

TECHNICAL MEMORANDUM



WAE230033-01 001 TM Rev1

30 October 2023

To: Luke Aveling

e-mail: lukea@omniwa.com.au

From: Michael Carmichael

Sender's email: michael.carmichael@galtgeo.com.au

SOIL CONTAMINATION ASSESSMENT – PROPOSED CHILDCARE CENTRE 184A SHEPPERTON ROAD, EAST VICTORIA PARK

Dear Luke,

1. INTRODUCTION

This report presents the findings of Galt Environmental Pty Ltd's (Galt's) soil contamination assessment for the proposed childcare centre located at 184A Shepperton Road, East Victoria Park (the site).

The location of the site relative to the surrounding area is shown on Figure 1.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

Publicly available aerial imagery indicates the site is approximately 0.17 ha in plan. At the time of fieldwork, the site was fully developed with a commercial healthcare business operating at the premises.

The proposed childcare development is considered a 'sensitive land use' under the Contaminated Sites Act 2003. As such, a soil contamination assessment is required to demonstrate the site is free from contamination and appropriate for its intended use. Additionally, we understand the assessment is an Education and Care Regulatory Unit (ECRU) requirement.

We are not aware if the site is being demolished to make way for the childcare centre or redeveloped in its current form. Supplied drawings indicate the building is a similar configuration/orientation to the current building on site, and may be renovated with the addition of outdoor play areas.

Supplied drawings are presented in Attachment A.

3. PROJECT OBJECTIVES

The objectives of the study were to:

- ✦ assess the nature and extent of soil contamination (if any) across the site; and
- ✦ make recommendation for further investigation and/or remedial works (if required).

4. FIELDWORK

Fieldwork was conducted on 15 May 2023 and comprised:

- ✦ a walkover of the site including taking photographs;
- ✦ drilling of boreholes at 6 locations extending to depths of between 0.9 m to 2.0 m; and

Galt Environmental Pty Ltd

- collection of soil samples at the surface and 0.5 m intervals until the termination of each borehole.

General

An environmental scientist conducted the walkover survey, drilled the boreholes, logged the materials encountered in the boreholes, conducted the field testing and collected samples for laboratory testing.

Test locations are shown on Figure 1 and photographs of the site are presented in Attachment B. Details of the tests are presented in Table 1.

Table 1: Summary of Tests

Test Name	Test Depth (m)	Depth to Groundwater (m)	Reason for Termination	Stratigraphy
BH01	2.0	GNE ¹	Target Depth	SAND
BH02	2.0		Target Depth	
BH03	2.0		Target Depth	
BH04	0.9		Refusal	
BH05	2.0		Target Depth	
BH06	2.0		Target Depth	

Notes: 1. GNE – Groundwater Not Encountered

Boreholes

The boreholes were drilled using a 90 mm nominal diameter hand auger by a representative from Galt. Borehole reports are presented in Attachment C along with a method of soil description and a list of explanatory notes and abbreviations used in the reports. A photograph of the spoil recovered in each borehole is included at the foot of each of the borehole reports.

Soil Sampling

Soil samples were collected from the boreholes in accordance with the following Australian Standards (AS):

- AS 4482.1:2005 *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil Part 1 Non-Volatile and Semi Volatile Compounds*; and
- AS 4482.2:1999 *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil Part 2 Volatile Compounds*;

Soil samples were collected at 0.5 m intervals at each borehole location using a new pair of disposable nitrile gloves. All soil samples were collected in laboratory supplied glass jars and stored on ice during fieldwork and transport to the laboratory to ensure that they arrived intact and at the appropriate temperature to ensure sample preservation.

5. LABORATORY ANALYSIS

Selected soil samples were analysed by Eurofins in their National Association of Testing Authorities (NATA) accredited laboratory for the following contaminants of potential concern (COPC):

- heavy metals;
- total petroleum hydrocarbons (TPH);
- benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN);

- ☞ polycyclic aromatic hydrocarbons (PAH).
- ☞ OC/OP pesticides; and
- ☞ asbestos identification (NEPM).

All laboratory analysis was undertaken using NATA accredited methods of analysis. Environmental laboratory test results are presented in Attachment D.

6. SITE CONDITIONS

6.1 Geology

The Perth sheet of the 1:50,000 scale Environmental Geology series map indicates that the area is underlain by Bassendean Sand of eolian origin.

We encountered sandy soils consistent with the geological mapping.

6.2 Subsurface Conditions

The subsurface conditions are broadly consistent and can be summarised as comprising SAND (SP) (possibly fill) fine to medium grained, sub-angular to sub-rounded, yellow to brown, with roots and organics in top 200 mm, and possible trace gravel.

6.3 Groundwater

The Perth Groundwater Atlas (1997) shows the maximum historical groundwater level to be around RL 11.0 m AHD. This is within about 5 m of the current ground surface. No groundwater was encountered during the course of the investigation.

6.4 Contaminated Sites

The Department of Water and Environment regulations (DWER) contaminated sites database indicates that site is not a registered contaminated site. We note that the publicly available database only lists sites classified as 'Remediated for restricted use', 'Contaminated – remediation required' and 'Contaminated – restricted use'.

7. ENVIRONMENTAL ASSESSMENT

7.1 Assessment Criteria

Regulatory assessment criteria for soil analysis were selected considering the existing land use, applicable soil beneficial uses and consistency with relevant published guidelines including the National Environmental Protection Council (2013) *National Environmental Protection (Assessment of Site Contamination) Measure (NEPM)*.

Specifically, soil samples were assessed against the following:

- ☞ health investigation levels - residential (HIL A); and
- ☞ health screening levels – residential (HSL A).

7.2 Results

Results of the groundwater sampling are summarised in Table 2 and laboratory analytical results are shown on Attachment E.

Table 2: Laboratory Analytical Results Summary

Analyte	Results Range	Exceedances
<i>Asbestos</i>		
Asbestos (AF/FA)	< LOR ¹	None
<i>Hydrocarbons</i>		
BTEXN	< LOR	None
TRH	< LOR	None
PAH	< LOR	None
<i>Metals</i>		
Arsenic	< LOR	None
Cadmium	< LOR - 0.1 mg/kg	None
Chromium (III+VI)	1.3 – 12 mg/kg	None
Copper	< LOR - 6.8 mg/kg	None
Lead	5.4 – 51 mg/kg	None
Mercury	< LOR - 0.04 mg/kg	None
Nickel	< LOR - 1.5 mg/kg	None
Zinc	18 – 170 mg/kg	None
<i>Pesticides</i>		
4,4-DDE	< LOR – 0.07 mg/kg	None
Chlordane	< LOR – 0.03 mg/kg	None
DDT	< LOR – 0.02 mg/kg	None
Dieldrin	< LOR – 0.39 mg/kg	None
Heptachlor Epoxide	< LOR - 0.01 mg/kg	None
Other OC Pesticides	< LOR	None
OP Pesticides	< LOR	None

Notes 1. < LOR indicates the test result was less than the laboratory limit of reporting.

7.3 Summary

All contaminants of potential concern (COPC) were below the LOR and/or conformed to the adopted criteria. We note the presence of low-level concentrations of some metals and pesticides at the site which are likely attributed to historical land use (possibly pest control below footings etc. in the vicinity of former buildings etc).

8. CONCLUSION

Based on the results of the study, we consider it unlikely that the soil presents a risk to human health or the environment in context of the proposed land use. Furthermore, we consider that the site is suitable for the proposed land use (childcare centre).

9. CLOSURE

We draw your attention to Attachment F of this report, "Understanding your Report". The information provided within is intended to inform you as to what your realistic expectations of this report should be. This information is provided not to reduce the level of responsibility accepted by Galt, but to ensure that all parties who rely on this report are aware of the responsibilities each assumes in so doing.

GALT ENVIRONMENTAL PTY LTD



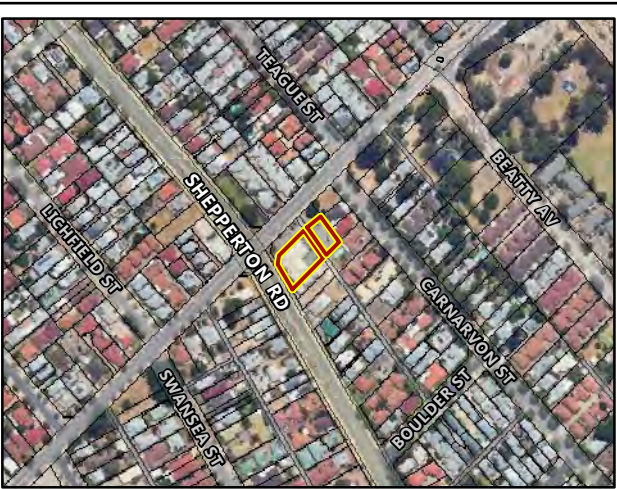
Brad Palmer

Environmental Scientist

Attachments

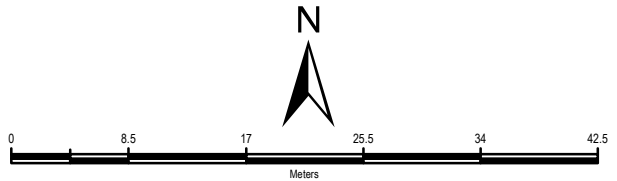
- A – Supplied Drawings
- B – Site Photographs
- C – Borehole Reports
- D – Laboratory Test Results
- E – Soil Analytical Results
- F – Understanding your Report

<https://galtgeo.sharepoint.com/sites/WAE230033/Shared Documents/01 Omni SI Shepperton/03 Correspondence/WAE230033-01 001 TM Rev1.docx>



Legend

- Site Boundary
- Borehole



NOTES
Aerial Imagery and Cadastre sourced from Landgate/SLIP



SCALE	1:548	(A3)
DRAWN	CED	
DATE DRAWN	16/5/2023	
CHECKED	ML	
DATE CHECKED	9/06/2023	
PROJECTION	GDA 1994 MGA Zone 50	



Galt Environmental Pty Ltd
ACN : 161 708 998
Tel : +61 (0)8 6272-0200
Address: 50 Edward Street
Osborne Park WA 6017

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CLIENT	OMNI PROJECTS		
PROJECT	SHEPPERTON ROAD CHILD CARE CENTRE		
LOCATION	184A SHEPPERTON ROAD VICTORIA PARK		
TITLE	SITE & LOCATION PLAN		
Job No	WAE230033-01-001	Fig No	FIGURE 1
Rev	A		

ATTACHMENT A

Supplied Drawings

Ground Floor - Exsiting

1:100

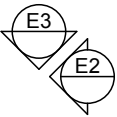
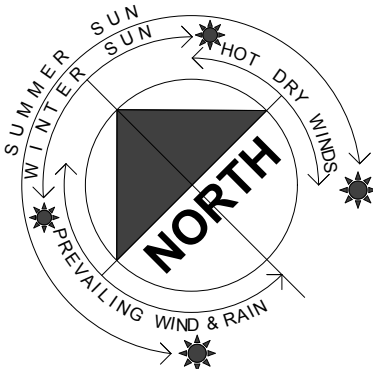
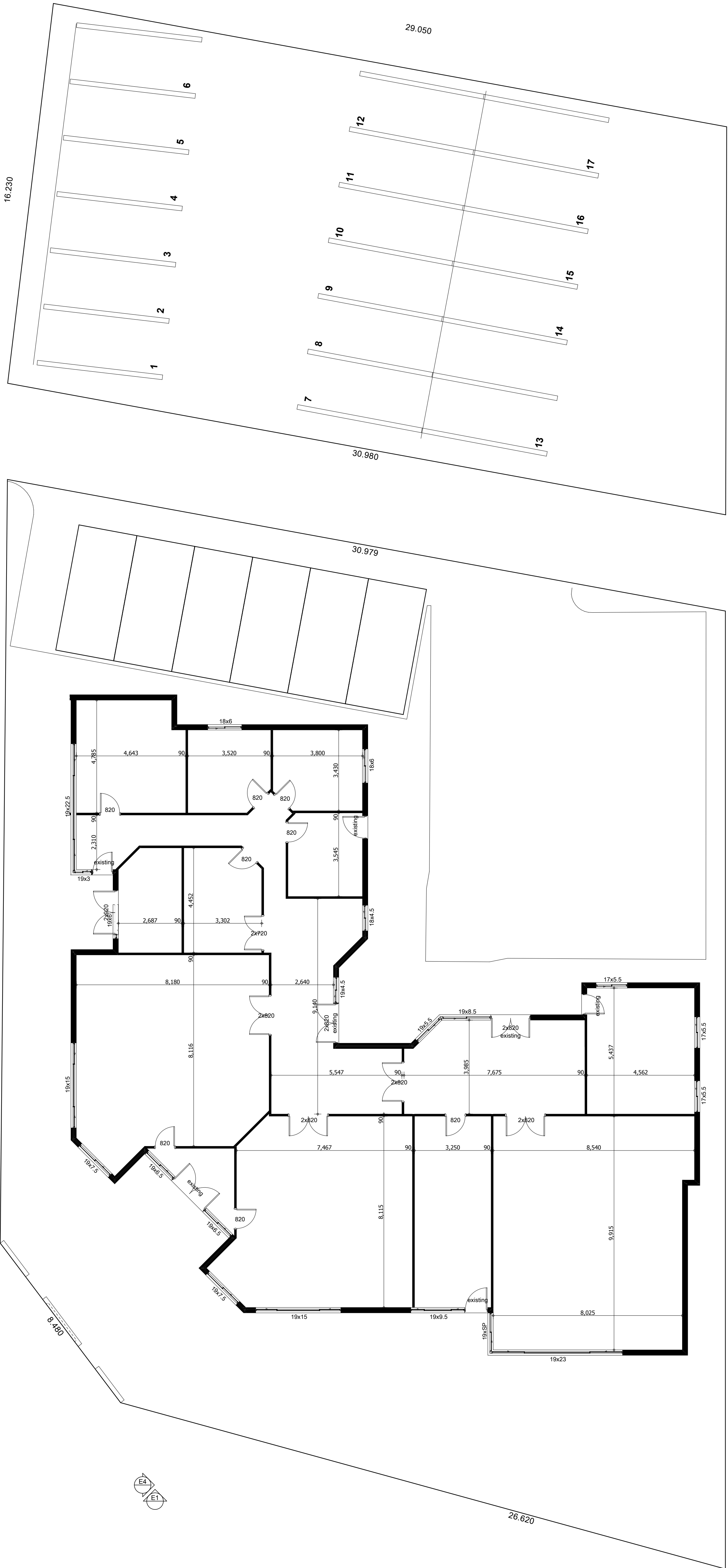


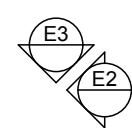
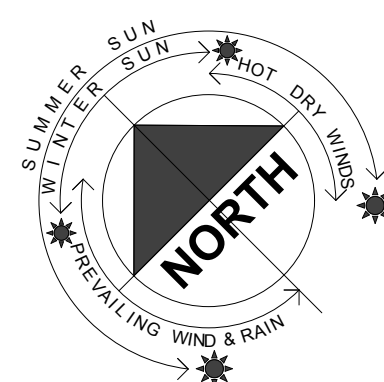
EXISTING BUILDING RE-FIT ON:
Lot 7 (#184a) Shepperton Road
East Victoria Park
FOR:
Omni Projects

SIGNATURES:
OWNER: _____
OWNER: _____
BUILDER: _____
DATE: _____

AMENDMENTS:		
10/01/23	1st DRAFT	
16/02/23	2nd DRAFT	
01/03/23	3rd DRAFT	

A1 SHEET
SHEET: 1 of 7
DRN: ss
DATE: 11/01/2023
SCALE: 1:100
CONTRACT NO: _____

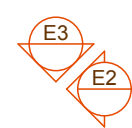
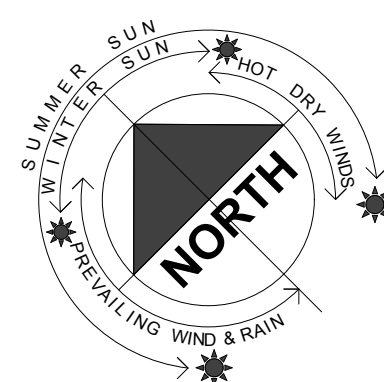




SIGNATURES:		AMENDMENTS:		A1 SHEET
OWNER: _____	_____	10/01/23	1st Draft	SHEET: 2 of 7
OWNER: _____	_____	06/02/23	2nd Draft	DRN: ss
BUILDER: _____	_____	01/03/23	3rd Draft	DATE: 11/01/2023
DATE: _____	_____			SCALE: 1:100
				CONTRACT NO:



Shepperton Road

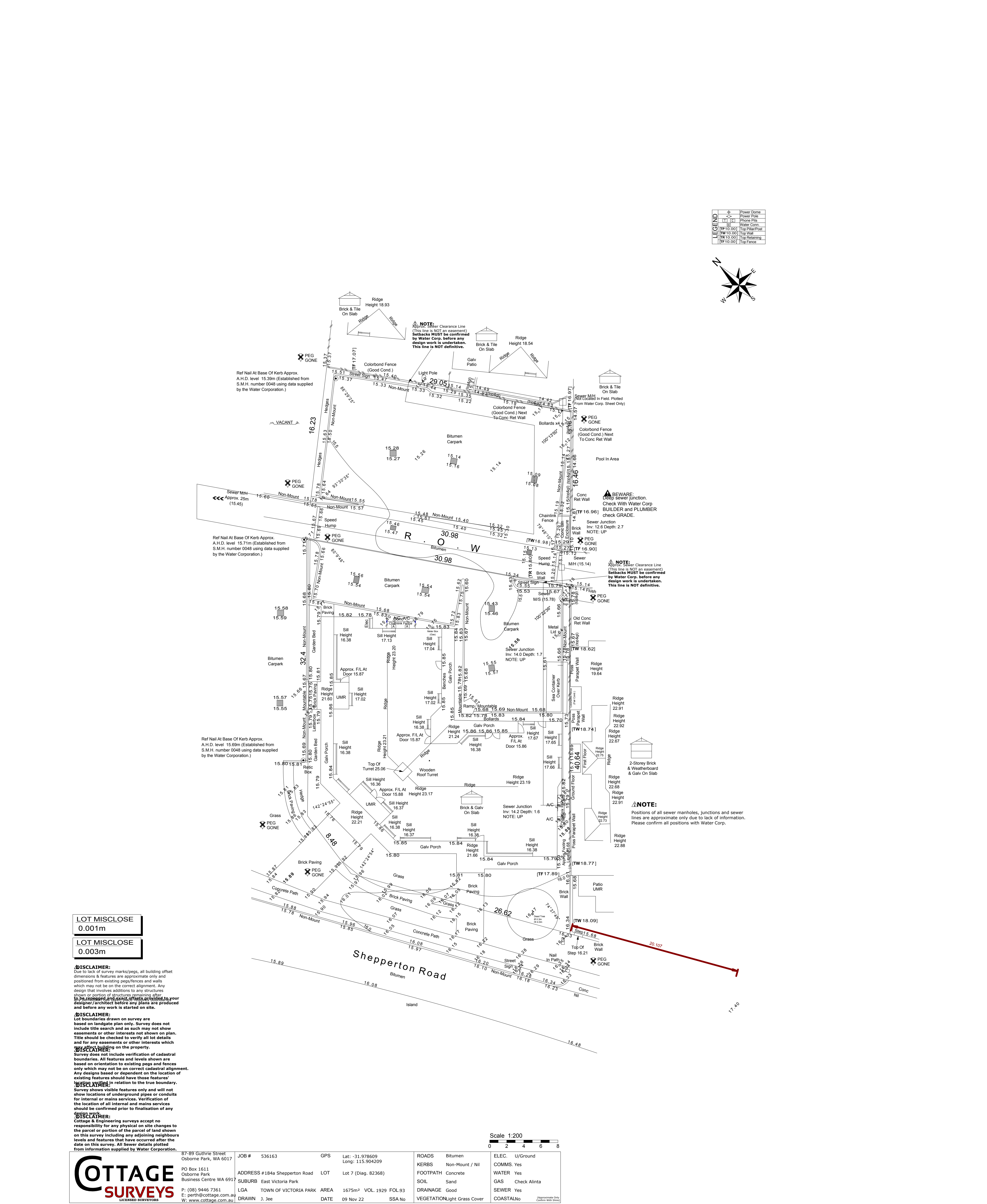


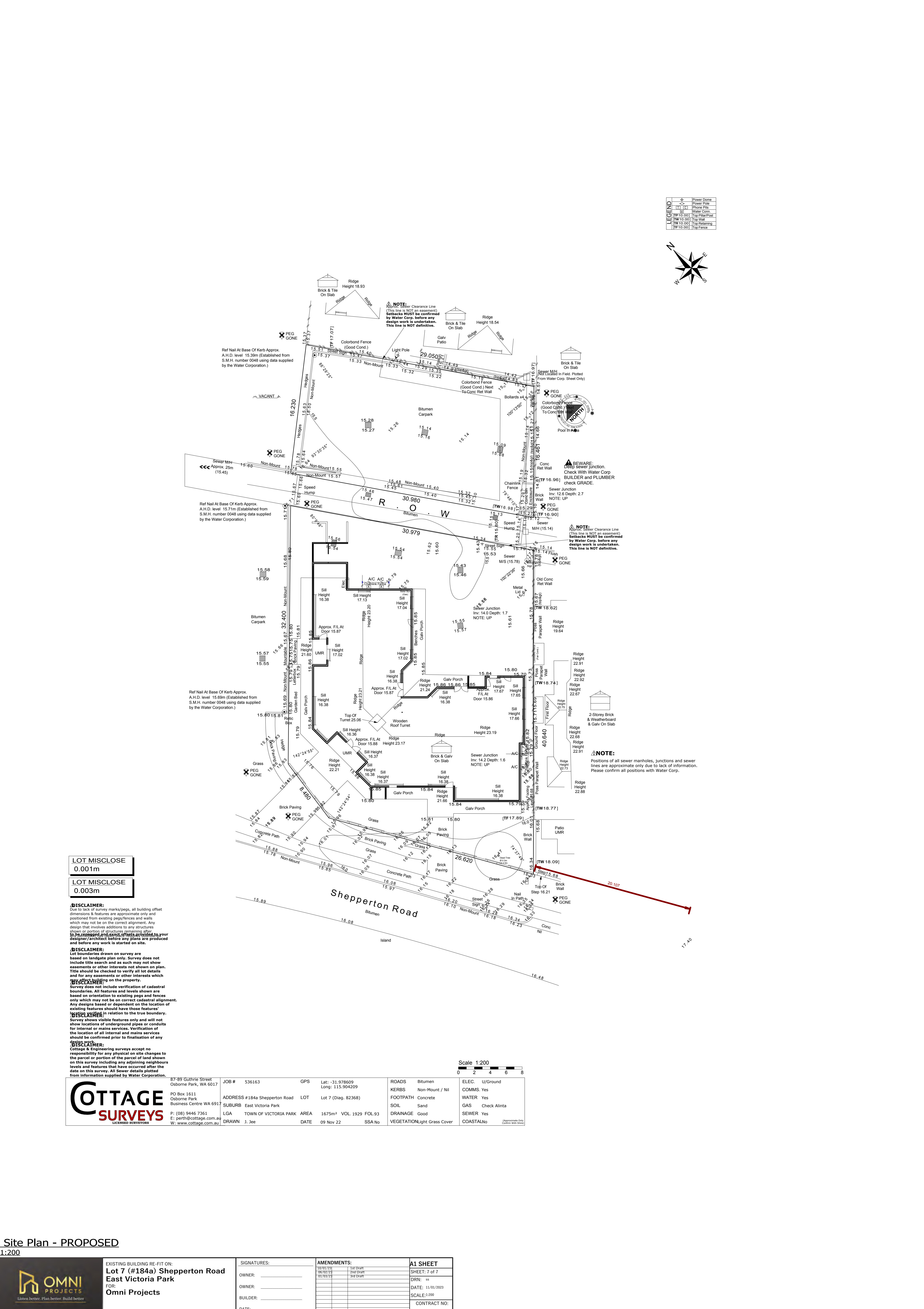
1:100

© copyright

DATE: _____

Areas	
. 0 - 2	41.93
. 2 - 3	61.87
. 3 +	164.65
. AMB WC	2.81
. BATH	24.49
. COTS	18.53
. DRYING CRT	11.48
. KITCHEN	15.24
. LDY	5.30
. NAPPY	8.96
. OFFICE/INPROGRAM	10.95
. OUTDOOR ACTIVITY	569.70
. PLAYPEN	5.54
. PREP	11.81
. RECEPTION	21.78
. STAFF	12.81
. STORE	16.50
. UAT	6.48
. WIP	2.12





ATTACHMENT B

Site Photograph



Photograph 1: Looking south east across the site adjacent Shepperton Road



Photograph 2: Looking north west across the site adjacent Shepperton Road



Photograph 3: Looking south west across the site



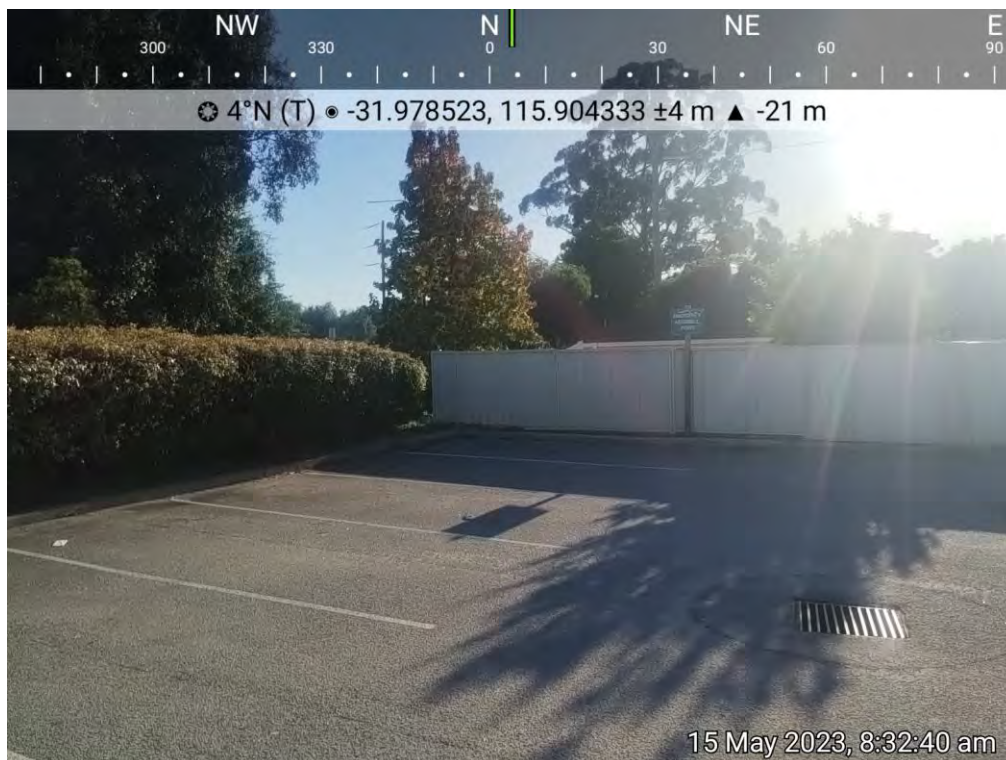
Photograph 4: Looking west across the site



Photograph 5: Looking south east across the eastern portion of the site



Photograph 6: Looking west towards the existing building (rear portion)



Photograph 7: Looking north across the carpark area



Photograph 8: Looking north east across the carpark area

ATTACHMENT C

Borehole Reports

Job Number: WAE230033-01	Location: 184A Shepperton Road, Victoria Park	Operator: TG	Date: 15/05/2023
Client: Omni Projects		Inclination: -90°	Logged: TG
Project: Shepperton Road Childcare Centre		Diameter: 90 mm	Checked Date: 16/05/2023
			Checked By: MC

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0.0				SP	SAND: fine to medium grained, sub-angular to sub-rounded, yellow, with roots and organics in top 200 mm				BH02/0.00	
			0.5									BH02/0.50	
			1.0									BH02/1.00	
			1.5									BH02/1.50	
			2.0					Hole terminated at 2.00 m Target depth Groundwater not encountered				BH02/2.00	

Sketch & Other Observations



Comments:	See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions
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Job Number: WAE230033-01	Location: 184A Shepperton Road, Victoria Park	Operator: TG	Date: 15/05/2023
Client: Omni Projects		Inclination: -90°	Logged: TG
Project: Shepperton Road Childcare Centre		Diameter: 90 mm	Checked Date: 16/05/2023
			Checked By: MC

Drilling					Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0.0						SAND: fine to medium grained, sub-angular to sub-rounded, brown, with roots and organics in top 200 mm				BH03/0.00	
			0.5										BH03/0.50	
			1.0					SP	Trace to with fine to medium grained, sub-angular to sub-rounded gravel		D		BH03/1.00	
			1.5						Trace clay, low plasticity				BH03/1.50	
			2.0						Hole terminated at 2.00 m Target depth Groundwater not encountered				BH03/2.00	

Sketch & Other Observations



Comments:	See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions
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GALT\LIB\1.01\GLB\Log GH EXCAVATION WAE230033-01.GPJ <<DrawingFile>> 1705/2023 07:54 10.02.0004 Dagei DGD CPT Photo Monitoring Tools | Lib: GALT 1.01 2013-02-21 Pj: GALT 1.01 2013-02-21

Job Number: WAE230033-01	Location: 184A Shepperton Road, Victoria Park	Operator: TG	Date: 15/05/2023
Client: Omni Projects		Inclination: -90°	Logged: TG
Project: Shepperton Road Childcare Centre		Diameter: 90 mm	Checked Date: 16/05/2023
			Checked By: MC

Drilling					Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0.0						SAND: fine to medium grained, sub-angular to sub-rounded, trace to with fine to medium grained, sub-angular to sub-rounded gravel (blue metal, limestone, building rubble), irregular size and shape	M			BH04/0.00	
			0.5					SP					BH04/0.50	
			1.0						Hole terminated at 0.90 m Refusal Groundwater not encountered					
			1.5											
			2.0											

Sketch & Other Observations



Comments:	See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions
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GALT IUB 1.01 GIB Log GH EXCAVATION WAE230033-01 GPJ <<DrawingFile>> 1705/2023 07:54 10.02.0004 Dagei DGD CPT Photo Monitoring Tools | Lib: GALT 1.01 2013-02-21 Pj: GALT 1.01 2013-02-21

Job Number: WAE230033-01				Location: 184A Shepperton Road, Victoria Park				Operator: TG				Date: 15/05/2023			
Client: Omni Projects								Inclination: -90°				Logged: TG			
Project: Shepperton Road Childcare Centre								Diameter: 90 mm				Checked Date: 16/05/2023			
												Checked By: MC			

Drilling				Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	SAMPLE		STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0.0					SAND: fine to medium grained, sub-angular to sub-rounded, mottled brown/yellow/black, trace to with fine to medium grained, sub-angular to sub-rounded gravel (blue metal, building rubble)				BH05/0.00		
			0.5									BH05/0.50		
			1.0									BH05/1.00		
			1.5									BH05/1.50		
			2.0									BH05/2.00		
								Hole terminated at 2.00 m Target depth Groundwater not encountered						

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

GALT IUB 1.01 GLB Log GH EXCAVATION WAE230033-01 GPJ <<DrawingFile>> 1705/2023 07:54 10.02.0004 Dageel DGD CPT Photo Monitoring Tools | Lib: GALT 1.01 2013-02-21 Proj: GALT 1.01 2013-02-21

Job Number: WAE230033-01	Location: 184A Shepperton Road, Victoria Park	Operator: TG	Date: 15/05/2023
Client: Omni Projects		Inclination: -90°	Logged: TG
Project: Shepperton Road Childcare Centre		Diameter: 90 mm	Checked Date: 16/05/2023
			Checked By: MC

Drilling					Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0.0						SAND: fine to medium grained, sub-angular to sub-rounded, mottled yellow/brown, with roots and organics in top 200 mm				BH06/0.00	
			0.5										BH06/0.50	
			1.0					SP	Dark brown	D			BH06/1.00	
			1.5										BH06/1.50	
			2.0						Hole terminated at 2.00 m Target depth Groundwater not encountered					

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

ATTACHMENT D

Laboratory Test Results

Galt Environment P/L
50 Edward Street
Osborne Park
WA 6017



NATA Accredited
Accreditation Number 2377
Site Number 2370

Accredited for compliance with ISO/IEC 17025—Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: - ALL SRA/Results
Report 989739-AIS
Project Name VICTORIA PARK
Project ID WAE230033
Received Date May 15, 2023
Date Reported Jun 06, 2023

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples (AS 4964-2004) and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral
 Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.

NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS 4964-2004 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil
 Samples

The whole sample submitted is first dried and then passed through a 10 mm sieve followed by a 2 mm sieve. All fibrous matter greater than 10mm, greater than 2 mm as well as the material passing through the 2 mm sieve are retained and analysed for the presence of asbestos. If the sub 2 mm fraction is greater than approximately 30 to 60 g then a sub-sampling routine based on ISO 3082:2009(E) is employed.

NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-
 containing material
 (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964-2004.

NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964-2004 method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).

The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964-2004 and hence NATA Accreditation does not cover the performance of this service.

NOTE: NATA News March 2014, p.7, states in relation to AS 4964-2004: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".

Reference is made to the NATA Specific Accreditation Criteria: ISO/IEC 17025 Application Document, Life Sciences - Annex, Asbestos sampling and testing This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the Government of Western Australia Department of Health Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia(WA DoH).

Client Sample ID			BH01/0.0	BH02/2.0	BH03/1.5	BH04/0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			23-My0037394	23-My0037395	23-My0037396	23-My0037397
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023	May 15, 2023
	LOR	Unit				
Asbestos in Soils (AS 4964-2004)						
Sample Description	-	Comment	Brown coarse grain soil and rock	Brown coarse grain soil and rock	Brown coarse grain soil and rock	Brown coarse grain soil and rock
Total Dry Mass	0.1	g	210	146	318	336
Total Analytical Fraction	0.1	g	210	146	318	336
Asbestos Detected	-	Yes/No	No	No	No	No
Materials Identified	-	Comment	N/A	N/A	N/A	N/A
Fibres Identified and estimated Asbestos Content (%)	-	Comment	Organic	Organic	Organic	Organic
Asbestos Content (as asbestos)	0.01	% w/w	< 0.01	< 0.01	< 0.01	< 0.01
Trace Analysis	0.1	g/kg	No trace asbestos detected	No trace asbestos detected	No trace asbestos detected	No trace asbestos detected
Asbestos in Soils (ASC NEPM 2013)						
Asbestos Containing Materials (ACM) >7 mm						
Total ACM (>7 mm)	0.1	g	< 0.1	< 0.1	< 0.1	< 0.1
ACM % asbestos (weighted average)	-	%	N/A	N/A	N/A	N/A
ACM in Soil (as asbestos)*	0.01	% w/w	< 0.01	< 0.01	< 0.01	< 0.01
Fibrous Asbestos (FA) >7 mm						
Total FA	0.0005	g	< 0.0005	< 0.0005	< 0.0005	< 0.0005
FA % asbestos (weighted average)	-	%	N/A	N/A	N/A	N/A
FA in Soil (as asbestos)*	0.001	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos Fines (AF) <7 mm						
Total AF	0.0005	g	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AF % asbestos (weighted average)	-	%	N/A	N/A	N/A	N/A
AF in Soil (as asbestos)*	0.001	% w/w	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			BH05/1.5	BH06/1.0	QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			23-My0037398	23-My0037399	23-My0037400
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023
	LOR	Unit			
Asbestos in Soils (AS 4964-2004)					
Sample Description	-	Comment	Brown coarse grain soil and rock	Brown coarse grain soil and rock	Brown coarse grain soil and rock
Total Dry Mass	0.1	g	330	311	249
Total Analytical Fraction	0.1	g	330	311	249
Asbestos Detected	-	Yes/No	No	No	No
Materials Identified	-	Comment	N/A	N/A	N/A
Fibres Identified and estimated Asbestos Content (%)	-	Comment	Organic	Organic	Organic
Asbestos Content (as asbestos)	0.01	% w/w	< 0.01	< 0.01	< 0.01
Trace Analysis	0.1	g/kg	No trace asbestos detected	No trace asbestos detected	No trace asbestos detected
Asbestos in Soils (ASC NEPM 2013)					
Asbestos Containing Materials (ACM) >7 mm					
Total ACM (>7 mm)	0.1	g	< 0.1	< 0.1	< 0.1
ACM % asbestos (weighted average)	-	%	N/A	N/A	N/A
ACM in Soil (as asbestos)*	0.01	% w/w	< 0.01	< 0.01	< 0.01
Fibrous Asbestos (FA) >7 mm					
Total FA	0.0005	g	< 0.0005	< 0.0005	< 0.0005
FA % asbestos (weighted average)	-	%	N/A	N/A	N/A
FA in Soil (as asbestos)*	0.001	% w/w	< 0.001	< 0.001	< 0.001
Asbestos Fines (AF) <7 mm					
Total AF	0.0005	g	< 0.0005	< 0.0005	< 0.0005
AF % asbestos (weighted average)	-	%	N/A	N/A	N/A
AF in Soil (as asbestos)*	0.001	% w/w	< 0.001	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
LTM-ASB-8020 Method for the Qualitative Identification of Asbestos in Bulk Samples	Welshpool	May 16, 2023	Indefinite



Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
1/2 Frost Drive
Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
Tel: +64 9 526 4551
IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: +64 3 343 5201
IANZ# 1290

Company Name: Galt Environment P/L
Address: 50 Edward Street
Osborne Park
WA 6017

Project Name: VICTORIA PARK
Project ID: WAE230033

Order No.:
Report #: 989739
Phone: 08 6272 0200
Fax: 08 9285 8444

Received: May 15, 2023 4:55 PM
Due: May 24, 2023
Priority: 7 Day
Contact Name: - ALL SRA/Results

Eurofins Analytical Services Manager : Andrew Harvey

Sample Detail						BTEx and Naphthalene	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	Asbestos in Soils (ASC NEPM 2013)	OCOP in Soil	OCOP in Water	Metals M8 Soil
Perth Laboratory - NATA # 2377 Site # 2370						X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254						X		X	X				
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	BH01/0.0	May 15, 2023		Soil	L23-My0037394		X		X	X	X		X
2	BH02/2.0	May 15, 2023		Soil	L23-My0037395		X		X	X	X		X
3	BH03/1.5	May 15, 2023		Soil	L23-My0037396		X		X	X	X		X
4	BH04/0.0	May 15, 2023		Soil	L23-My0037397		X		X	X	X		X
5	BH05/1.5	May 15, 2023		Soil	L23-My0037398		X		X	X	X		X
6	BH06/1.0	May 15, 2023		Soil	L23-My0037399		X		X	X	X		X
7	QC01	May 15, 2023		Soil	L23-My0037400		X		X	X	X		X
8	QC03	May 15, 2023		Water	L23-My0037401			X				X	
9	QC04	May 15, 2023		Water	L23-My0037402	X							
Test Counts						1	7	1	7	7	7	1	7

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (% w/w)
F/ftd	Airborne fibre filter loading as Fibres (N) per Fields counted (n)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (C)
g, kg	Mass, e.g. of whole sample (M) or asbestos-containing find within the sample (m)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (V = r x t)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (r)
min	Time (t), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration:
$$C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right)$$

Asbestos Content (as asbestos):
$$\% w/w = \frac{(m \times P_A)}{M}$$

Weighted Average (of asbestos):
$$\%_{WA} = \sum \frac{(m \times P_A) \times x}{x}$$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 <i>Appendix 2</i> , else assumed to be 15% in accordance with WA DOH <i>Appendix 2</i> (PA).
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (% w/w).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, <i>Asbestos: The Analysts Guide</i> , 2nd Edition (2021).
HSG264	UK HSE HSG264, <i>Asbestos: The Survey Guide</i> (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (K) as derived from the effective filter area of the given AFM membrane used for collecting the sample (A) and the projected eyepiece graticule area of the specific microscope used for the analysis (a).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, <i>Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i> , 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according to the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, <i>Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia</i> (updated 2021), including Appendix Four: <i>Laboratory analysis</i>
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (% _{WA}).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Gustav Myburgh Senior Analyst-Asbestos

Authorised by:

Rhys Thomas Senior Analyst-Asbestos



Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Galt Environment P/L
50 Edward Street
Osborne Park
WA 6017



NATA Accredited
Accreditation Number 2377
Site Number 2370

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: - ALL SRA/Results

Report 989739-S
Project name VICTORIA PARK
Project ID WAE230033
Received Date May 15, 2023

Client Sample ID			BH01/0.0	BH02/2.0	BH03/1.5	BH04/0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			L23-My0037394	L23-My0037395	L23-My0037396	L23-My0037397
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	66	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	66	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
BTEX						
4-Bromofluorobenzene (surr.)	1	%	98	90	85	95
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01/0.0	BH02/2.0	BH03/1.5	BH04/0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			L23-My0037394	L23-My0037395	L23-My0037396	L23-My0037397
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	71	80	91	73
p-Terphenyl-d14 (surr.)	1	%	60	76	93	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
OCOP in Soil						
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
alpha-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
beta-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
delta-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Bifenthrin	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bromophos Ethyl	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Chlordane	0.01	mg/kg	< 0.01	< 0.01	0.03	0.02
Chlorpyrifos	0.02	mg/kg	< 0.02	< 0.02	< 0.02	< 0.02
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	0.12	0.03
p,p-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
p,p-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
p,p-DDT	0.01	mg/kg	< 0.01	< 0.01	0.01	< 0.01
o,p-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan Sulfate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor Epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.01
Hexachlorobenzene (HCB)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Lindane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Oxychlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Fenitrothion	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Malathion	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Trifluralin	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Arsenic	5	mg/kg	< 5	< 5	< 5	< 5
Cadmium	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Chromium	1	mg/kg	3.4	3.2	12	5.7
Copper	1	mg/kg	3.7	< 1	6.8	4.1
Lead	1	mg/kg	17	5.4	51	40
Mercury	0.02	mg/kg	0.03	< 0.02	0.04	< 0.02

Client Sample ID			BH01/0.0	BH02/2.0	BH03/1.5	BH04/0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			L23-My0037394	L23-My0037395	L23-My0037396	L23-My0037397
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit				
Nickel	1	mg/kg	< 1	< 1	1.5	< 1
Zinc	1	mg/kg	55	18	66	48
Sample Properties						
% Moisture	1	%	3.3	5.0	5.0	6.1

Client Sample ID			BH05/1.5	BH06/1.0	QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			L23-My0037398	L23-My0037399	L23-My0037400
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3
BTEX					
4-Bromofluorobenzene (surr.)	1	%	97	87	93
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	BH05/1.5 Soil L23- My0037398 May 15, 2023	BH06/1.0 Soil L23- My0037399 May 15, 2023	QC01 Soil L23- My0037400 May 15, 2023
Polycyclic Aromatic Hydrocarbons					
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	81	84	59
p-Terphenyl-d14 (surr.)	1	%	82	89	63
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100
OCOP in Soil					
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01
alpha-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01
beta-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01
delta-BHC (HCH)	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Bifenthrin	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Bromophos Ethyl	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Chlordane	0.01	mg/kg	0.01	0.02	< 0.01
Chlorpyrifos	0.02	mg/kg	< 0.02	< 0.02	< 0.02
Dieldrin	0.01	mg/kg	0.39	0.16	< 0.01
p,p-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01
p,p-DDE	0.01	mg/kg	0.02	0.07	< 0.01
p,p-DDT	0.01	mg/kg	< 0.01	0.02	< 0.01
o,p-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Endosulfan Sulfate	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Heptachlor Epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Hexachlorobenzene (HCB)	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Lindane	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Oxychlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Ethion	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Fenitrothion	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Malathion	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Trifluralin	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Arsenic	5	mg/kg	< 5	< 5	< 5
Cadmium	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Chromium	1	mg/kg	1.8	1.3	3.7
Copper	1	mg/kg	4.4	1.9	< 1
Lead	1	mg/kg	26	13	6.1
Mercury	0.02	mg/kg	< 0.02	< 0.02	< 0.02
Nickel	1	mg/kg	< 1	< 1	< 1
Zinc	1	mg/kg	170	91	18

Client Sample ID			BH05/1.5	BH06/1.0	QC01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			L23-My0037398	L23-My0037399	L23-My0037400
Date Sampled			May 15, 2023	May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit			
Sample Properties					
% Moisture	1	%	8.4	16	4.6

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 19, 2023	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 19, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 19, 2023	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Welshpool	May 19, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 19, 2023	14 Days
OCOP in Soil - Method: ARL003 - OCOP and PCB in Soil	Welshpool	May 19, 2023	14 Days
Arsenic - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Cadmium - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Chromium - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Copper - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Lead - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Mercury - Method: ARL No. 406 - Mercury by Cold Vapour Atomic Absorption Spectrophotometry	Welshpool	May 19, 2023	28 Days
Nickel - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
Zinc - Method: ARL401/403 - Metals in Soil and Sediment by ICPOES/MS	Welshpool	May 19, 2023	180 Days
% Moisture - Method: ARL135 Moisture in Solids	Welshpool	May 16, 2023	14 Days

Company Name: Galt Environment P/L
Address: 50 Edward Street
Osborne Park
WA 6017

Project Name: VICTORIA PARK
Project ID: WAE230033

Order No.:
Report #: 989739
Phone: 08 6272 0200
Fax: 08 9285 8444

Received: May 15, 2023 4:55 PM
Due: May 24, 2023
Priority: 7 Day
Contact Name: - ALL SRA/Results

Eurofins Analytical Services Manager : Andrew Harvey

Sample Detail						BTEx and Naphthalene	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	Asbestos in Soils (ASC NEPM 2013)	OCOP in Soil	OCOP in Water	Metals M8 Soil
Perth Laboratory - NATA # 2377 Site # 2370						X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254						X		X	X				
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	BH01/0.0	May 15, 2023		Soil	L23-My0037394		X		X	X	X		X
2	BH02/2.0	May 15, 2023		Soil	L23-My0037395		X		X	X	X		X
3	BH03/1.5	May 15, 2023		Soil	L23-My0037396		X		X	X	X		X
4	BH04/0.0	May 15, 2023		Soil	L23-My0037397		X		X	X	X		X
5	BH05/1.5	May 15, 2023		Soil	L23-My0037398		X		X	X	X		X
6	BH06/1.0	May 15, 2023		Soil	L23-My0037399		X		X	X	X		X
7	QC01	May 15, 2023		Soil	L23-My0037400		X		X	X	X		X
8	QC03	May 15, 2023		Water	L23-My0037401			X				X	
9	QC04	May 15, 2023		Water	L23-My0037402	X							
Test Counts						1	7	1	7	7	7	1	7

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
OCOP in Soil							
Aldrin	mg/kg	0.01			0.01	Pass	
alpha-BHC (HCH)	mg/kg	< 0.01			0.01	Pass	
beta-BHC (HCH)	mg/kg	< 0.01			0.01	Pass	
delta-BHC (HCH)	mg/kg	< 0.01			0.01	Pass	
Bifenthrin	mg/kg	< 0.2			0.2	Pass	
Bromophos Ethyl	mg/kg	< 0.05			0.05	Pass	
Chlordane	mg/kg	< 0.01			0.01	Pass	
Chlorpyrifos	mg/kg	< 0.02			0.02	Pass	
Dieldrin	mg/kg	< 0.01			0.01	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
p.p-DDD	mg/kg	< 0.01			0.01	Pass	
p.p-DDE	mg/kg	< 0.01			0.01	Pass	
p.p-DDT	mg/kg	< 0.01			0.01	Pass	
o.p-DDT	mg/kg	< 0.01			0.01	Pass	
Endosulfan I	mg/kg	< 0.01			0.01	Pass	
Endosulfan II	mg/kg	< 0.01			0.01	Pass	
Endosulfan Sulfate	mg/kg	< 0.01			0.01	Pass	
Endrin	mg/kg	< 0.01			0.01	Pass	
Heptachlor	mg/kg	< 0.01			0.01	Pass	
Heptachlor Epoxide	mg/kg	< 0.01			0.01	Pass	
Hexachlorobenzene (HCB)	mg/kg	< 0.01			0.01	Pass	
Lindane	mg/kg	< 0.01			0.01	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Oxychlorodane	mg/kg	< 0.01			0.01	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.05			0.05	Pass	
Fenitrothion	mg/kg	< 0.1			0.1	Pass	
Malathion	mg/kg	< 0.1			0.1	Pass	
Trifluralin	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Arsenic	mg/kg	< 5			5	Pass	
Cadmium	mg/kg	< 0.1			0.1	Pass	
Chromium	mg/kg	< 1			1	Pass	
Copper	mg/kg	< 1			1	Pass	
Lead	mg/kg	< 1			1	Pass	
Mercury	mg/kg	< 0.02			0.02	Pass	
Nickel	mg/kg	< 1			1	Pass	
Zinc	mg/kg	< 1			1	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	104			70-130	Pass	
TRH C10-C14	%	105			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	104			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
o-Xylene	%	100			70-130	Pass	
Xylenes - Total*	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	84			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	99			70-130	Pass	
Acenaphthylene	%	84			70-130	Pass	
Anthracene	%	95			70-130	Pass	
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	%	85			70-130	Pass	
Benzo(g,h,i)perylene	%	103			70-130	Pass	
Benzo(k)fluoranthene	%	98			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	%	102			70-130	Pass	
Dibenz(a,h)anthracene	%	95			70-130	Pass	
Fluoranthene	%	87			70-130	Pass	
Fluorene	%	96			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	97			70-130	Pass	
Naphthalene	%	88			70-130	Pass	
Phenanthrene	%	91			70-130	Pass	
Pyrene	%	83			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	99			70-130	Pass	
LCS - % Recovery							
OCOP in Soil							
Aldrin	%	119			60-120	Pass	
Dieldrin	%	109			60-120	Pass	
p,p-DDT	%	86			60-120	Pass	
Endrin	%	70			60-120	Pass	
Heptachlor	%	113			60-120	Pass	
Lindane	%	120			60-120	Pass	
LCS - % Recovery							
Arsenic	%	81			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	100			80-120	Pass	
Copper	%	80			80-120	Pass	
Lead	%	120			80-120	Pass	
Mercury	%	88			60-120	Pass	
Nickel	%	88			80-120	Pass	
CRM - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	92			70-130	Pass	
CRM - % Recovery							
BTEX							
Benzene	%	97			70-130	Pass	
Toluene	%	98			70-130	Pass	
Ethylbenzene	%	89			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
o-Xylene	%	98			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
CRM - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	108			70-130	Pass	
TRH C6-C10	%	90			70-130	Pass	
CRM - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	107			80-120	Pass	
Acenaphthylene	%	93			80-120	Pass	
Anthracene	%	97			80-120	Pass	
Benz(a)anthracene	%	89			70-130	Pass	
Benzo(a)pyrene	%	89			80-120	Pass	
Benzo(b&j)fluoranthene	%	90			80-120	Pass	
Benzo(g,h,i)perylene	%	93			80-120	Pass	
Benzo(k)fluoranthene	%	111			80-120	Pass	
Chrysene	%	117			80-120	Pass	
Dibenz(a,h)anthracene	%	105			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluoranthene			%	85			80-120	Pass	
Fluorene			%	102			80-120	Pass	
Indeno(1.2.3-cd)pyrene			%	91			80-120	Pass	
Naphthalene			%	106			70-130	Pass	
Phenanthrene			%	99			80-120	Pass	
Pyrene			%	83			80-120	Pass	
CRM - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
TRH >C10-C16			%	96			70-130	Pass	
TRH >C34-C40			%	101			70-130	Pass	
CRM - % Recovery									
Arsenic			%	93			80-120	Pass	
Cadmium			%	106			80-120	Pass	
Chromium			%	104			80-120	Pass	
Copper			%	98			80-120	Pass	
Lead			%	116			80-120	Pass	
Mercury			%	107			60-120	Pass	
Nickel			%	102			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	L23-My0037395	CP	%	107			70-130	Pass	
TRH C10-C14	L23-My0037395	CP	%	129			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	L23-My0037395	CP	%	101			70-130	Pass	
Toluene	L23-My0037395	CP	%	97			70-130	Pass	
Ethylbenzene	L23-My0037395	CP	%	101			70-130	Pass	
m&p-Xylenes	L23-My0037395	CP	%	106			70-130	Pass	
o-Xylene	L23-My0037395	CP	%	107			70-130	Pass	
Xylenes - Total*	L23-My0037395	CP	%	106			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	L23-My0037395	CP	%	106			70-130	Pass	
TRH C6-C10	L23-My0037395	CP	%	96			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	L23-My0037395	CP	%	107			70-130	Pass	
Acenaphthylene	L23-My0037395	CP	%	101			70-130	Pass	
Anthracene	L23-My0037395	CP	%	103			70-130	Pass	
Benz(a)anthracene	L23-My0037395	CP	%	93			70-130	Pass	
Benzo(a)pyrene	L23-My0037395	CP	%	94			70-130	Pass	
Benzo(b&j)fluoranthene	L23-My0037395	CP	%	96			70-130	Pass	
Benzo(g,h,i)perylene	L23-My0037395	CP	%	102			70-130	Pass	
Benzo(k)fluoranthene	L23-My0037395	CP	%	106			70-130	Pass	
Chrysene	L23-My0037395	CP	%	106			70-130	Pass	
Dibenz(a,h)anthracene	L23-My0037395	CP	%	106			70-130	Pass	
Fluoranthene	L23-My0037395	CP	%	95			70-130	Pass	
Fluorene	L23-My0037395	CP	%	106			70-130	Pass	
Indeno(1.2.3-cd)pyrene	L23-My0037395	CP	%	104			70-130	Pass	
Naphthalene	L23-My0037395	CP	%	104			70-130	Pass	
Phenanthrene	L23-My0037395	CP	%	104			70-130	Pass	
Pyrene	L23-My0037395	CP	%	95			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	L23-My0037395	CP	%	123			70-130	Pass	
Spike - % Recovery									
OCOP in Soil				Result 1					
Aldrin	L23-My0037395	CP	%	114			60-120	Pass	
Dieldrin	L23-My0037395	CP	%	98			60-120	Pass	
p,p-DDT	L23-My0037395	CP	%	112			60-120	Pass	
Endrin	L23-My0037395	CP	%	88			60-120	Pass	
Heptachlor	L23-My0037395	CP	%	111			60-120	Pass	
Lindane	L23-My0037395	CP	%	108			60-120	Pass	
Spike - % Recovery									
				Result 1					
Arsenic	L23-My0037395	CP	%	80			80-120	Pass	
Copper	L23-My0037395	CP	%	88			80-120	Pass	
Lead	L23-My0037395	CP	%	102			80-120	Pass	
Nickel	L23-My0037395	CP	%	86			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	L23-My0037394	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	L23-My0013466	NCP	mg/kg	470	570	19	30%	Pass	
TRH C15-C28	L23-My0013466	NCP	mg/kg	930	1100	16	30%	Pass	
TRH C29-C36	L23-My0013466	NCP	mg/kg	< 500	< 500	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	L23-My0037394	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	L23-My0037394	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	L23-My0037394	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	L23-My0037394	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	L23-My0047854	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	L23-My0013466	NCP	mg/kg	820	970	17	30%	Pass
TRH >C16-C34	L23-My0013466	NCP	mg/kg	< 1000	< 1000	<1	30%	Pass
TRH >C34-C40	L23-My0013466	NCP	mg/kg	< 1000	< 1000	<1	30%	Pass
Duplicate								
OCOP in Soil				Result 1	Result 2	RPD		
Aldrin	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
alpha-BHC (HCH)	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
beta-BHC (HCH)	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
delta-BHC (HCH)	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Bifenthrin	L23-My0037394	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bromophos Ethyl	L23-My0037394	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Chlordane	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Chlorpyrifos	L23-My0037394	CP	mg/kg	< 0.02	< 0.02	<1	30%	Pass
Dieldrin	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
p,p-DDD	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
p,p-DDE	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
p,p-DDT	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
o,p-DDT	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endosulfan I	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endosulfan II	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endosulfan Sulfate	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endrin	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Heptachlor	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Heptachlor Epoxide	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Hexachlorobenzene (HCB)	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Lindane	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Methoxychlor	L23-My0037394	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Oxychlordane	L23-My0037394	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Diazinon	L23-My0037394	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	L23-My0037394	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Fenitrothion	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Malathion	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Trifluralin	L23-My0037394	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Arsenic	L23-My0037394	CP	mg/kg	< 5	< 5	<1	20%	Pass
Cadmium	L23-My0037394	CP	mg/kg	< 0.1	< 0.1	<1	20%	Pass
Chromium	L23-My0037394	CP	mg/kg	3.4	5.3	45	20%	Fail Q15
Copper	L23-My0037394	CP	mg/kg	3.7	2.5	37	20%	Fail Q15
Lead	L23-My0037394	CP	mg/kg	17	25	36	20%	Fail Q15
Nickel	L23-My0037394	CP	mg/kg	< 1	< 1	<1	20%	Pass
Zinc	L23-My0037394	CP	mg/kg	55	45	20	20%	Pass
Duplicate								
Sample Properties				Result 1	Result 2	RPD		
% Moisture	L23-My0037394	CP	%	3.3	3.5	4.4	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Harvey	Analytical Services Manager
Douglas Todd	Senior Analyst-Sample Properties
John Horwood	Senior Analyst-Volatile
Patrick Patfield	Senior Analyst-Organic
Paul Nottle	Senior Analyst-Organic
Rhys Thomas	Senior Analyst-Asbestos
Sean Sangster	Senior Analyst-Metal



Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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Galt Environment P/L
50 Edward Street
Osborne Park
WA 6017



NATA Accredited
Accreditation Number 2377
Site Number 2370

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: - ALL SRA/Results

Report 989739-W
Project name VICTORIA PARK
Project ID WAE230033
Received Date May 15, 2023

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			L23-My0037401	L23-My0037402
Date Sampled			May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	-
TRH C10-C14	0.02	mg/L	< 0.02	-
TRH C15-C28	0.04	mg/L	< 0.04	-
TRH C29-C36	0.04	mg/L	< 0.04	-
TRH C10-C36 (Total)	0.04	mg/L	< 0.04	-
BTEX				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003
BTEX				
4-Bromofluorobenzene (surr.)	1	%	100	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.001	mg/L	< 0.001	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.02	mg/L	< 0.02	-
TRH C6-C10	0.02	mg/L	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.001	mg/L	< 0.001	-
Acenaphthene	0.001	mg/L	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	-
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001	-

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			L23-My0037401	L23-My0037402
Date Sampled			May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Naphthalene	0.001	mg/L	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	87	-
p-Terphenyl-d14 (surr.)	1	%	95	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	0.02	mg/L	< 0.02	-
TRH >C16-C34	0.05	mg/L	< 0.05	-
TRH >C34-C40	0.05	mg/L	< 0.05	-
TRH >C10-C40 (total)*	0.05	mg/L	< 0.05	-
OCOP in Water				
Aldrin	0.001	ug/L	G02< 0.005	-
alpha-BHC (HCH)	0.001	ug/L	G02< 0.005	-
beta-BHC (HCH)	0.001	ug/L	G02< 0.005	-
delta-BHC (HCH)	0.001	ug/L	G02< 0.005	-
Bifenthrin	0.05	ug/L	G02< 0.25	-
Bromophos Ethyl	0.005	ug/L	G02< 0.025	-
Chlordane	0.002	ug/L	G02< 0.01	-
Chlorothalonil	0.01	ug/L	G02< 0.05	-
Chlorpyrifos	0.005	ug/L	G02< 0.025	-
Diazinon	0.01	ug/L	G02< 0.05	-
Dieldrin	0.001	ug/L	G02< 0.005	-
Endosulfan I	0.001	ug/L	G02< 0.005	-
Endosulfan II	0.001	ug/L	G02< 0.005	-
Endosulfan Sulfate	0.001	ug/L	G02< 0.005	-
Endrin	0.01	ug/L	G02< 0.05	-
Ethion	0.01	ug/L	G02< 0.05	-
Fenitrothion	0.01	ug/L	G02< 0.05	-
Fipronil	0.02	ug/L	G02< 0.1	-
Hexachlorobenzene (HCB)	0.001	ug/L	G02< 0.005	-
Heptachlor Epoxide	0.001	ug/L	G02< 0.005	-
Heptachlor	0.001	ug/L	G02< 0.005	-
Lindane	0.001	ug/L	G02< 0.005	-
Malathion	0.01	ug/L	G02< 0.05	-
Methoxychlor	0.02	ug/L	G02< 0.1	-
o,p-DDT	0.001	ug/L	G02< 0.005	-
Oxychlordane	0.001	ug/L	G02< 0.005	-
p,p-DDD	0.001	ug/L	G02< 0.005	-
p,p-DDE	0.001	ug/L	G02< 0.005	-
p,p-DDT	0.001	ug/L	G02< 0.005	-
Parathion Ethyl	0.02	ug/L	G02< 0.1	-
Parathion Methyl	0.02	ug/L	G02< 0.1	-
Trifluralin	0.01	ug/L	G02< 0.05	-
Vinclozolin	0.02	ug/L	G02< 0.1	-

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			L23-My0037401	L23-My0037402
Date Sampled			May 15, 2023	May 15, 2023
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	< 0.001	-
Cadmium	0.0001	mg/L	< 0.0001	-
Chromium	0.001	mg/L	< 0.001	-
Copper	0.001	mg/L	< 0.001	-
Lead	0.001	mg/L	< 0.001	-
Mercury	0.0001	mg/L	< 0.0001	-
Nickel	0.001	mg/L	< 0.001	-
Zinc	0.005	mg/L	< 0.005	-
Naphthalene ^{N02}	0.001	mg/L	-	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 18, 2023	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 18, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 18, 2023	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Welshpool	May 18, 2023	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 18, 2023	7 Days
OCOP in Water - Method: ARL No. 002 - OCOP and PCB in Water	Welshpool	May 18, 2023	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	May 18, 2023	28 Days
Naphthalene - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	May 18, 2023	14 Days

Company Name: Galt Environment P/L
Address: 50 Edward Street
Osborne Park
WA 6017

Project Name: VICTORIA PARK
Project ID: WAE230033

Order No.:
Report #: 989739
Phone: 08 6272 0200
Fax: 08 9285 8444

Received: May 15, 2023 4:55 PM
Due: May 24, 2023
Priority: 7 Day
Contact Name: - ALL SRA/Results

Eurofins Analytical Services Manager : Andrew Harvey

Sample Detail						BTEx and Naphthalene	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	Asbestos in Soils (ASC NEPM 2013)	OCOP in Soil	OCOP in Water	Metals M8 Soil
Perth Laboratory - NATA # 2377 Site # 2370						X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254						X		X	X				
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	BH01/0.0	May 15, 2023		Soil	L23-My0037394		X		X	X	X		X
2	BH02/2.0	May 15, 2023		Soil	L23-My0037395		X		X	X	X		X
3	BH03/1.5	May 15, 2023		Soil	L23-My0037396		X		X	X	X		X
4	BH04/0.0	May 15, 2023		Soil	L23-My0037397		X		X	X	X		X
5	BH05/1.5	May 15, 2023		Soil	L23-My0037398		X		X	X	X		X
6	BH06/1.0	May 15, 2023		Soil	L23-My0037399		X		X	X	X		X
7	QC01	May 15, 2023		Soil	L23-My0037400		X		X	X	X		X
8	QC03	May 15, 2023		Water	L23-My0037401			X				X	
9	QC04	May 15, 2023		Water	L23-My0037402	X							
Test Counts						1	7	1	7	7	7	1	7

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.02			0.02	Pass	
TRH C15-C28	mg/L	< 0.04			0.04	Pass	
TRH C29-C36	mg/L	< 0.04			0.04	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.001			0.001	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.02			0.02	Pass	
TRH >C16-C34	mg/L	< 0.05			0.05	Pass	
TRH >C34-C40	mg/L	< 0.05			0.05	Pass	
Method Blank							
OCOP in Water							
Aldrin	ug/L	< 0.001			0.001	Pass	
alpha-BHC (HCH)	ug/L	< 0.001			0.001	Pass	
beta-BHC (HCH)	ug/L	< 0.001			0.001	Pass	
delta-BHC (HCH)	ug/L	< 0.001			0.001	Pass	
Bifenthrin	ug/L	< 0.05			0.05	Pass	
Bromophos Ethyl	ug/L	< 0.005			0.005	Pass	
Chlordane	ug/L	< 0.002			0.002	Pass	
Chlorothalonil	ug/L	< 0.01			0.01	Pass	
Chlorpyrifos	ug/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Diazinon	ug/L	< 0.01			0.01	Pass	
Dieldrin	ug/L	< 0.001			0.001	Pass	
Endosulfan I	ug/L	< 0.001			0.001	Pass	
Endosulfan II	ug/L	< 0.001			0.001	Pass	
Endosulfan Sulfate	ug/L	< 0.001			0.001	Pass	
Endrin	ug/L	< 0.01			0.01	Pass	
Ethion	ug/L	< 0.01			0.01	Pass	
Fenitrothion	ug/L	< 0.01			0.01	Pass	
Fipronil	ug/L	< 0.02			0.02	Pass	
Hexachlorobenzene (HCB)	ug/L	< 0.001			0.001	Pass	
Heptachlor Epoxide	ug/L	< 0.001			0.001	Pass	
Heptachlor	ug/L	< 0.001			0.001	Pass	
Lindane	ug/L	< 0.001			0.001	Pass	
Malathion	ug/L	< 0.01			0.01	Pass	
Methoxychlor	ug/L	< 0.02			0.02	Pass	
o.p-DDT	ug/L	< 0.001			0.001	Pass	
Oxychlordane	ug/L	< 0.001			0.001	Pass	
p.p-DDD	ug/L	< 0.001			0.001	Pass	
p.p-DDE	ug/L	< 0.001			0.001	Pass	
p.p-DDT	ug/L	< 0.001			0.001	Pass	
Parathion Ethyl	ug/L	< 0.02			0.02	Pass	
Parathion Methyl	ug/L	< 0.02			0.02	Pass	
Trifluralin	ug/L	< 0.01			0.01	Pass	
Vinclozolin	ug/L	< 0.02			0.02	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	84			70-130	Pass	
TRH C10-C14	%	112			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	104			70-130	Pass	
Toluene	%	88			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	82			70-130	Pass	
o-Xylene	%	82			70-130	Pass	
Xylenes - Total*	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	82			70-130	Pass	
TRH C6-C10	%	84			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	108			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Anthracene				%	92			70-130	Pass	
Benz(a)anthracene				%	92			70-130	Pass	
Benzo(a)pyrene				%	84			70-130	Pass	
Benzo(b&j)fluoranthene				%	90			70-130	Pass	
Benzo(g,h,i)perylene				%	91			70-130	Pass	
Benzo(k)fluoranthene				%	99			70-130	Pass	
Chrysene				%	115			70-130	Pass	
Dibenz(a,h)anthracene				%	92			70-130	Pass	
Fluoranthene				%	85			70-130	Pass	
Fluorene				%	101			70-130	Pass	
Indeno(1,2,3-cd)pyrene				%	87			70-130	Pass	
Naphthalene				%	103			70-130	Pass	
Phenanthrene				%	98			70-130	Pass	
Pyrene				%	81			70-130	Pass	
LCS - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions										
TRH >C10-C16				%	108			70-130	Pass	
LCS - % Recovery										
OCOP in Water										
Aldrin				%	101			60-120	Pass	
Dieldrin				%	118			60-120	Pass	
Endrin				%	117			60-120	Pass	
Heptachlor				%	105			60-120	Pass	
Lindane				%	120			60-120	Pass	
p,p-DDT				%	92			60-120	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	105			80-120	Pass	
Cadmium				%	94			80-120	Pass	
Chromium				%	107			80-120	Pass	
Copper				%	105			80-120	Pass	
Lead				%	106			80-120	Pass	
Mercury				%	117			80-120	Pass	
Nickel				%	105			80-120	Pass	
Zinc				%	107			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1					
TRH C6-C9		L23-My0034686	NCP	%	82			70-130	Pass	
TRH C10-C14		L23-My0034686	NCP	%	100			70-130	Pass	
Spike - % Recovery										
BTEX					Result 1					
Benzene		L23-My0034686	NCP	%	87			70-130	Pass	
Toluene		L23-My0034686	NCP	%	92			70-130	Pass	
Ethylbenzene		L23-My0034686	NCP	%	88			70-130	Pass	
m&p-Xylenes		L23-My0034686	NCP	%	84			70-130	Pass	
o-Xylene		L23-My0034686	NCP	%	90			70-130	Pass	
Xylenes - Total*		L23-My0034686	NCP	%	86			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
Naphthalene		L23-My0034686	NCP	%	99			70-130	Pass	
TRH C6-C10		L23-My0034686	NCP	%	80			70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	L23-My0035598	NCP	%	111			70-130	Pass	
Acenaphthylene	L23-My0035598	NCP	%	98			70-130	Pass	
Anthracene	L23-My0035598	NCP	%	101			70-130	Pass	
Benz(a)anthracene	L23-My0035598	NCP	%	89			70-130	Pass	
Benzo(a)pyrene	L23-My0035598	NCP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	L23-My0035598	NCP	%	98			70-130	Pass	
Benzo(g,h,i)perylene	L23-My0035598	NCP	%	108			70-130	Pass	
Benzo(k)fluoranthene	L23-My0035598	NCP	%	107			70-130	Pass	
Chrysene	L23-My0035598	NCP	%	117			70-130	Pass	
Dibenz(a,h)anthracene	L23-My0035598	NCP	%	106			70-130	Pass	
Fluoranthene	L23-My0035598	NCP	%	96			70-130	Pass	
Fluorene	L23-My0035598	NCP	%	104			70-130	Pass	
Indeno(1,2,3-cd)pyrene	L23-My0035598	NCP	%	100			70-130	Pass	
Naphthalene	L23-My0035598	NCP	%	104			70-130	Pass	
Phenanthrene	L23-My0035598	NCP	%	97			70-130	Pass	
Pyrene	L23-My0035598	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	L23-My0034686	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	L23-My0035680	NCP	%	106			75-125	Pass	
Cadmium	L23-My0035680	NCP	%	96			75-125	Pass	
Chromium	L23-My0035680	NCP	%	105			75-125	Pass	
Copper	L23-My0035680	NCP	%	102			75-125	Pass	
Lead	L23-My0035680	NCP	%	104			75-125	Pass	
Mercury	L23-My0035680	NCP	%	122			75-125	Pass	
Nickel	L23-My0035680	NCP	%	103			75-125	Pass	
Zinc	L23-My0035680	NCP	%	102			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	L23-My0037571	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
TRH C10-C14	L23-My0037571	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C15-C28	L23-My0037571	NCP	mg/L	< 0.04	< 0.04	<1	30%	Pass	
TRH C29-C36	L23-My0037571	NCP	mg/L	< 0.04	< 0.04	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	L23-My0037571	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Toluene	L23-My0037571	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Ethylbenzene	L23-My0037571	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
m&p-Xylenes	L23-My0037571	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
o-Xylene	L23-My0037571	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Xylenes - Total*	L23-My0037571	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	L23-My0037571	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	L23-My0037571	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(a)pyrene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Naphthalene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	L23-My0041711	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	L23-My0037571	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH >C16-C34	L23-My0037571	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C34-C40	L23-My0037571	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	L23-My0035641	NCP	mg/L	0.008	0.008	6.1	30%	Pass
Cadmium	L23-My0035641	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	L23-My0035641	NCP	mg/L	0.005	0.005	2.2	30%	Pass
Copper	L23-My0035641	NCP	mg/L	0.002	0.002	8.8	30%	Pass
Lead	L23-My0035641	NCP	mg/L	0.002	0.002	3.1	30%	Pass
Mercury	L23-My0035641	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	L23-My0035641	NCP	mg/L	0.003	0.003	8.8	30%	Pass
Zinc	L23-My0035641	NCP	mg/L	0.045	0.042	5.8	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G02	The LORs have been raised as there was insufficient sample provided for analysis
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Andrew Harvey	Analytical Services Manager
Douglas Todd	Senior Analyst-Metal
Patrick Patfield	Senior Analyst-Organic
Patrick Patfield	Senior Analyst-Volatile
Paul Nottle	Senior Analyst-Organic



Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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Certificate of Analysis PEE1077

Client Details

Client	Galt Environmental Pty Ltd (WA)
Contact	Accounts Payable
Address	50 Edward Street, Osborne Park, WA, 6017

Sample Details

Your Reference	WAE230033 Victoria Park
Number of Samples	1 Soil
Date Samples Received	16/05/2023
Date Samples Registered	15/05/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date Results Requested by	23/05/2023
Date of Issue	23/05/2023

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Authorisation Details

Asbestos Approved By	Analysed by Asbestos Approved Analyst: Eugene Chan Analysed by Asbestos Approved Analyst: Thomas Edwards Authorised by Asbestos Approved Signatory: Thomas Edwards
Results Approved By	Heram Halim, Operations Manager Michael Hall, Inorganics & Metals Supervisor Thomas Edwards, OHL Supervisor Travis Carey, Organics Supervisor
Laboratory Manager	Michael Kubiak

Certificate of Analysis PEE1077

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PEE1077-01	QC02	Soil	15/05/2023	16/05/2023

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Volatile TRH and BTEX (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	PEE1077-01 QC02 15/05/2023
TRH C6-C9	mg/kg	25	<25
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 less BTEX (F1)	mg/kg	25	<25
Methyl tert butyl ether (MTBE)	mg/kg	0.50	<0.50
Benzene	mg/kg	0.20	<0.20
Toluene	mg/kg	0.50	<0.50
Ethylbenzene	mg/kg	1.0	<1.0
meta+para Xylene	mg/kg	2.0	<2.0
ortho-Xylene	mg/kg	1.0	<1.0
Total Xylene	mg/kg	3.0	<3.0
Naphthalene (value used in F2 calc)	mg/kg	1.0	<1.0
Surrogate aaa-Trifluorotoluene	%		94.8

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Semi-volatile TRH (Soil)

EnviroLab ID Your Reference Date Sampled	Units	PQL	PEE1077-01 QC02 15/05/2023
TRH C10-C14	mg/kg	50	<50
TRH C15-C28	mg/kg	100	<100
TRH C29-C36	mg/kg	100	<100
Total +ve TRH C10-C36	mg/kg	50	<50
TRH >C10-C16	mg/kg	50	<50
TRH >C10-C16 less Naphthalene F2	mg/kg	50	<50
TRH >C16-C34 (F3)	mg/kg	100	<100
TRH >C34-C40 (F4)	mg/kg	100	<100
Total +ve TRH >C10-C40	mg/kg	50	<50
Surrogate o-Terphenyl	%		90.9

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Polycyclic Aromatic Hydrocarbons (Soil)

EnviroLab ID Your Reference Date Sampled	Units	PQL	PEE1077-01 QC02 15/05/2023
Naphthalene	mg/kg	0.10	<0.10
Acenaphthylene	mg/kg	0.10	<0.10
Acenaphthene	mg/kg	0.10	<0.10
Fluorene	mg/kg	0.10	<0.10
Phenanthrene	mg/kg	0.10	<0.10
Anthracene	mg/kg	0.10	<0.10
Fluoranthene	mg/kg	0.10	<0.10
Pyrene	mg/kg	0.10	<0.10
Benzo(a)anthracene	mg/kg	0.10	<0.10
Chrysene	mg/kg	0.10	<0.10
Benzo(b,j,k)fluoranthene	mg/kg	0.20	<0.20
Benzo(a)pyrene	mg/kg	0.050	<0.050
Indeno(1,2,3-c,d)pyrene	mg/kg	0.10	<0.10
Dibenzo(a,h)anthracene	mg/kg	0.10	<0.10
Benzo(g,h,i)perylene	mg/kg	0.10	<0.10
Total +ve PAH	mg/kg	0.050	<0.050
Benzo(a)pyrene TEQ calc zero	mg/kg	0.50	<0.50
Benzo(a)pyrene TEQ calc Half	mg/kg	0.50	<0.50
Benzo(a)pyrene TEQ calc PQL	mg/kg	0.50	<0.50
Surrogate p-Terphenyl-D14	%		78.2

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Organochlorine Pesticides (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	PEE1077-01 QC02 15/05/2023
alpha-BHC	mg/kg	0.10	<0.10
Hexachlorobenzene	mg/kg	0.10	<0.10
beta-BHC	mg/kg	0.10	<0.10
gamma-BHC	mg/kg	0.10	<0.10
delta-BHC	mg/kg	0.10	<0.10
Heptachlor	mg/kg	0.10	<0.10
Aldrin	mg/kg	0.10	<0.10
Heptachlor epoxide	mg/kg	0.10	<0.10
trans-Chlordane	mg/kg	0.10	<0.10
cis-Chlordane	mg/kg	0.10	<0.10
Endosulfan I	mg/kg	0.10	<0.10
4,4'-DDE	mg/kg	0.10	<0.10
Dieldrin	mg/kg	0.10	<0.10
Endrin	mg/kg	0.10	<0.10
4,4'-DDD	mg/kg	0.10	<0.10
Endosulfan II	mg/kg	0.10	<0.10
Endrin aldehyde	mg/kg	0.10	<0.10
4,4'-DDT	mg/kg	0.10	<0.10
Endosulfan sulfate	mg/kg	0.10	<0.10
Endrin ketone	mg/kg	0.10	<0.10
Methoxychlor	mg/kg	0.10	<0.10
Mirex	mg/kg	0.10	<0.10
Total +ve OCP	mg/kg	0.10	<0.10
Surrogate 2-Chlorophenol-D4	%		73.6

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Organophosphorus Pesticides (Soil)

Envirolab ID Your Reference Date Sampled	Units	PQL	PEE1077-01 QC02 15/05/2023
Dichlorvos	mg/kg	0.10	<0.10
Dimethoate	mg/kg	0.10	<0.10
Diazinon	mg/kg	0.10	<0.10
Chlorpyrifos-methyl	mg/kg	0.10	<0.10
Ronnel	mg/kg	0.10	<0.10
Fenitrothion	mg/kg	0.10	<0.10
Malathion	mg/kg	0.10	<0.10
Chlorpyrifos	mg/kg	0.10	<0.10
Parathion	mg/kg	0.10	<0.10
Bromophos-ethyl	mg/kg	0.10	<0.10
Ethion	mg/kg	0.10	<0.10
Coumaphos	mg/kg	0.10	<0.10
Disulfoton	mg/kg	0.10	<0.10
Fenamiphos	mg/kg	0.10	<0.10
Fenthion	mg/kg	0.10	<0.10
Methidathion	mg/kg	0.10	<0.10
Mevinphos	mg/kg	0.10	<0.10
Parathion-methyl	mg/kg	0.10	<0.10
Phorate	mg/kg	0.10	<0.10
Phosalone	mg/kg	0.10	<0.10
Azinphos-methyl	mg/kg	0.10	<0.10
Surrogate 2-Chlorophenol-D4	%		73.6

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Acid Extractable Metals (Soil)

Envirolab ID	Units	PQL	PEE1077-01
Your Reference			QC02
Date Sampled			15/05/2023
Arsenic	mg/kg	2.0	2.3
Cadmium	mg/kg	0.40	<0.40
Chromium	mg/kg	1.0	7.4
Copper	mg/kg	1.0	<1.0
Mercury	mg/kg	0.10	<0.10
Nickel	mg/kg	1.0	<1.0
Lead	mg/kg	1.0	4.5
Zinc	mg/kg	1.0	8.4

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Inorganics - Moisture (Soil)

Envirolab ID	Units	PQL	PEE1077-01
Your Reference			QC02
Date Sampled			15/05/2023
Moisture	%	0.10	5.6

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Asbestos ID in Soil

Client ID	Envirolab ID	Description	Result
QC02	PEE1077-01	89g Coarse Sand	No Asbestos Detected >0.1g/kg No trace fibres detected Organic fibres detected

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Method Summary

Method ID	Methodology Summary
ASB-001_AS4964	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004. When mineral fibres of unknown type are detected by polarized light microscopy including dispersion staining, the fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
INORG-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
METALS-020	Determination of various metals by ICP-OES.
METALS-021	Determination of Mercury by Cold Vapour AAS.
ORG-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
ORG-022	Determination of semi-volatile organic compounds (SVOCs) by GC-MS. Water samples are extracted by LLE and soils using DCM/Acetone/Methanol.
ORG-022_OC	Determination of semi-volatile organic compounds (SVOCs) by GC-MS. Water samples are extracted by LLE and soils using DCM/Acetone/Methanol.
ORG-022_PAH	Determination of semi-volatile organic compounds (SVOCs) by GC-MS. Water samples are extracted by LLE and solids using DCM/Acetone/Methanol. For PAHs:- Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, for Total +ve calculations, the PQL is reflective of the lowest individual PQL and therefore, for example, "Total +ve PAHs" is simply a sum of the positive individual PAHs.
ORG-023_F1_TOT	Determination of volatile organic compounds (VOCs) by P&T-GC-MS. Water samples are analysed directly by purge and trap GC-MS. Solids are extracted with Methanol, diluted and analysed by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

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Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

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Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PEE1077

Client Details

Client	Galt Environmental Pty Ltd (WA)
Your Reference	WAE230033 Victoria Park
Date Issued	23/05/2023

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	No	Duplicate Outliers Exist - See detailed list below
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PEE1077

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
vTRH&MBTEXN Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
sTRH Soil	1	15/05/2023	17/05/2023	19/05/2023	Yes
PAH Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
OCP Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
OPP (21 list) Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
Metals Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
Metals-Hg Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
Moisture Soil	1	15/05/2023	17/05/2023	18/05/2023	Yes
Asbestos in soil Soil	1	15/05/2023	23/05/2023	23/05/2023	Yes

Outliers: Duplicates

METALS-020 | Acid Extractable Metals (Soil) | Batch BEE1949

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BEE1949-DUP1#	DUP1	Copper	40.00	52.0
BEE1949-DUP3#	DUP3	Copper	40.00	51.5

ORG-022_PAH | Polycyclic Aromatic Hydrocarbons (Soil) | Batch BEE1953

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BEE1953-DUP1#	DUP1	Benzo(a)pyrene	50.00	200[2]
BEE1953-DUP1#	DUP1	Fluoranthene	50.00	200[2]
BEE1953-DUP1#	DUP1	Pyrene	50.00	200[2]

Outliers: Matrix Spike

METALS-020 | Acid Extractable Metals (Soil) | Batch BEE1949

Sample ID	Analyte	% Limits	% Recovery
BEE1949-MS1#	Copper	70 - 130	##[1]

Quality Control PEE1077

ORG-023_F1_TOT|Volatile TRH and BTEX (Soil) | Batch BEE1951

Analyte	Units	PQL	Blank	DUP1 BEE1951-DUP1# Samp QC RPD %	DUP2 BEE1951-DUP2# Samp QC RPD %	LCS %	Spike % BEE1951-MS1#
TRH C6-C9	mg/kg	25	<25	<25 <25 [NA]	<25 <25 [NA]	89.3	88.4
TRH C6-C10	mg/kg	25	<25	<25 <25 [NA]	<25 <25 [NA]	87.2	86.4
TRH C6-C10 less BTEX (F1)	mg/kg	25	<25	<25 <25 [NA]	<25 <25 [NA]	[NA]	[NA]
Methyl tert butyl ether (MTBE)	mg/kg	0.50	<0.50			[NA]	[NA]
Benzene	mg/kg	0.20	<0.20	<0.20 <0.20 [NA]	<0.20 <0.20 [NA]	78.6	78.0
Toluene	mg/kg	0.50	<0.50	<0.50 <0.50 [NA]	<0.50 <0.50 [NA]	79.9	78.6
Ethylbenzene	mg/kg	1.0	<1.0	<1.0 <1.0 [NA]	<1.0 <1.0 [NA]	79.1	78.7
meta+para Xylene	mg/kg	2.0	<2.0	<2.0 <2.0 [NA]	<2.0 <2.0 [NA]	77.0	76.5
ortho-Xylene	mg/kg	1.0	<1.0	<1.0 <1.0 [NA]	<1.0 <1.0 [NA]	79.6	78.6
Total Xylene	mg/kg	3.0	<3.0	<3.0 <3.0 [NA]	<3.0 <3.0 [NA]	[NA]	[NA]
Naphthalene (value used in F2 calc)	mg/kg	1.0	<1.0	<1.0 <1.0 [NA]	<1.0 <1.0 [NA]	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%		110	96.5 / 96.8	102 / 99.9	104	101

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

ORG-020|Semi-volatile TRH (Soil) | Batch BEE1953

Analyte	Units	PQL	Blank	DUP1 BEE1953-DUP1# Samp QC RPD %	DUP2 BEE1953-DUP2# Samp QC RPD %	LCS %	Spike % BEE1953-MS1#
TRH C10-C14	mg/kg	50	<50	<50 <50 [NA]	<50 <50 [NA]	79.0	75.0
TRH C15-C28	mg/kg	100	<100	<100 <100 [NA]	<100 <100 [NA]	85.3	81.4
TRH C29-C36	mg/kg	100	<100	<100 <100 [NA]	<100 <100 [NA]	89.3	82.3
TRH >C10-C16	mg/kg	50	<50	<50 <50 [NA]	<50 <50 [NA]	82.1	79.3
TRH >C16-C34 (F3)	mg/kg	100	<100	<100 <100 [NA]	<100 <100 [NA]	75.8	71.9
TRH >C34-C40 (F4)	mg/kg	100	<100	<100 <100 [NA]	<100 <100 [NA]	94.7	85.6
Surrogate o-Terphenyl	%		92.3	92.9 / 91.6	90.2 / 91.0	92.4	88.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

ORG-022_PAH|Polycyclic Aromatic Hydrocarbons (Soil) | Batch BEE1953

Analyte	Units	PQL	Blank	DUP1 BEE1953-DUP1# Samp QC RPD %	DUP2 BEE1953-DUP2# Samp QC RPD %	LCS %	Spike % BEE1953-MS2#
Naphthalene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	98.5	95.0
Acenaphthylene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Acenaphthene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	95.7	92.0
Fluorene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	94.5	90.9
Phenanthrene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	95.8	93.9
Anthracene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Fluoranthene	mg/kg	0.10	<0.10	<0.10 0.111 200 [2]	<0.10 <0.10 [NA]	93.6	90.4
Pyrene	mg/kg	0.10	<0.10	<0.10 0.108 200 [2]	<0.10 <0.10 [NA]	91.7	90.0
Benzo(a)anthracene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Chrysene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	91.4	88.1
Benzo(b,j,k)fluoranthene	mg/kg	0.20	<0.20	<0.20 <0.20 [NA]	<0.20 <0.20 [NA]	[NA]	[NA]
Benzo(a)pyrene	mg/kg	0.050	<0.050	<0.050 0.0518 200 [2]	<0.050 <0.050 [NA]	98.3	95.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Dibenzo(a,h)anthracene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Benzo(g,h,i)perylene	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]
Surrogate p-Terphenyl-D14	%		76.2	72.7 / 75.5	76.5 / 78.3	78.1	76.4

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PEE1077

ORG-022_OC | Organochlorine Pesticides (Soil) | Batch BEE1953

Analyte	Units	PQL	Blank	DUP1			DUP2			LCS %	Spike % BEE1953-MS2 #
				BEE1953-DUP1#			BEE1953-DUP2#				
				Samp	QC	RPD %	Samp	QC	RPD %		
alpha-BHC	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	93.2	88.2
Hexachlorobenzene	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
beta-BHC	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	89.4	85.5
gamma-BHC	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
delta-BHC	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Heptachlor	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	91.1	87.3
Aldrin	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	91.5	90.2
Heptachlor epoxide	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	88.9	86.9
trans-Chlordane	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
cis-Chlordane	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Endosulfan I	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
4,4'-DDE	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	89.4	87.2
Dieldrin	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	90.8	88.2
Endrin	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	88.9	86.4
4,4'-DDD	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	86.8	85.1
Endosulfan II	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Endrin aldehyde	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
4,4'-DDT	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Endosulfan sulfate	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	90.7	87.7
Endrin ketone	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Methoxychlor	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Mirex	mg/kg	0.10	<0.10	<0.10	<0.10	[NA]	<0.10	<0.10	[NA]	[NA]	[NA]
Surrogate 2-Chlorophenol-D4	%		76.2	72.3 / 72.5			73.3 / 73.9			78.9	72.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

ORG-022 | Organophosphorus Pesticides (Soil) | Batch BEE1953

Analyte	Units	PQL	Blank	DUP1		DUP2		LCS %	Spike % BEE1953-MS2 #
				BEE1953-DUP1#		BEE1953-DUP2#			
				Samp	QC RPD %	Samp	QC RPD %		
Dichlorvos	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	102	93.9		
Dimethoate	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Diazinon	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Chlorpyrifos-methyl	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	89.7	85.7		
Ronnel	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	90.0	87.1		
Fenitrothion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	85.1	79.0		
Malathion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	90.6	86.1		
Chlorpyrifos	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	86.0	82.7		
Parathion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	88.6	82.2		
Bromophos-ethyl	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Ethion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	86.7	84.6		
Coumaphos	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Disulfoton	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Fenamiphos	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Fenthion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Methidathion	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Mevinphos	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Parathion-methyl	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Phorate	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Phosalone	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Azinphos-methyl	mg/kg	0.10	<0.10	<0.10 <0.10 [NA]	<0.10 <0.10 [NA]	[NA]	[NA]		
Surrogate 2-Chlorophenol-D4	%		76.2	72.3 / 72.5		73.3 / 73.9		78.9	72.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PEE1077

METALS-020 | Acid Extractable Metals (Soil) | Batch BEE1949

Analyte	Units	PQL	Blank	DUP1			DUP2			LCS %	Spike %
				BEE1949-DUP1#			BEE1949-DUP2#				BEE1949-MS1#
				Samp	QC	RPD %	Samp	QC	RPD %		
Arsenic	mg/kg	2.0	<2.0	12.2	11.0	10.1	14.9	19.2	25.4	105	112
Cadmium	mg/kg	0.40	<0.40	<0.40	<0.40	[NA]	<0.40	<0.40	[NA]	105	85.7
Chromium	mg/kg	1.0	<1.0	17.8	16.1	10.1	11.9	12.7	6.54	106	96.6
Copper	mg/kg	1.0	<1.0	194	114	52.0	<1.0	<1.0	[NA]	111	##[1]
Lead	mg/kg	1.0	<1.0	15.1	14.1	6.93	10.4	8.23	23.6	102	90.2
Mercury	mg/kg	0.10	<0.10	<0.10	<0.10	[NA] [3]	<0.10	<0.10	[NA]	86.4	80.0
Nickel	mg/kg	1.0	<1.0	17.6	18.9	6.94	1.74	1.70	2.03	105	87.3
Zinc	mg/kg	1.0	<1.0	48.1	46.2	4.03	10.4	9.47	9.36	103	78.9

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				BEE1949-DUP3#	BEE1949-DUP4#	
				Samp QC RPD %	Samp QC RPD %	
Arsenic	mg/kg	2		12.2 9.95 20.1	14.9 15.8 5.80	[NA]
Cadmium	mg/kg	0.4		<0.40 <0.40 [NA]	<0.40 <0.40 [NA]	[NA]
Chromium	mg/kg	1		17.8 15.4 14.6	11.9 8.59 32.5	[NA]
Copper	mg/kg	1		194 114 51.5	<1.0 <1.0 [NA]	[NA]
Lead	mg/kg	1		15.1 13.8 9.35	10.4 9.68 7.54	[NA]
Mercury	mg/kg	0.1		<0.10 <0.10 [NA] [3]	<0.10 <0.10 [NA]	[NA]
Nickel	mg/kg	1		17.6 16.2 8.43	1.74 1.61 7.49	[NA]
Zinc	mg/kg	1		48.1 47.7 0.678	10.4 7.99 26.2	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-008 | Inorganics - Moisture (Soil) | Batch BEE1942

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %
				BEE1942-DUP1#	BEE1942-DUP2#	
				Samp QC RPD %	Samp QC RPD %	
Moisture	%	0.1		3.24 3.56 9.41	17.2 16.0 7.00	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

QC Comments

Identifier	Description
[1]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.
[2]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.
[3]	The laboratory duplicate RPD acceptance criteria has been exceeded. Sample heterogeneity suspected. 3 sets of data have been provided to help demonstrate the degree of non-homogeneity within the sample as well as assessing the analytical precision.

ATTACHMENT E

Soil Analytical Results



					Field ID	BH01/0.0	BH02/2.0	BH03/1.5	BH04/0.0	BH05/1.5	BH06/1.0
					Date	15 May 2023	15 May 2023	15 May 2023	15 May 2023	15 May 2023	15 May 2023
	Unit	EQL	NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand	NEPM 2013 Table 1A(1) HILs Res A Soil							
Asbestos											
AF % asbestos (weighted average)	Comment				1	1	1	1	1	1	1
AF in Soil (as asbestos)	% w/w	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos (Trace)	Comment				1	1	1	1	1	1	1
Asbestos Detected	-				1	1	1	1	1	1	1
FA % asbestos (weighted average)	Comment				1	1	1	1	1	1	1
FA in Soil (as asbestos)	% w/w	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibres Identified and estimated Asbestos Content (%)	Comment				1	1	1	1	1	1	1
Total Analytical Fraction	g	0.1			210	146	318	336	330	311	
Total Asbestos	g/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Dry Mass	g	0.1			210	146	318	336	330	311	
Biota											
Sample Description	-				1	1	1	1	1	1	1
Mass											
Mass Asbestos in FA	g	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
NA											
Total AF	g	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Sample Preparation											
Analysed Material	Comment				1	1	1	1	1	1	1
BTEX											
Naphthalene (VOC)	mg/kg	0.5	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	mg/kg	0.1	0.5 0.5 0.5 0.5		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	160 220 310 540		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	55		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene (m & p)	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene (o)	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene Total	mg/kg	0.3	40 60 95 170		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
TRH											
C6-C10 Fraction (F1)	mg/kg	20			<20	<20	<20	<20	<20	<20	<20
C6-C10 (F1 minus BTEX)	mg/kg	20	45 70 110 200		<20	<20	<20	<20	<20	<20	<20
>C10-C16 Fraction (F2)	mg/kg	50			<50	<50	<50	<50	<50	<50	<50
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50	110 240 440		<50	<50	<50	<50	<50	<50	<50
>C16-C34 Fraction (F3)	mg/kg	100			<100	<100	<100	<100	<100	<100	<100
>C34-C40 Fraction (F4)	mg/kg	100			<100	<100	<100	<100	<100	<100	<100
>C10-C40 Fraction (Sum)	mg/kg	100			<100	<100	<100	<100	<100	<100	<100
Halogenated Benzenes											
Hexachlorobenzene	mg/kg	0.01		10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Herbicides											
Trifluralin	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Inorganics											
Moisture Content (dried @ 103°C)	%	1			3.3	5.0	5.0	6.1	8.4		16
Metals											
Arsenic	mg/kg	5		100	<5	<5	<5	<5	<5	<5	<5
Cadmium	mg/kg	0.1		20	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Chromium (III+VI)	mg/kg	1			3.4	3.2	12	5.7	1.8	1.3	
Copper	mg/kg	1		6,000	3.7	<1	6.8	4.1	4.4	1.9	
Lead	mg/kg	1		300	17	5.4	51	40	26	13	
Mercury	mg/kg	0.02		40	0.03	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
Nickel	mg/kg	1		400	<1	<1	1.5	<1	<1	<1	<1
Zinc	mg/kg	1		7,400	55	18	66	48	170	91	
Organochlorine Pesticides											
2,4-DDT	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4-DDE	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	0.02	0.07	
a-BHC	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
b-BHC	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlordane	mg/kg	0.01		50	<0.01	<0.01	0.03	0.02	0.01	0.02	
d-BHC	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
DDD	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
DDT	mg/kg	0.01			<0.01	<0.01	0.01	<0.01	<0.01	0.02	
Dieldrin	mg/kg	0.01			<0.01	<0.01	0.12	0.03	0.39	0.16	
Endosulfan I	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan II	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan sulphate	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	mg/kg	0.01		10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
g-BHC (Lindane)	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	mg/kg	0.01		6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	mg/kg	0.01			<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Methoxychlor	mg/kg	0.2		300	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Oxychlordane	mg/kg	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides											
Chlorpyrifos	mg/kg	0.02		160	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	mg/kg	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenitrothion	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH											
Acenaphthene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	0.5	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAHs (Sum of total)	mg/kg	0.5		300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pesticides											
Bifenthrin	mg/kg	0.2		600	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos	mg/kg	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TPH											
C6-C9 Fraction	mg/kg	20			<20	<20	<20	<20	<20	<20	<20
C10-C14 Fraction	mg/kg	20			<20	<20	<20	<20	<20	<20	<20
C15-C28 Fraction	mg/kg	50			<50	<50	<50	<50	<50	<50	<50
C29-C36 Fraction	mg/kg	50			<50	<50	66	<50	<50	<50	<50
C10-C36 Fraction (Sum)	mg/kg	50			<50	<50	66	<50	<50	<50	<50

ATTACHMENT F

Understanding Your Report

UNDERSTANDING YOUR REPORT

GALT FORM PMP29 Rev3

1. EXPECTATIONS OF THE REPORT

This document has been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- ✦ the project objectives as we understood them and as described in this report;
- ✦ the specific site mentioned in this report; and
- ✦ the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- ✦ the report was not written for you;
- ✦ the report was not written for the site specific to your development;
- ✦ the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- ✦ the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. DATA PROVIDED BY THIRD PARTIES

Where data is provided by third parties, it will be identified as such in our reports. We necessarily rely on the completeness and accuracy of data provided by third parties in order to draw conclusions presented in our reports. We are not responsible for omissions, incomplete or inaccurate data associated with third party data, including where we have been requested to provide advice in relation to field investigation data provided by third parties.

4. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

5. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

6. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

7. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

8. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.

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