg	45	89	43.9546660880E	40	112	
		TRH C29-C36	mg/kg	45	140	101.758178334E	40	87	
		TRH C37-C40	mg/kg	100	<100	33.1455529405E	-	-	
		TRH C10-C36 Total	mg/kg	110	280	101.758178334E	-	-	
		TRH >C10-C40 Total (F bands)	mg/kg	210	210	18.4967776275	-	-	
		TRH F	TRH >C10-C16	mg/kg	25	51	2.42713914528	40	121
		Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	51	0	-	-
			TRH >C16-C34 (F3)	mg/kg	90	160	18.4967776275	40	103
			TRH >C34-C40 (F4)	mg/kg	120	<120	30.10179544101	-	-

VOC's in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE251707.001	LB287134.004	Monocyclic	Benzene	mg/kg	0.1	4.7	0.00649836714	5	94
		Aromatic	Toluene	mg/kg	0.1	4.9	0.01934020942	5	98
			Ethylbenzene	mg/kg	0.1	5.0	0.01799520516	5	99
			m/p-xylene	mg/kg	0.2	10	0.04490062731	10	100

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.

VOC's in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE251707.001	LB287134.004	Monocyclic	o-xylene	mg/kg	0.1	5.2	0.02382553046	5	103
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	0.00743696945	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.2	9.95831580527	10	102
			d8-toluene (Surrogate)	mg/kg	-	10.3	10.37398762644	10	103
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.9	9.44286751737	10	99
		Totals	Total BTEX*	mg/kg	0.6	30	0	-	-
			Total Xylenes*	mg/kg	0.3	15	0.06872615778	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE251707.001	LB287134.004	TRH C6-C10	mg/kg	25	110	1.99846662219	92.5	111	
		TRH C6-C9	mg/kg	20	91	1.73457050040	80	111	
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.2	9.95831580527	10	102
			d8-toluene (Surrogate)	mg/kg	-	10.3	10.37398762644	10	103
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.9	9.44286751737	-	99
		VPH F	Benzene (F0)	mg/kg	0.1	4.7	0.00649836714	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	75	1.99846662219	62.5	117

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

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

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

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

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

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](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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CLIENT DETAILS

LABORATORY DETAILS

Contact **Jake Duck**  
 Client **HUNTER ENVIRONMENTAL CONSULTING PTY LTD**  
 Address **PO BOX 3127  
 THORNTON NSW 2322**

Telephone **61 2 49661844**  
 Facsimile **(Not specified)**  
 Email **jd@hunterenviro.com.au**

Project **E0098 - Chisholm**  
 Order Number **HEC0196**  
 Samples **7**

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 **SE251583 R0**  
 Date Received **01 Aug 2023**  
 Date Reported **08 Aug 2023**

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 #2,4,6: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.

Sample #1,3,5,7: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam

SIGNATORIES



Ravee SIVASUBRAMANIAM  
 Hygiene Team Leader

RESULTS

Fibre Identification in soil

Method AS4964/AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE251583.001	BH1 0.2-0.3	Soil	108g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.002	BH1 0.7-0.8	Soil	68g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.003	BH3 0.1-0.3	Soil	87g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.004	BH3 0.7-0.9	Soil	75g Clay, Soil	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.005	BH4 0.0-1.1	Soil	70g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.006	BH4 0.7-0.8	Soil	56g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01
SE251583.007	BH5 0.1-0.2	Soil	77g Sand, Soil, Rocks	27 Jul 2023	No Asbestos Found at RL of 0.1g/kg	<0.01



METHOD

METHODOLOGY SUMMARY

AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be 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	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states: "Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602/AS4964	The sample can be reported "no asbestos found at the reporting limit (RL) of 0.1 g/kg" (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- <ul style="list-style-type: none"> <li>(a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres);</li> <li>(b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg; and</li> <li>(c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.</li> </ul>

FOOTNOTES

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

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

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

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

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

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

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

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

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## CERTIFICATE OF ANALYSIS

<b>Certificate Number</b>	S1361559 [R02]	<b>Page</b>	1/2
<b>Client</b>	SGS Environmental Services - Sydney	<b>Registering Laboratory</b>	Sydney
<b>Contact</b>	Jack Duck	<b>Contact</b>	Customer Service Team
<b>Address</b>	16/33 Maddox St Alexandria NSW 2015	<b>Address</b>	2 Sirius Rd, Lane Cove West, NSW 2066
<b>Telephone</b>	02 8594 0400	<b>Email</b>	<a href="mailto:admin@symbiolabs.com.au">admin@symbiolabs.com.au</a>
<b>Order Number</b>	---	<b>Telephone</b>	1300 703 166
<b>Project ID</b>	Soil SE251583	<b>Date Samples Received</b>	01/08/2023
<b>Sampler</b>	Customer	<b>Date Analysis Commenced</b>	01/08/2023
<b>Client Job Reference</b>	---	<b>Issue Date</b>	04/08/2023
<b>No. of Samples Registered</b>	2   Sampler: Customer	<b>Receipt Temperature (°C)</b>	7
<b>Priority</b>	Normal	<b>Storage Temperature (°C)</b>	4
		<b>Quote Number</b>	---



Accreditation No: 2455  
Accredited for compliance  
with ISO/IEC 17025 - Testing

This report supersedes any previous revision with this reference. This document must not be reproduced, except in full. If samples were provided by the customer, results apply only to the samples 'as received' and responsibility for representative sampling rests with the customer. Water results are reported on an 'as is' basis. Soil and sediment results are reported on a 'dry weight' basis. For other matrices the basis of reporting will be confirmed in the 'Report Comments' section. Measurement Uncertainty is available upon request. If the laboratory was authorised to conduct testing on samples received outside of the specified conditions, all test results may be impacted. Details of samples received outside of the specified conditions are mentioned in the sample description section of this test report.

### Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested | ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | \*\* Potential Holding Time Concern | \* Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

### Authorised By

Name	Position	Accreditation Category
Melissa Gan	Laboratory Manager – Microbiology	Environmental and Food Microbiology

### Sample Information - Client/Sampler Supplied

Sample ID	S1361559/1	S1361559/2
Sample Description	SE251583.001 BH1 0.2-0.3	SE251583.006 BH4 0.7-0.8
Sample Date/Time	2023-07-27 00:00	2023-07-27 00:00

Client	SGS Environmental Services - Sydney
Certificate Number	S1361559 [R02]
Page	2/2

Project ID	Soil SE251583
Sampler	Customer
Order Number	---



### Analytical Results

Client Sample Description			SE251583.001 BH1 0.2-0.3	SE251583.006 BH4 0.7-0.8
Client Sampling date/time			27/07/2023 00:00	27/07/2023 00:00
Compound/Analyte	LOR	Units	S1361559/1	S1361559/2
			Results	Results
Micro General Water SYD				
M16.1 - AS 5013.10				
Salmonella spp.	ND	/25g	ND	ND
M8.3 - AS 5013.3 & AS 5013.15				
Thermotolerant Coliforms	3	MPN/g	<3	<3
Escherichia coli	3	MPN/g	<3	<3

### Analysis Location

All in-house analysis was completed by Symbio Laboratories - Sydney.

### Revision Comments

- [R01]- Updated Job Description
- [R01]- Updated Sample Description



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

Email: [au.samplereceipt.sydneyp@sgs.com](mailto:au.samplereceipt.sydneyp@sgs.com)

### CHAIN OF CUSTODY & ANALYSIS REQUEST

Company Name: Hunter Enviro  
 Address: 3/62 Sandringham Avenue Thornton 2322

Contact Name: Jake

Project Name/No: E0098 - (Chris Holm)  
 Purchase Order No: HEC0196  
 Results Required By: STD  
 Telephone: 0499 160 449  
 Facsimile:  
 Email Results: [jd@hunterenviro.com.au](mailto:jd@hunterenviro.com.au); [results@hunterenviro.com.au](mailto:results@hunterenviro.com.au)

Client Sample ID	Date Sampled	Lab Sample ID	Media / Preservative				NO OF CONTAINERS	Analysis										
			WATER	SOIL	PRESERVATIVE			CL17	CL10	E Coli, Faecal Coliform & Salmonella	Asbestos 10	HOLD						
BH1 0.2-0.3	27.7.23	1	X	X		3	✓	✓	✓	✓								
BH2 0.7-0.8		2	X	X		1	✓	✓	✓	✓								
BH3 0.1-0.3		3	X	X		2	✓	✓	✓	✓								
BH3 0.7-0.9		4	X	X		1	✓	✓	✓	✓								
BH4 0.0-0.1		5	X	X		2	✓	✓	✓	✓								
BH4 0.7-0.8		6	X	X		2	✓	✓	✓	✓								
BH5 0.1-0.2		7	X	X		2	✓	✓	✓	✓								
BH5 0.5-0.6		8	X	X		1	✓	✓	✓	✓								

SGS EHS Sydney COC  
**SE251583**

Relinquished By: *[Signature]* Date/Time: 31.7.23  
 Received By: *[Signature]* Date/Time: 1.8.23 10:40  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Samples Intact:  Yes  No  
 Temperature: Ambient / Chilled *118*  
 Sample Cooler Sealed:  Yes  No  
 Comments: \_\_\_\_\_  
 Laboratory Quotation No: \_\_\_\_\_