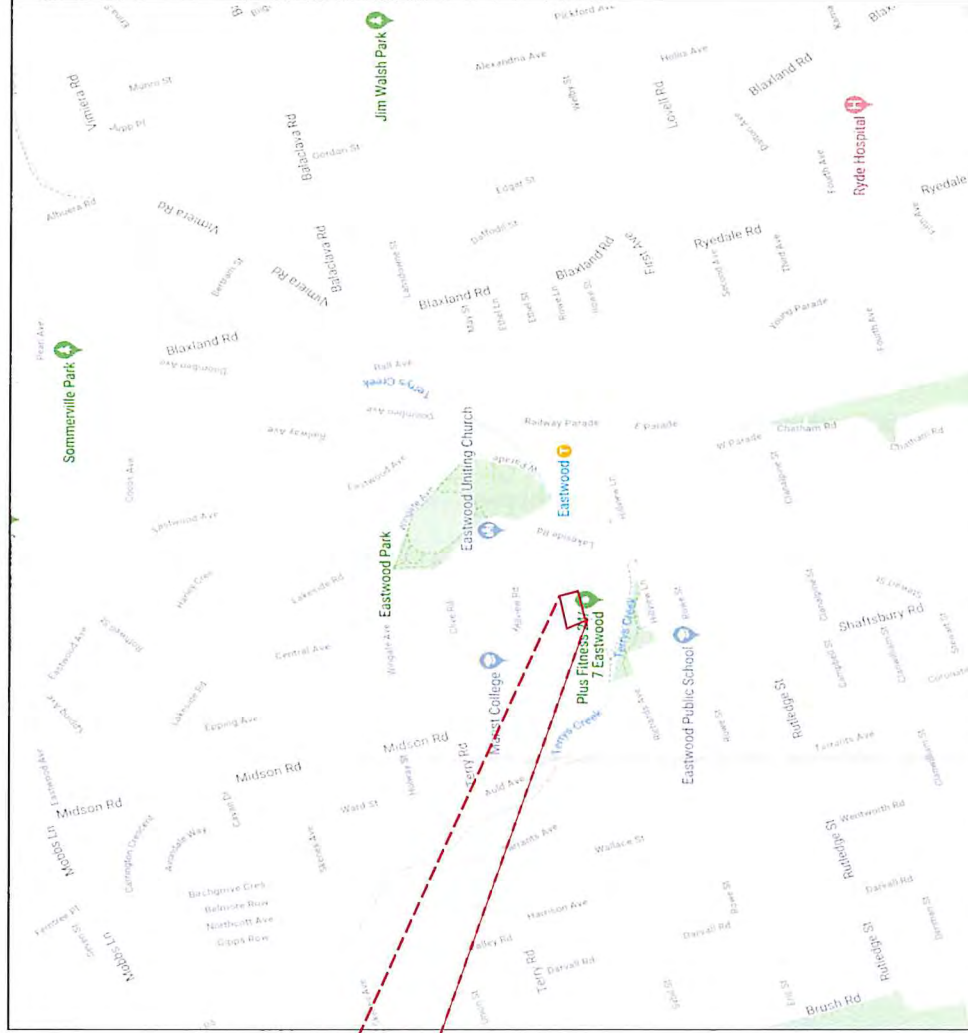


Figure 1

Site Location



Locality Map



Legend



Approximate Site Location



Sidney
Unit 11 Macquarie Link
271 Lane Cove Road
Macquarie Park NSW 2113
Newcastle
Level 4
45 Watt Street
Newcastle NSW 2300

Title
Site Location

Site Address
13-19 Glen St, Eastwood

Project No.
0475405

Figure No.
1

Date
5/02/2019

Client
ACE Civil Pty Ltd

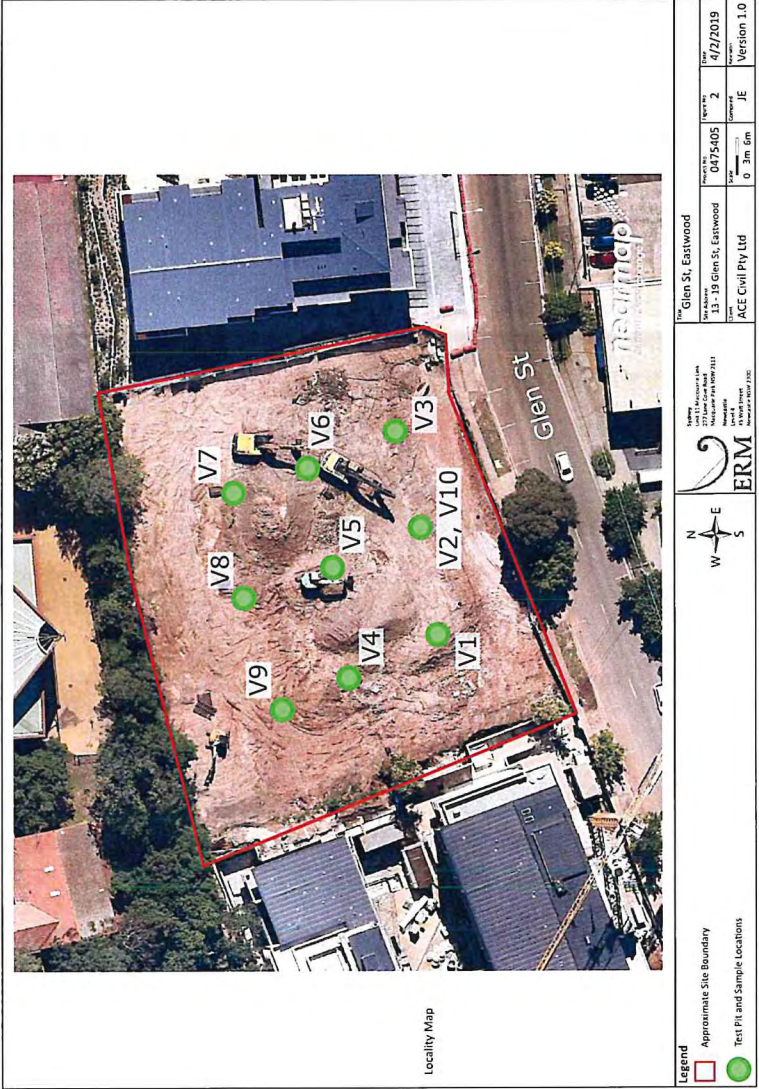
Scale
Not to Scale

Compiled
TR

Revision
Version 1.0

Figure 2

Site Layout



Appendix A

Photographic Gallery



Photo 001

13-19 Glen St, Eastwood, Surface of site.



**Stockpile area,
EXCLUDED FROM THIS CLASSIFICATION**

Photo 002

13-19 Glen St, Eastwood. Stockpiled material to be excluded from classification observed on 24th January 2019.



Photo 003

13-19 Glen St, Eastwood. Red Grey clay and Orange grey clay with overlying fill layer.



Photo 004

13-19 Glen St, Eastwood. Clayey Shale material from sample V5.



Photo 005

13-19 Glen St, Eastwood. 1st February: Site surface after fill material had been removed.



Photo 006

13-19 Glen St, Eastwood 1st February: Area where stockpile and overlying fill material was located after scraping and removal, showing natural clays on surface.

Appendix B

Nata certified Analytical Data



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET70858 / 74038 /1- 11
Your ref: 0475405 – 13 Glen Street Eastwood
NATA Accreditation No: 14484

30 January 2019

ERM Services
11/277 Lane Cove Road
Macquarie Park NSW 2113



Attn: Mr Matthew Junghans

Accredited for compliance with ISO/IEC 17025.

Dear Matthew

Asbestos Identification

This report presents the results of eleven samples, forwarded by ERM Services on 25 January 2019, for analysis for asbestos.

1.Introduction:Eleven samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method (Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).

The report also provides approximate weights and percentages, categories of asbestos forms appearing in the sample, such as **AF** (Asbestos Fines), **FA** (Friable Asbestos and **ACM** (Asbestos Containing Material), also satisfying the requirements of the WA/ NEPM Guidelines)

3. Results: **Sample No. 1. ASET70858 / 74038 / 1. 0475405 - V1.**
Approx. dimensions 12.0 cm x 12.0 cm x 3.8 cm
Approximate total dry weight of soil = 557.0g
The sample consisted of a mixture of clayish sandy soil, sandstones, shale, fragments of brick and glass.
No asbestos detected.

Sample No. 2. ASET70858 / 74038 / 2. 0475405 - V2.
Approx. dimensions 12.0 cm x 12.0 cm x 4.6 cm
Approximate total dry weight of soil = 671.0g
The sample consisted of a mixture of clayish sandy soil, sandstones, shale, plant matter, fragments of cement and wood chips.
No asbestos detected.

Sample No. 3. ASET70858 / 74038 / 3. 0475405 – V3.
Approx. dimensions 12.0 cm x 12.0 cm x 3.5 cm
Approximate total dry weight of soil = 504.0g
The sample consisted of a mixture of clayish sandy soil, sandstones, shale, plant matter, fragments of cement and plaster.
No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

OCCUPATIONAL HEALTH & SAFETY STUDIES • INDOOR AIR QUALITY SURVEYS • HAZARDOUS MATERIAL SURVEYS • RADIATION SURVEYS • ASBESTOS SURVEYS
ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING



Sample No. 4. ASET70858 / 74038 / 4. 0475405 - V3 - A.

Approx. dimensions 12.0 cm x 12.0 cm x 3.6 cm

Approximate total dry weight of soil = 518.0g

The sample consisted of a mixture of clayish sandy soil, shale, sandstones, plant matter, fragments of brick and cement.

No asbestos detected.

Sample No. 5. ASET70858 / 74038 / 5. 0475405 - V4.

Approx. dimensions 12.0 cm x 12.0 cm x 4.1 cm

Approximate total dry weight of soil = 592.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, fragments of brick, cement, plaster and wood chips.

No asbestos detected.

Sample No. 6. ASET70858 / 74038 / 6. 0475405 - V5.

Approx. dimensions 12.0 cm x 12.0 cm x 3.9 cm

Approximate total dry weight of soil = 574.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, plant matter, fragments of brick and cement.

No asbestos detected.

Sample No. 7. ASET70858 / 74038 / 7. 0475405 - V6.

Approx. dimensions 12.0 cm x 12.0 cm x 3.9 cm

Approximate total dry weight of soil = 610.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, fragments of brick, cement, glass and plaster.

No asbestos detected.

Sample No. 8. ASET70858 / 74038 / 8. 0475405 - V7.

Approx. dimensions 12.0 cm x 12.0 cm x 3.9 cm

Approximate total dry weight of soil = 565.0g

The sample consisted of a mixture of clayish sandy soil, shale, sandstones, fragments of brick, cement, glass, plaster and wood chips.

No asbestos detected.

Sample No. 9. ASET70858 / 74038 / 9. 0475405 - V8.

Approx. dimensions 9.0 cm x 9.0 cm x 5.5 cm

Approximate total dry weight of soil = 449.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, fragments of brick and cement.

No asbestos detected.

Sample No. 10. ASET70858 / 74038 / 10. 0475405 - V9.

Approx. dimensions 12.0 cm x 12.0 cm x 4.6 cm

Approximate total dry weight of soil = 668.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, plant matter, fragments of cement and plaster.

No asbestos detected.



Sample No. 11. ASET70858 / 74038 / 11. 0475405 - V10.

Approx. dimensions 12.0 cm x 12.0 cm x 4.2 cm

Approximate total dry weight of soil = 611.0g

The sample consisted of a mixture of clayish sandy soil, sandstones, shale, plant matter, fragments of brick, cement and wood chips.

No asbestos detected.

Reported by,

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory



Accredited for compliance with ISO/IEC 17025.

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia and it also satisfies the requirements of the current NEPM Guidelines. NATA Accreditation does not cover the performance of this service (NATA ISO/IEC17025 AUG 2014).

Disclaimers;

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos, as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported. This weight disclaimer also covers weight / weight percentages if given.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

^ denotes loose fibres of relevant asbestos types detected in soil/dust.

*** denotes asbestos detected in ACM in bonded form.**

denotes friable asbestos as soft fibro plaster and/ or highly weathered ACM that will easily crumble.



λ denotes samples that have been analysed only in accordance to AS 4964 – 2004.
Ω Sample volume criteria of 500mL have not been satisfied.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by AS4964-2004. Trace / respirable level asbestos will be reported only when detected and trace analysis have been performed on each sample as required by AS4964-2004. When loose asbestos fibres/ fibre bundles are detected and reported that means they are larger handpicked fibres/ fibre bundles, and they do not represent respirable fibres. Dust/soil samples are always subjected to trace analysis except where the amounts involved are extremely minute and trace analysis is not possible to be carried out. When trace analysis is not performed on dust samples it will be indicated in the report that trace analysis has not been carried out due to the volume of the sample being extremely minute.

*Estimation of asbestos weights involves the use of following assumptions;
Volume of each kind of Asbestos present in broken edges have been visually estimated and its been assumed that volumes remain similar throughout the binding matrix and those volumes are only approximate and not exact. Material densities have been assumed to be similar to commonly found similar materials and may not be exact.*

All samples indicating "No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.

CERTIFICATE OF ANALYSIS 210306

Client Details

Client	ERM SERVICES AUSTRALIA PTY LTD
Attention	Tristan Rodrigues
Address	Unit 11 Macquarie Link, 277 Lane Cove Rd, Macquarie Park, NSW, 2113

Sample Details

Your Reference	<u>0475405 - 13 Glen St Eastwood</u>
Number of Samples	11 soil
Date samples received	25/01/2019
Date completed instructions received	25/01/2019

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.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	04/02/2019
Date of Issue	04/02/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Giovanni Agosti, Group Technical Manager
Jeremy Faircloth, Organics Supervisor
Priya Samarawickrama, Senior Chemist
Steven Luong, Senior Chemist

Authorised By



Jacinta Hurst, Laboratory Manager

Client Reference: 0475405 - 13 Glen St Eastwood

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		210306-1	210306-2	210306-3	210306-4	210306-5
Your Reference	UNITS	V1	V2	V3	V3-A	V4
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	86	88	83	88

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		210306-6	210306-7	210306-8	210306-9	210306-10
Your Reference	UNITS	V5	V6	V7	V8	V9
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	88	87	91	85	103

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		210306-11
Your Reference	UNITS	V10
Date Sampled		24/01/2019
Type of sample		soil
Date extracted	-	29/01/2019
Date analysed	-	30/01/2019
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	94

svTRH (C10-C40) in Soil

Our Reference		210306-1	210306-2	210306-3	210306-4	210306-5
Your Reference	UNITS	V1	V2	V3	V3-A	V4
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	96	96	99	93	92

svTRH (C10-C40) in Soil

Our Reference		210306-6	210306-7	210306-8	210306-9	210306-10
Your Reference	UNITS	V5	V6	V7	V8	V9
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	94	90	96	92	94

Client Reference: 0475405 - 13 Glen St Eastwood

svTRH (C10-C40) in Soil		
Our Reference		210306-11
Your Reference	UNITS	V10
Date Sampled		24/01/2019
Type of sample		soil
Date extracted	-	29/01/2019
Date analysed	-	30/01/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	90

Client Reference: 0475405 - 13 Glen St Eastwood

PAHs in Soil						
Our Reference		210306-1	210306-2	210306-3	210306-4	210306-5
Your Reference	UNITS	V1	V2	V3	V3-A	V4
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	101	104	103	101

PAHs in Soil						
Our Reference		210306-6	210306-7	210306-8	210306-9	210306-10
Your Reference	UNITS	V5	V6	V7	V8	V9
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Total +ve PAH's	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	101	102	100	102

PAHs in Soil		
Our Reference		210306-11
Your Reference	UNITS	V10
Date Sampled		24/01/2019
Type of sample		soil
Date extracted	-	29/01/2019
Date analysed	-	30/01/2019
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	100

Client Reference: 0475405 - 13 Glen St Eastwood

Organochlorine Pesticides in soil						
Our Reference		210306-2	210306-5	210306-7	210306-9	210306-11
Your Reference	UNITS	V2	V4	V6	V8	V10
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	89	90	88	88	87

Organophosphorus Pesticides						
Our Reference		210306-2	210306-5	210306-7	210306-9	210306-11
Your Reference	UNITS	V2	V4	V6	V8	V10
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	89	90	88	88	87

Client Reference: 0475405 - 13 Glen St Eastwood

PCBs in Soil						
Our Reference		210306-2	210306-5	210306-7	210306-9	210306-11
Your Reference	UNITS	V2	V4	V6	V8	V10
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	89	90	88	88	87

Client Reference: 0475405 - 13 Glen St Eastwood

Acid Extractable metals in soil						
Our Reference		210306-1	210306-2	210306-3	210306-4	210306-5
Your Reference	UNITS	V1	V2	V3	V3-A	V4
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	04/02/2019	04/02/2019	04/02/2019	04/02/2019	04/02/2019
Arsenic	mg/kg	5	12	7	8	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	5	10	11	5
Copper	mg/kg	23	17	22	24	17
Lead	mg/kg	15	10	13	14	9
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	4	3	5	4
Zinc	mg/kg	28	22	23	34	30

Acid Extractable metals in soil						
Our Reference		210306-6	210306-7	210306-8	210306-9	210306-10
Your Reference	UNITS	V5	V6	V7	V8	V9
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	04/02/2019	04/02/2019	04/02/2019	04/02/2019	04/02/2019
Arsenic	mg/kg	4	<4	7	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	4	6	7	7	7
Copper	mg/kg	18	29	18	34	29
Lead	mg/kg	10	17	12	15	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	10	3	3	3
Zinc	mg/kg	42	55	19	25	30

Acid Extractable metals in soil			
Our Reference		210306-11	210306-12
Your Reference	UNITS	V10	V2 - [TRIPLICATE]
Date Sampled		24/01/2019	24/01/2019
Type of sample		soil	soil
Date prepared	-	29/01/2019	29/01/2019
Date analysed	-	04/02/2019	04/02/2019
Arsenic	mg/kg	<4	7
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	6	6
Copper	mg/kg	44	32
Lead	mg/kg	58	13
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	11	7
Zinc	mg/kg	73	40

Client Reference: 0475405 - 13 Glen St Eastwood

Moisture						
Our Reference		210306-1	210306-2	210306-3	210306-4	210306-5
Your Reference	UNITS	V1	V2	V3	V3-A	V4
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Moisture	%	17	20	20	24	15

Moisture						
Our Reference		210306-6	210306-7	210306-8	210306-9	210306-10
Your Reference	UNITS	V5	V6	V7	V8	V9
Date Sampled		24/01/2019	24/01/2019	24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	29/01/2019	29/01/2019	29/01/2019	29/01/2019	29/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Moisture	%	13	15	19	19	16

Moisture		
Our Reference		210306-11
Your Reference	UNITS	V10
Date Sampled		24/01/2019
Type of sample		soil
Date prepared	-	29/01/2019
Date analysed	-	30/01/2019
Moisture	%	14

Client Reference: 0475405 - 13 Glen St Eastwood

Texture and Salinity*				
Our Reference		210306-1	210306-6	210306-8
Your Reference	UNITS	V1	V5	V7
Date Sampled		24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil
Date prepared	-	30/01/2019	30/01/2019	30/01/2019
Date analysed	-	30/01/2019	30/01/2019	30/01/2019
Electrical Conductivity 1:5 soil:water	µS/cm	48	18	31
Texture Value	-	7.0	9.0	7.0
Texture		MEDIUM CLAY	CLAY LOAM	MEDIUM CLAY
ECe	dS/m	<2	<2	<2
Class		NON SALINE	NON SALINE	NON SALINE

Soil Aggressivity				
Our Reference		210306-1	210306-6	210306-8
Your Reference	UNITS	V1	V5	V7
Date Sampled		24/01/2019	24/01/2019	24/01/2019
Type of sample		soil	soil	soil
pH 1:5 soil:water	pH Units	5.3	5.7	5.5
Resistivity by calculation	ohm m	210	540	320
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10
Sulphate, SO4 1:5 soil:water	mg/kg	56	10	30

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-123	Determined using a "Texture by Feel" method.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	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.
Org-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ 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. 'EQ 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. 'EQ 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, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly 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.

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			30/01/2019	2	30/01/2019	30/01/2019		30/01/2019	
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	2	<25	<25	0	94	
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	2	<25	<25	0	94	
Benzene	mg/kg	0.2	Org-016	<0.2	2	<0.2	<0.2	0	92	
Toluene	mg/kg	0.5	Org-016	<0.5	2	<0.5	<0.5	0	91	
Ethylbenzene	mg/kg	1	Org-016	<1	2	<1	<1	0	97	
m+p-xylene	mg/kg	2	Org-016	<2	2	<2	<2	0	96	
o-Xylene	mg/kg	1	Org-016	<1	2	<1	<1	0	98	
naphthalene	mg/kg	1	Org-014	<1	2	<1	<1	0		
Surrogate aaa-Trifluorotoluene	%		Org-016	91	2	86	88	2	88	

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-				10	29/01/2019	29/01/2019			
Date analysed	-				10	30/01/2019	30/01/2019			
TRH C ₆ - C ₉	mg/kg	25	Org-016		10	<25	<25	0		
TRH C ₆ - C ₁₀	mg/kg	25	Org-016		10	<25	<25	0		
Benzene	mg/kg	0.2	Org-016		10	<0.2	<0.2	0		
Toluene	mg/kg	0.5	Org-016		10	<0.5	<0.5	0		
Ethylbenzene	mg/kg	1	Org-016		10	<1	<1	0		
m+p-xylene	mg/kg	2	Org-016		10	<2	<2	0		
o-Xylene	mg/kg	1	Org-016		10	<1	<1	0		
naphthalene	mg/kg	1	Org-014		10	<1	<1	0		
Surrogate aaa-Trifluorotoluene	%		Org-016		10	103	86	18		

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	2	<50	<50	0	120	
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	2	<100	<100	0	104	
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	2	<100	<100	0	129	
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	2	<50	<50	0	120	
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	2	<100	<100	0	104	
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	2	<100	<100	0	129	
Surrogate o-Terphenyl	%		Org-003	107	2	96	98	2	128	

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-				10	29/01/2019	29/01/2019			
Date analysed	-				10	29/01/2019	29/01/2019			
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003		10	<50	<50	0		
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003		10	<100	<100	0		
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003		10	<100	<100	0		
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003		10	<50	<50	0		
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003		10	<100	<100	0		
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003		10	<100	<100	0		
Surrogate o-Terphenyl	%		Org-003		10	94	95	1		

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			30/01/2019	2	30/01/2019	30/01/2019		30/01/2019	
Naphthalene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	97	
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Acenaphthene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Fluorene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	97	
Phenanthrene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	99	
Anthracene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Fluoranthene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	102	
Pyrene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	100	
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Chrysene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0	107	
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	2	<0.2	<0.2	0		
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	2	<0.05	<0.05	0	117	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	2	<0.1	<0.1	0		
Surrogate p-Terphenyl-d14	%		Org-012	105	2	101	103	2	105	

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-				10	29/01/2019	29/01/2019			
Date analysed	-				10	30/01/2019	30/01/2019			
Naphthalene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Acenaphthylene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Acenaphthene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Fluorene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Phenanthrene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Anthracene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Fluoranthene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Pyrene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Benzo(a)anthracene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Chrysene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012		10	<0.2	<0.2	0		
Benzo(a)pyrene	mg/kg	0.05	Org-012		10	<0.05	<0.05	0		
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012		10	<0.1	<0.1	0		
Surrogate p-Terphenyl-d14	%		Org-012		10	102	102	0		

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
HCB	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
alpha-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	83	
gamma-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
beta-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	85	
Heptachlor	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	72	
delta-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
Aldrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	72	
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	83	
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
Endosulfan I	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
pp-DDE	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	85	
Dieldrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	94	
Endrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	81	
pp-DDD	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	94	
Endosulfan II	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
pp-DDT	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	86	
Methoxychlor	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0		
Surrogate TCMX	%		Org-005	93	2	89	88	1	115	

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0		
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0		
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	101	
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0		
Diazinon	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0		
Dichlorvos	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	103	
Dimethoate	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0		
Ethion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	109	
Fenitrothion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	108	
Malathion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	79	
Parathion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	94	
Ronnel	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	101	
Surrogate TCMX	%		Org-008	93	2	89	88	1	93	

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: PCBs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	97	
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0		
Surrogate TCLMX	%		Org-006	93	2	89	88	1	93	

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			29/01/2019	2	29/01/2019	29/01/2019		29/01/2019	
Date analysed	-			04/02/2019	2	04/02/2019	04/02/2019		04/02/2019	
Arsenic	mg/kg	4	Metals-020	<4	2	12	10	18	107	
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	103	
Chromium	mg/kg	1	Metals-020	<1	2	5	6	18	103	
Copper	mg/kg	1	Metals-020	<1	2	17	30	55	104	
Lead	mg/kg	1	Metals-020	<1	2	10	18	57	98	
Mercury	mg/kg	0.1	Metals-021	<0.1	2	0.1	<0.1	0	106	
Nickel	mg/kg	1	Metals-020	<1	2	4	6	40	99	
Zinc	mg/kg	1	Metals-020	<1	2	22	34	43	101	

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-				10	29/01/2019	29/01/2019			
Date analysed	-				10	04/02/2019	04/02/2019			
Arsenic	mg/kg	4	Metals-020		10	6	6	0		
Cadmium	mg/kg	0.4	Metals-020		10	<0.4	<0.4	0		
Chromium	mg/kg	1	Metals-020		10	7	7	0		
Copper	mg/kg	1	Metals-020		10	29	30	3		
Lead	mg/kg	1	Metals-020		10	15	18	18		
Mercury	mg/kg	0.1	Metals-021		10	<0.1	<0.1	0		
Nickel	mg/kg	1	Metals-020		10	3	5	50		
Zinc	mg/kg	1	Metals-020		10	30	39	26		

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: Texture and Salinity*						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			30/01/2019					30/01/2019	
Date analysed	-			30/01/2019					30/01/2019	
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1					104	

Client Reference: 0475405 - 13 Glen St Eastwood

QUALITY CONTROL: Soil Aggressivity					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	10.7	01	10.69	10.69	0.11	103	0.99
Resistivity by calculation	ohm m	0.1	Inorg-002	<0.1	01	0.1	0.09	0.12		0.99
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	01	2.0	1.99	0.1	85	0.99
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	01	10.1	9.99	0.01	89	0.99

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
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.
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.
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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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.

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 QA/QC tables for details; <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 insufficient in order to satisfy laboratory QA/QC protocols.

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.

Measurement Uncertainty estimates are available for most tests upon request.

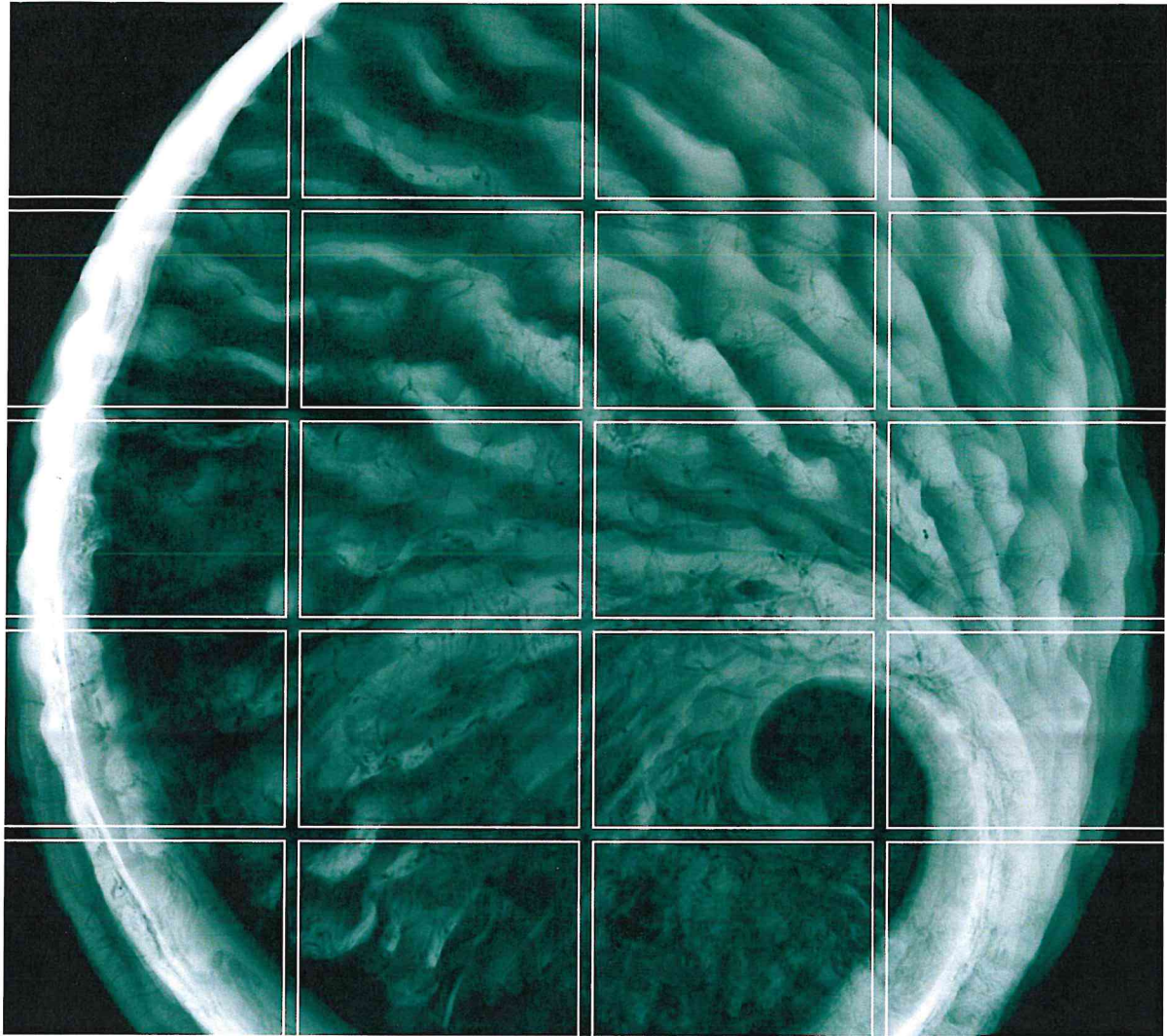
Report Comments

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 210306-2 for Cu & Zn. Therefore a triplicate result has been issued as laboratory sample number 210306-12



Suite 710/ 90 George Street Hornsby NSW 2077 PO Box 1644 Hornsby Westfield NSW 1635
Ph: 02 9987 2183 Fax: 02 9987 2151 Email: aset@bigpond.net.au

Page 1 of 1



Waste Classification

ACE Civil Pty Ltd

17-21 Mary St, Auburn, NSW 2144

Date: 7/12/2018

Project No.: 0475405

Project name: 17-21 Mary St, Auburn, NSW 2144
Document control number: S009139
Prepared for: ACE Civil Pty Ltd

© Copyright 2018 by ERM Worldwide Group Ltd and / or its affiliates ("ERM").
All rights reserved. No part of this work may be reproduced or transmitted in any form,
or by any means, without the prior written permission of ERM

Document history

ERM approval to issue

Version	Revision	Author	Reviewed by	Name	Date	Comments
1.0	00	Tristan Rodrigues	Anthony Richard	Richard Bolton	7/12/18	

Table of contents

1 Introduction	1
1.1 Objectives	1
2 Desktop Study.....	2
2.1 Site Observations	2
2.2 Regional Geology	2
2.3 Acid Sulphate Soils.....	2
2.4 Salinity and Aggressivity of Soils.....	2
2.5 NSW EPA Contaminated Land Register	2
2.6 Waste Classification Types	3
2.7 Waste Classification Criteria.....	4
3 Sampling Analysis & Quality Plan	5
3.1 VENM Assessment.....	5
3.2 Sampling Justification.....	5
3.3 Analysis	6
4 Results	7
4.1 Observations	7
4.2 Analytical Results	7
5 Discussion	10
6 Conclusions & Recommendations	11
7 Limitations.....	12

List of Tables

Table 1. <i>Site Identification Summary</i>	1
Table 2. <i>Material Descriptions</i>	7
Table 3. <i>Waste Classification Criteria (mg/kg)</i>	8
Table 4. <i>Summary of VENM Results (Samples: M1-M10)</i>	9

1 Introduction

ERM Services Australia Pty Ltd (ERM), was commissioned by ACE Civil Pty Ltd to conduct a Waste Classification assessment of soils at 17-21 Mary St, Auburn, NSW 2144 (the Site), refer to Table 1 for site identification details.

Table 1. *Site Identification Summary*

Item	Details
Address	17-21 Mary St, Auburn, NSW 2144
Local Government Authority	Auburn City Council
Lot/ DP	Lot 1319/DP1241830
Land Zoning	B4 – Mixed Use
Locality Map	Refer to Figure 1 – Site Location
Date of fieldwork	06/11/2018
Volume of material	30,000m ³
Surface Area	2,234m ² Refer to Figure 2
Material status	In-situ natural materials
Material description	Grey Sandy Clay with Orange inclusions, Brown grey sandy clay with orange inclusions and Dark Brown/Black sandy clay. No asbestos containing material, odours or staining were identified in the subject material.

1.1 Objectives

The objective of this assessment was to classify the soils within the subject area in accordance with the NSW Environment Protection Authority (EPA) Waste Classification Guidelines. Part 1: Classifying Waste (2014)..

The scope of this investigation included the following:

- Inspection of subject area.
- Collection of soil samples for analysis at a NATA accredited laboratory.
- Screening of analytical results against NSW EPA Waste Classification Guidelines (2014)
- Preparation of a report documenting the investigation process

2 Desktop Study

2.1 Site Observations

A review of online aerial photography was conducted using Nearthmaps (<https://au.nearthmap.com>) and Google Earth. The earliest available photograph from 2009 indicates that prior to redevelopment works, the Site was residential properties. The Site is surrounded by low density residential properties. Auburn train station is located approximately 300m to the North East.

2.2 Regional Geology

The 1:250,000 Sydney Geological Series Sheet S1 indicates that Shale with some sandstone beds of the Wianamatta group underlies the site.

2.3 Acid Sulphate Soils

Review of the Australian Soil Resource Information System indicates there are no known occurrences of acid sulfate soil in the vicinity of the site.

2.4 Salinity and Aggressivity of Soils

The Salinity Potential in Western Sydney map indicates the Site is within a region of low salinity potential.

2.5 NSW EPA Contaminated Land Register

A search was conducted of all records pertaining to section 58 of the Contaminated Land Management Act 1997 (NSW) and revealed that the site is not encumbered by any notices from the NSW EPA with regard to contaminated land. No sites in the vicinity of the site were identified to be encumbered by any notices.

2.6 Waste Classification Types

In accordance with land use Health Investigation Levels defined in the National Environment Protection (Assessment of Site Contamination) Amendment Measure (No. 1) ('NEPM', NEPC, 2013), soils being excavated from the sites may remain if they comply with the nominated criteria. Alternatively, if soils are to be excavated and disposed off-site, they will require Waste Classification in accordance with the NSW EPA Waste Classification Guidelines (2014) or the applicable NSW EPA Resource Recovery Exemption. Several possible waste types for the site are listed below:

Virgin Excavated Natural Material (VENM)

Schedule 1, Section 50 of the Protection of the Environment Operations (POEO) Act 1997 defines VENM as natural material (such as clay, gravel, sand, soil or rock fines):

- a. That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, and
- b. That does not contain any sulfidic ores or soils or any other waste.

Excavated Natural Material (ENM)

The EPA has the authority under the POEO Regulation to make certain materials exempt from being classified as waste. One such exemption relevant to development sites is ENM. ENM is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

- a. Been excavated from the ground;
- b. Contains at least 98% (by weight) natural material; and
- c. Does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, acid sulphate soils (ASS), potential ASS or sulfidic ores.

At the time the excavated natural material is received at the premises, the material must meet all chemical and other material requirements for excavated natural material which are required on or before the supply of excavated natural material under 'the excavated natural material order 2014.

General Solid Waste (non-putrescible)

General Solid Waste (GSW) is any waste or soil that complies with the definition of GSW within the Waste Classification Guidelines (NSW EPA, 2014) and exceeds the licensed threshold criteria of any recycling facility. GSW is compared to the 'CT1' criteria and may be re-classified if the Toxicity Characteristics Leaching Procedure (TCLP) is conducted. This procedure allows the soil/material been classified to be compared to the 'SCC1' criteria, if compliant with the 'TCLP' criteria.

Restricted Solid Waste

Restricted Solid Waste (RSW) is any waste or soil that complies with the definition of RSW within the Waste Classification Guidelines (NSW EPA, 2014) and exceeds the licensed threshold criteria of any recycling facility. RSW is compared to the 'CT2' criteria and may be re-classified if TCLP is conducted. This procedure allows the soil/material been classified to be compared to the 'SCC2' criteria, if compliant with the 'TCLP' criteria.

Hazardous Waste

Hazardous Waste is any waste or soil that exceeds the 'CT1' and 'SCC2' criteria but may be re-classified if TCLP is conducted.

Special Waste – Asbestos

Special Waste is a class of waste that has unique regulatory requirements. The potential environmental impacts of special waste need to be managed to minimise the risk of harm to the environment and human health. Special waste falls into one of the chemical classifications above.

2.7 Waste Classification Criteria

The characterisation of materials for off-site beneficial reuse or disposal will be performed in accordance with:

- Waste Classification Guidelines (NSW EPA, 2014);
- Excavated Natural Material Order (NSW EPA, 2014) and Excavated Natural Material Exemption (NSW EPA, 2014);
- Protection of the Environment Operations Act 1997 (NSW) and associated regulations; and
- All other relevant resource recovery orders, resource recovery exemptions and approvals issued by the NSW EPA.

A selection of criteria from the aforementioned sources are summarised in Table 3. Any criterion not listed can be found in the relevant guidelines and reference documents.

3 Sampling Analysis & Quality Plan

3.1 VENM Assessment

On the 6th of November 2018 ERM conducted an inspection of the site and in situ natural material. Visual inspection of the surface material and test pits revealed the natural material was homogenous. Considering this, no contaminated soil is expected to be found below natural material. Ten test pit samples were taken of the in situ material for analysis. In accordance with the PLDC Penrith Lakes Import Protocol VENM sample rate, for a volume of 30,000m³, nine samples are required. A stockpile of approximately 200m³ containing brown sandy clay with trace amounts of building materials was observed in the centre of the site. Additionally a small 50m³ stockpile of yellow sand and a 100m³ stockpile of concrete and bitumen was observed to be present in the western section of the site. **The stockpiled fill material, yellow sand and concrete/bitumen is not included in this classification. This classification applies only to the in-situ material proposed to be excavated within the nominated area identified in Figure 2.**

On the 26th November 2018 ERM conducted a follow up inspection of the site to confirm all stockpiled material had been removed. The stockpiled material was confirmed to be removed from the site. Refer to Photo 004 of **Appendix A – Photographic Gallery**

3.2 Sampling Justification

A total of 10 samples were collected for this investigation. Samples were collected systematically in situ, through ten test pit locations excavated to a depth of 0.5. Samples were collected at a depth of 0.5m below ground level using an excavator. Samples were collected within the area identified in **Figure 2 – Site Layout**.

The following field procedures were implemented as part of field QAQC:

- Collection of ten primary samples from the in-situ material;
- Decontamination of all sampling equipment between each sample; and,
- Collection of photographs of subject material

Sample Containers: Soil samples for chemical analyses were generally collected in accordance with the Sampling Design Guidelines (NSW EPA, 1995), NEPM (NEPC, 2013) and AS4482.1-2005. Collected soil samples were immediately transferred to sample containers of appropriate composition (glass jars for chemical analysis, plastic bags for asbestos). Job number; sample identification number; sample details and date of sampling were recorded on sample labels affixed to the sample containers. Samples were then placed immediately into a chilled esky to prevent the loss of potential volatile components

Decontamination: all equipment used in the sampling program was decontaminated prior to use and between samples to prevent cross contamination. Decontamination of equipment involved:

- Cleaning equipment in potable water to remove gross contamination;
- Cleaning in a solution of Decon 90; and,
- Rinsing in clean demineralised water then wiping with clean lint free cloths.

Chain of Custody: samples were recorded on a chain of custody form. The soil samples were transported under standard chain-of-custody protocols to Envirolab Services Pty Ltd and Australian Safer Environment and Technology Pty Ltd for analysis. Both laboratories are NATA accredited. Copies of the chain of custody forms, signed by laboratory, that acknowledged sample receipt date and time, samples received in good condition and properly chilled and documentation received in proper order, are provided in **Appendix B** - Nata certified Analytical Data.

3.3 Analysis

All chemical soil samples were sent to Envirolab Services Sydney for analysis and all asbestos samples were sent to Australian Safer Environment & Technology Pty Ltd. All soil samples were analysed for the following analytes:

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethyl-Benzene, Xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Heavy Metals: Arsenic (As), Chromium (Cr), Cadmium (Cd), Copper, (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Zinc (Zn);
- Organochlorine Pesticides (OCP);
- Organophosphorus Pesticides (OPP);
- Polychlorinated Biphenyls (PCB); and,
- Asbestos.
- pH
- EC

Samples were analysed for the above analytes to comply with the NSW EPA (2014) Waste Classification Guidelines to ensure there was no cross contamination from the stockpiled fill material.

4 Results

4.1 Observations

Four natural clay types were encountered on site along with fill material during the time of sampling. No asbestos containing material, odours or staining were identified in the subject material. This fill material has since been removed and all exposed surfaces are natural clays. Refer to **Appendix A** – Photographic Gallery and **Table 2**– Material Description.

Table 2. *Material Descriptions*

Sample ID	Material Description	Sampled Depth (m BGL)
M1	Brown/Grey sandy clay with orange inclusions	.5
M2	Grey sandy clay with red inclusions	0.5
M3	Grey Sandy Clay with orange inclusions	0.5
M4	Grey Sandy Clay with orange inclusions	0.5
M5	Grey Sandy Clay with orange inclusions	0.5
M6	Grey Sandy Clay with orange inclusions	0.5
M7	Grey sandy clay with red inclusions	0.5
M8	Grey Sandy Clay with orange inclusions	0.5
M9	Grey Sandy Clay with orange inclusions	0.5
M10	Dark Brown/Black sandy clay	0.5

4.2 Analytical Results

There were no detections above the laboratory limit of reporting (LOR) for BTEX, volatile and semi-volatile TRH, PAH, OCs, OPs, PCBs or asbestos in any of the samples collected. Detections above the LOR were recorded for all heavy metals with the exception of cadmium and mercury. The material was also analysed for salinity. Results indicated the material in M2, 5 and 9 was non- saline. Refer to **Appendix B** – NATA Certified Analytical Data.

As it is proposed to import the material to the PLDC site the material was assessed against the PLDC VENM importation criteria. 10 samples were collected exceeding the 9 required to import the 30000m³ volume., refer to **Table 3**. All samples analysed reported concentrations below the PLDC VENM importation criteria. The results are presented below in Table 4. The subject material is also considered to be 'non-putrescible'.

Table 3: Waste Classification Criteria (mg/kg)

Analyte	PLDC VENM Criteria ¹	
	Ave. Conc	Max Conc
BTEX		
Benzene	0.2	0.2
Toluene	0.5	0.5
Ethylbenzene	1	1
Xylenes (total)	1.5	1.5
Total Recoverable Hydrocarbons		
C6 – C10	25	25
>C10 – C36 6	100	100
Polycyclic Aeromantic Hydrocarbons		
PAH (total)	1	1
B(a)P	-	0.5
Heavy Metals		
Arsenic	20	40
Cadmium	0.5	3
Chromium	75	100
Copper	55	200
Lead	50	100
Mercury	0.5	1
Nickel	15	60
Zinc	120	300
Physical Parameters		
pH (pH units)	5-9	4.5-10
Foreign Materials	None	None
EC (dS/m)	--	--

#. NA - No applicable as these contaminants are only assessed using Specific Contaminant Concentrations

1. Penrith Lakes Importation Protocol, ref 0448886_Pj0949 issued August 2018. **Section 3.3.**

Table 4 – Summary of VENM Results (Samples: M1-M10)

Analytes	PLDC VENM Import Criteria (mg/kg) (Ave/Max)	Average Concentration (n=10)	Max Concentration
Heavy Metals(mg/Kg)			
Arsenic	20/40	8.4	28
Cadmium	0./3	Nd	Nd
Chromium	75/100	6.1	13
Copper	55/200	22	61
Lead	50/100	13	21
Mercury	0.51	Nd	Nd
Nickel	15/60	1.9	6
Zinc	120/300	17	58
PAH (mg/Kg)			
BaP	-	Nd	Nd
Total PAHs)	1/1	Nd	Nd
TRH			
F1	25/25	Nd	Nd
F2	50/50	Nd	Nd
F3	100/100	Nd	Nd
F4	100/100	Nd	Nd
PCB	0.1/0.1	Nd	Nd
Pesticides			
Moderately Harmful	N/A	Nd	Nd
Scheduled Chemicals	0.1/0.1	Nd	Nd
Asbestos			
Bonded	None	Nd	Nd
AF/FA	None	Nd	Nd
Texture & Salinity			
Texture			Heavy Clay
ECe (dS/m)		<2	<2
Class			Non Saline
Soil Aggressivity			
pH (pH units)	4.5 to 10	5.6	Max (5.8) Min (5.4)
Chloride (mg/Kg)		73	100
Sulphate (mg/Kg)		120	150

5 Discussion

ERM conducted an investigation of the in-situ soils in accordance with NSW EPA (2014) Waste Classification Guidelines and the PLDC Penrith Lakes Import Protocol. The material assessed in this investigation consisted of 30,000 m³ of grey sandy clay with orange inclusions, brown grey sandy clay with orange inclusions and dark brown/black sandy clay. During an inspection on the 6th November 2018 small stockpiles of concrete sand and fill material were observed onsite. . ERM reinspected the site on the 26th November 2018 and has confirmed this stockpiled material to be removed, leaving only the natural clays exposed on site.

Refer to **Figure 2** – Site Layout and **Appendix A** – Photographic Gallery.

A total of ten samples were collected from the in-situ natural clay soil. During the Site inspection and sampling, no signs of discoloration, staining, odours or foreign materials were observed which would indicate potential contamination or signs that the materials were not VENM.

There were no detections above the LOR for BTEX, TRH, PAH, Pesticides, PCBs or Asbestos. Detections above the LOR were reported for heavy metals, however the reported concentrations of heavy metals did not exceed the NSW EPA (2014) Waste classification criteria and were considered to be consistent with natural background concentrations for the region.

A desktop review, visual inspection and sampling assessment determined that the in-situ soil is suitable to be classified as VENM as defined by the Protection of the Environment Operations (Waste) Regulation 2014 and NSW EPA (2014) Waste Classification Guidelines, with no evidence found of contamination from manufactured chemicals or with process residues as a result of industrial, commercial, mining or agricultural activities.

6 Conclusions & Recommendations

Based on the information provided, the 30,000 m³ of in-situ material located in the Site, strictly limited to the in-situ grey sandy clay with orange inclusions, brown grey sandy clay with orange inclusions and dark brown/black sandy clay, complies with the definition of VENM provided in the POEO Act 1997 and is suitable to be received by sites able to receive VENM as per their DA requirements or a landfill facility licensed to accept this material. No fill materials are covered under this classification.

If any unexpected finds of potentially contaminated material is uncovered during excavation, or material observed to be different to the material described in this report is encountered, then these materials should be excavated separately with a clearance provided by a contaminated land professional.

7 Limitations

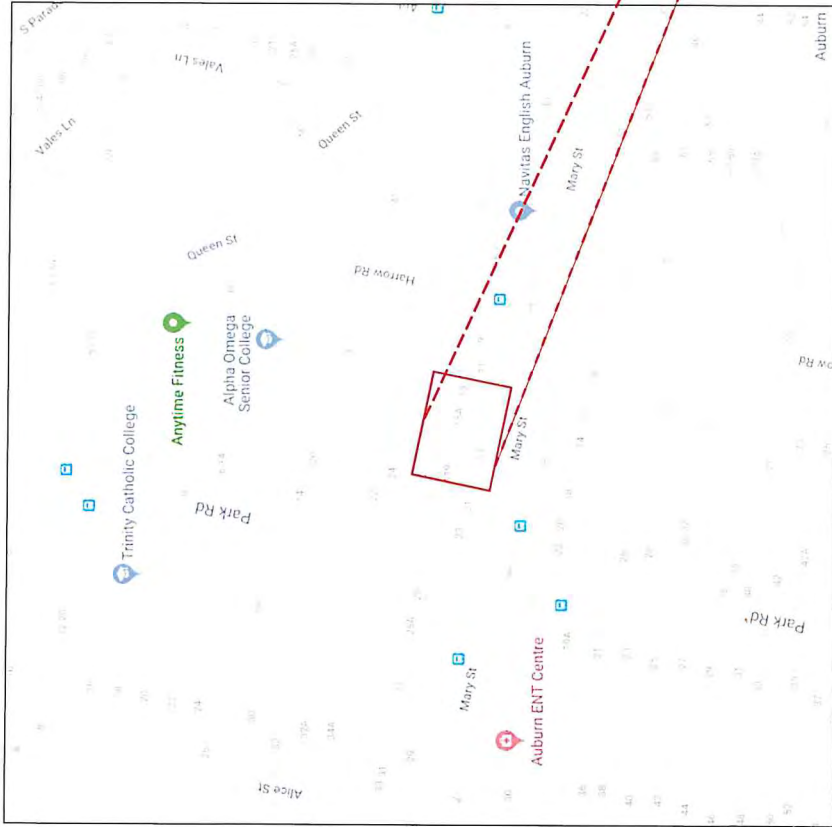
ERM Services Australia Pty Ltd (ERM) acts in all professional matters as a faithful advisor to the Client and exercises all reasonable skill and care in the provision of its professional services. Reports are commissioned by and prepared for the exclusive use of the Client. They are subject to and issued in accordance with the agreement between the Client and ERM. ERM is not responsible for any liability and accepts no responsibility whatsoever arising from the misapplication or misinterpretation by third parties of the contents of its reports. Reports cannot be copied or reproduced in whole or part for any purpose without the prior written agreement of ERM.

The conclusions presented in this report are relevant to the present condition of the Site and the state of legislation currently enacted as at the date of this report. ERM do not make any representation or warranty that the conclusions in this report will be applicable in the future as there may be changes in the condition of the Site, applicable legislation or other factors that would affect the conclusions contained in this report.

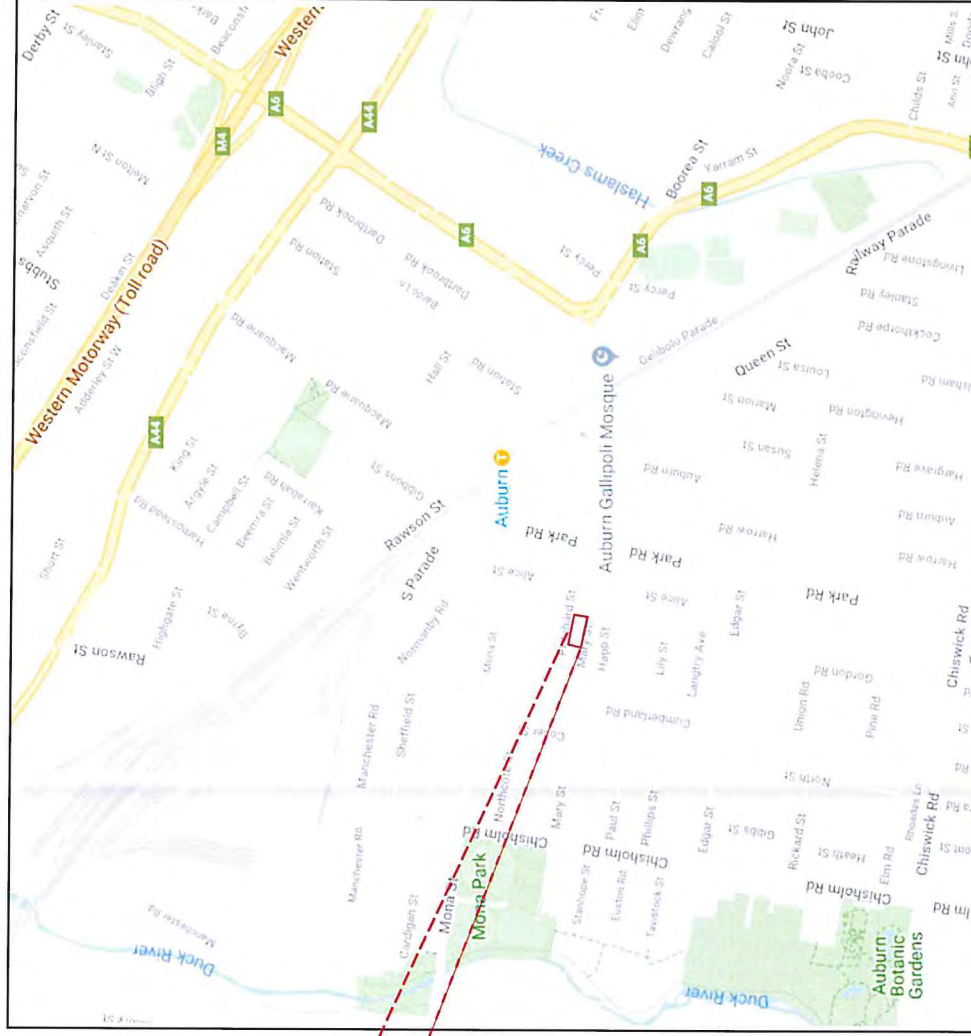
This report is limited to the scope defined herein. Sampling and chemical analysis of environmental media are based on representative samples, the intensity of those samples being in accordance with the usual levels of testing carried out for this type of investigation and appropriate for the objectives of this report. Due to the inherent variability in environmental media, ERM cannot warrant that the whole overall condition of the Site is identical or substantially similar to the representative samples.

Figure 1

Site Location



Locality Map



Legend



Approximate Site Location



ERM

Sydney
Unit 11 Macquarie Link
277 Lane Cove Road
Macquarie Park NSW 2113

Newcastle
Level 4
45 Watt Street
Newcastle NSW 2300

Title Site Location

Site Address	Project No.	Figure No.	Date
17- 21 Mary St, Auburn	0475405	1	7/11/2018
Client	Scale	Complied	Revision
ACE Civil Pty Ltd	Not to Scale	TR	Version 1.0

Figure 2

Site Layout



Legend

- Site Boundary
- ERM Sample Locations bgl

Figure Title
Site Layout & Sample Locations

Approximate Scale

0m 10m 20m

North Arrow

Figure No.	Date	Scale	Revision
0475405	7/11/2017	As Shown	2

Client	Project No.
ACE Civil Pty Ltd	0475405

Site Address	Date	Scale	Revision
17- 21 Mary St, Auburn, NSW, 2144	7/11/2017	As Shown	2

Version 1.0

Appendix A

Photographic Gallery



Photo 001

Mary St, Auburn, Surface of site.



Photo 002

Mary Street, Auburn. Stockpiled material to be excluded from classification observed on 8th November 2018



Photo 003

Mary Street, Auburn. Test pit showing natural clay material under fill layer.



Photo 004

Mary Street, Auburn. 26th November 2018, No fill remaining on site.

Appendix B

Nata certified Analytical Data



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET69160/ 72340 /1- 10
Your ref : 0475405- Mary St, Auburn
NATA Accreditation No: 14484

13 November 2018

ERM Services
11/277 Lane Cove Road
Macquarie Park NSW 2113



Attn: Mr Matthew Junghans

Accredited for compliance with ISO/IEC 17025.

Dear Matthew

Asbestos Identification

This report presents the results of ten samples, forwarded by ERM Services on 7 November 2018, for analysis for asbestos.

1.Introduction:Ten samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method (**Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction**) (**Qualitative Analysis only**).

The report also provides approximate weights and percentages, categories of asbestos forms appearing in the sample, such as **AF**(Asbestos Fines), **FA**(Friable Asbestos and **ACM** (Asbestos Containing Material), also satisfying the requirements of the WA/ NEPM Guidelines)

3. Results : **Sample No. 1. ASET69160 / 72340 / 1. 0475405 - M1.**

Approx dimensions 12.0 cm x 12.0 cm x 6.4 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 607.0g

Sample No. 2. ASET69160 / 72340 / 2. 0475405 - M2.

Approx dimensions 12.0 cm x 12.0 cm x 6.5 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone and brick.

No asbestos detected.

Approximate total dry weight of soil = 665.0g

Sample No. 3. ASET69160 / 72340 / 3. 0475405 - M3.

Approx dimensions 12.0 cm x 12.0 cm x 6.35 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone, brick and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 631.0g

Sample No. 4. ASET69160 / 72340 / 4. 0475405 - M4.

Approx dimensions 12.0 cm x 12.0 cm x 6.4 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 730.0g

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635

PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

OCCUPATIONAL HEALTH & SAFETY STUDIES • INDOOR AIR QUALITY SURVEYS • HAZARDOUS MATERIAL SURVEYS • RADIATION SURVEYS • ASBESTOS SURVEYS
ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING

ASET

Sample No. 5. ASET69160 / 72340 / 5. 0475405 - M5.

Approx dimensions 12.0 cm x 12.0 cm x 6.3 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone, brick, glass, bitumen and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 557.0g

Sample No. 6. ASET69160 / 72340 / 6. 0475405 - M6.

Approx dimensions 12.0 cm x 12.0 cm x 6.5 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone, brick, glass and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 593.0g

Sample No. 7. ASET69160 / 72340 / 7. 0475405 - M7.

Approx dimensions 12.0 cm x 12.0 cm x 6.4 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone, brick, glass and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 556.0g

Sample No. 8. ASET69160 / 72340 / 8. 0475405 - M8.

Approx dimensions 12.0 cm x 12.0 cm x 6.42 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone, brick and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 591.0g

Sample No. 9. ASET69160 / 72340 / 9. 0475405 - M9.

Approx dimensions 12.0 cm x 12.0 cm x 6.4 cm

The sample consisted of a mixture of clayish soil, stones, fragments of plaster, cement, sandstone and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 548.0g

Sample No. 10. ASET69160 / 72340 / 10. 0475405 - M10.

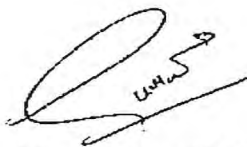
Approx dimensions 12.0 cm x 12.0 cm x 6.42 cm

The sample consisted of a mixture of sandy soil, stones, fragments of plaster, cement, sandstone and plant matter.

No asbestos detected.

Approximate total dry weight of soil = 551.0g

Reported by,



Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory



Accredited for compliance with ISO/IEC 17025.