



FDC Construction (NSW) Pty Ltd
ABN 72 608 609 427

22 - 24 Junction Street
Forest Lodge NSW 2037 Australia
T 61 2 8117 5000 | F 61 2 9566 2900
fdcbuilding.com.au

23/06/2020

Re: Macquarie University Central Courtyard Project, Gymnasium Road, Macquarie Park

Development Consent; SSD 8755, DA Condition C34:

To Whom it May Concern,

As required under condition C34 of SSD8755, FDC intends to load out soil from site as per the appended waste classification report, safe work notice and tip acceptance.

Costan Griziotis
Site Engineer, Construction NSW

0466 546 850
costang@fdcbuilding.com.au
22 - 24 Junction Street, Forest Lodge, NSW 2037



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Notice of intent to remove friable asbestos

Notification number: 943R-00268860-03

Date of notice: 26/02/2020

Notification status: Accepted

LICENCE DETAILS

Asbestos removal licence number: 212137

Expiry date: 26/03/2025

Licence holder name: Remedial Civil Solutions Pty Ltd

Class(es): Class A / ASA/ Class B / ASB

Registered business name: Remedial Civil Solutions Pty Ltd

A.B.N: 45162770283

Daytime contact number: 0406664665

WORK/ SITE DETAILS

Proposed work start date: 27/02/2020

Proposed work finish date: 31/08/2020

Site name: Gymnasium Rd Macquarie University

Site address: 192 Balaclava Rd North Ryde NSW 2113

Site owner: Fdc Construction

Telephone:

Approximate quantity of asbestos: 200

Amount of bonded asbestos: 0 Square metres

Detail location of asbestos on site: In Ground

Details of removal including method used to enclose the removal area: Exclusion zone with erected temporary fencing around the work zone with plastic sheeting on fencing and warning signs on display. Plastic or geofabric to cover stockpile material. Water to suppress dust

Waste disposal site name: Genesis

CLEARANCE CERTIFICATE PROVIDER

Competent person:

Telephone:

Licensed asbestos assessor: Anthony Richard

Number: LAA000181

Telephone: 85868705

SUPERVISOR/ WORKER DETAILS

Number of workers for this removal work: 3

Number of workers who have successfully completed relevant competency unit: 6

Supervisor	DOB	Competency	Telephone
MR Rithy Cheng	08/08/1972	ASA ASB	0423354880

All work is to be carried out in accordance with the *Work Health and Safety Regulation 2017* and the associated codes of practice. This notification to remove asbestos is required by clause 466 of the *Work Health and Safety Regulation 2017*. See Section 268 of the *Work Health and Safety Act 2011* for offences relating to the giving of false or misleading information under the Act or the Regulation.



D & W Plumbing and Civil Contractors Pty Ltd

2/22 Northumberland Road

Caringbah NSW 2229

16 June 2020

Report Number: 11118-ER-1-1
Project Name: Stormwater Pipe Installation Works
Site Location: Gymnasium Road, Macquarie Park NSW 2113 (Macquarie University)
Report Type: Waste Classification Report
Sample Locations: Stockpiled Soil Material (SP1)

Summary Table

Material Assessed	Stockpiled soil material (SP1) approximately 500 tonnes.
Material Classification	<i>Special Waste (non-friable asbestos) as General Solid Waste (CT1)</i>

Based on Alliance Geotechnical Pty Ltd's (AG) assessment, fieldwork observations and laboratory analytical data, as of the date of this report, the stockpiled soil material (SP1) assessed is classified as ***Special Waste (non-friable asbestos) as General Solid Waste (CT1)*** as per the NSW EPA *Waste Classification Guidelines* (2014) (WCG EPA, 2014).

1. Introduction

Alliance Geotechnical Pty Ltd (AG) was engaged by D & W Plumbing and Civil Contractors Pty Ltd (the client) to assess stockpiled soil material located at Gymnasium Road, Macquarie Park (within Macquarie University) NSW 2113 (refer to **Figure 1, Attachment 1**). The purpose of this assessment was to understand the contamination characteristics (if any) of soil materials to facilitate offsite disposal (only).

The following investigation/classification has been undertaken with reference to the relevant sections of WCG EPA, 2014.

2. History and production of waste

AG were informed that the stockpiled soil material was excavated from an underground stormwater pipe installation located onsite. No other information in regards to history and production of waste were provided to AG.

3. Potential contaminating activities

Based on AG's understanding of site history, there is potential for soil contaminating activities to have occurred at the site including uncontrolled filling activities.

4. Geological Survey

The Geological Sheet of Sydney (Scale 1:250,000) indicated the residual soils within the site to be underlain by the Wianamatta Group (Rwa), which features black to dark-shale and laminate.

5. Acid sulfate soils

A review of NSW Department of Planning, Industry and Environment 'eSpade' acid sulfate soils risk indicated that the site is located in an area mapped as *No Known Occurrence*. Soil investigations to assess for acid sulfate soils (ASS) was deemed unwarranted.

6. Fieldwork

The site was visited by an experienced Geotechnical consultant from AG on 15 June 2020 and the following observations were made:

- A total of three (3) soil samples (SP1-1 to SP1-3) were collected from one (1) stockpile of soil material (SP1), refer to **Figure 2, Attachment 1** and **Site Photographs, Attachment 2**;
- The soil material was generally comprised of Silty Gravely Clay;
- During sample collection foreign materials including suspected asbestos containing material was observed with one fragment (SP1-Frag) collected for laboratory analysis; and
- No hydrocarbons or staining were observed.

7. Quantity of materials

The weight of the stockpiled soil material (SP1) is estimated to be approximately 500 tonnes, assuming a bulk density of 1.8 t/m³.

The frequency of soil sampling was consistent with the requirements of NSW EPA *Excavated Natural Material Order 2014*.

8. Laboratory analysis

All samples collected were scheduled for analysis at a NATA accredited laboratory for a selected range of the following parameters:

- arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (Heavy metals);
- total recoverable hydrocarbons (TRHs);
- polycyclic aromatic hydrocarbons (PAHs);
- benzene, toluene, ethylbenzene, total xylene (BTEX);
- polychlorinated biphenyls (PCBs);
- organochlorine pesticides (OCPs);
- pH/EC; and
- asbestos ID.

The identifiers for samples were taken as follows:

SP1 – 1, SP1 – 2, SP1 – 3 and SP1 – Frag.

The results of the analysis are presented in **Table 1, Attachment 3** and **Laboratory Documentation, Attachment 4**.

8.1. Soil sampling and transportation

Upon inspection and logging of the material, soil samples were recovered by an appropriately experienced environmental consultant from AG and sent to a NATA accredited laboratory for analysis. The samples were recovered from site using disposable nitrile gloves and transferred into laboratory supplied 250mL glass jars, which were sealed with Teflon lids, and zip lock sealed 500mL asbestos bags. The sealed samples were placed into a chilled esky and transported to Eurofins Scientific | mgt, under Chain of Custody (COC) procedures. A new pair of nitrile gloves were used at each sample location to prevent cross-contamination.

8.2. Laboratory quality assurance and quality control

Eurofins Scientific | mgt is registered by NATA for chemical testing (1261) and quality system compliance to ISO/IEC 17025. A component of this quality system is checks on the analytical equipment to assess the accuracy of the results. Duplicates, spikes and blanks were not collected. However, based on the following AG considers the quality of the data to be acceptable:

- Primary samples were analysed by a NATA accredited laboratory;
- No evidence of odours or staining was observed in samples collected;
- Soil samples were collected using disposable gloves, in order to reduce the risk of cross contamination;
- Samples were placed in insulated containers with ice during storage and transport;

- Laboratory results for samples analysed for volatile contaminants of concern were less than the limit of reporting;
- Laboratory analytical results of primary samples were within the expected ranges in the context of this project and based on field observations; and
- AG considers the risk of volatile losses during storage and handling to be low.

9. Waste classification assessment

The 6-step classification procedure in *WCG EPA, 2014* was followed, with the results presented in **Table 8.1** below:

Table 8.1. NSW EPA Waste Classification Guidelines (2014) – 6 Step Classification Procedure

Step	Material Observation
1 <i>Is the waste special waste?</i>	Yes. Asbestos was detected within sample fragment 'SP1-Frag' in the form of grey fibre cement fragment (35x25x5mm).
2 <i>Is the waste liquid waste?</i>	No. The fill comprised a soil matrix.
3 <i>Is the waste pre-classified?</i>	No. The fill is not pre-classified with reference to <i>WCG EPA, 2014</i> .
4 <i>Does the waste possess hazardous characteristics</i>	No. The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5 <i>Waste classification using chemical assessment.</i>	Yes. All soil samples returned analytical results less than the General Solid Waste (CT1) criteria, as outlined in the <i>WCG EPA, 2014</i> .
6 <i>Is the waste putrescible or non-putrescible?</i>	Non-putrescible. The fill does not contain materials considered to be putrescible. *

*wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (*WCG EPA, 2014*).

10. Material classification

Based on Alliance Geotechnical Pty Ltd's (AG) assessment, fieldwork observations and laboratory analytical data, as of the date of this report, the stockpiled soil material (SP1) assessed is classified as **Special Waste (non-friable asbestos) as General Solid Waste (CT1)** as per the NSW EPA Waste Classification Guidelines (2014) (*WCG EPA, 2014*).

If the material was to be excavated and disposed based on the currently available data, AG recommends that:

- all waste be disposed offsite to an appropriately NSW EPA licenced waste facility;
- the asbestos impacted soil be handled by a Class B licenced contractor under the supervision of a qualified occupational hygienist, with the appropriate controls in place, as per the SafeWork NSW Codes of Practice: How to Safely Remove Asbestos (2016) and the site Environmental Management Plan (if available); and
- the waste generator retains transport and tipping records for all waste removed from site.

Should unexpected finds be uncovered during excavation of the stockpiled material described in this waste classification, works are to cease and a suitably qualified environmental consultant engaged to assess the potential implication with regard to this waste classification.

This conclusion must be read in conjunction with the statement of limitations presented in **Section 11**.

11. Statement of limitations

The findings presented in this report are based on chemical analysis, physical observations made during a site inspection, and anecdotal information that were made available during the course of this investigation. To the best of our knowledge, these observations represent a reasonable interpretation of the general condition of the site at the time of report completion.

This report has been prepared solely for the use of the client to whom it is addressed and no other party is entitled to rely on its findings.

No warranties are made as to the information provided in this report. All conclusions and recommendations made in this report are of the professional opinions of personnel involved with the project and while normal checking of the accuracy of data has been conducted, any circumstances outside the scope of this report or which are not made known to personnel and which may impact on those opinions is not the responsibility of Alliance Geotechnical Pty Ltd.

Should you need any further information, please do not hesitate to contact the undersigned.

For and on behalf of,
Alliance Geotechnical Pty Ltd



Alexander Williams
B. Env. (Sci & Management)
Graduate Environmental Consultant

Reviewed by:



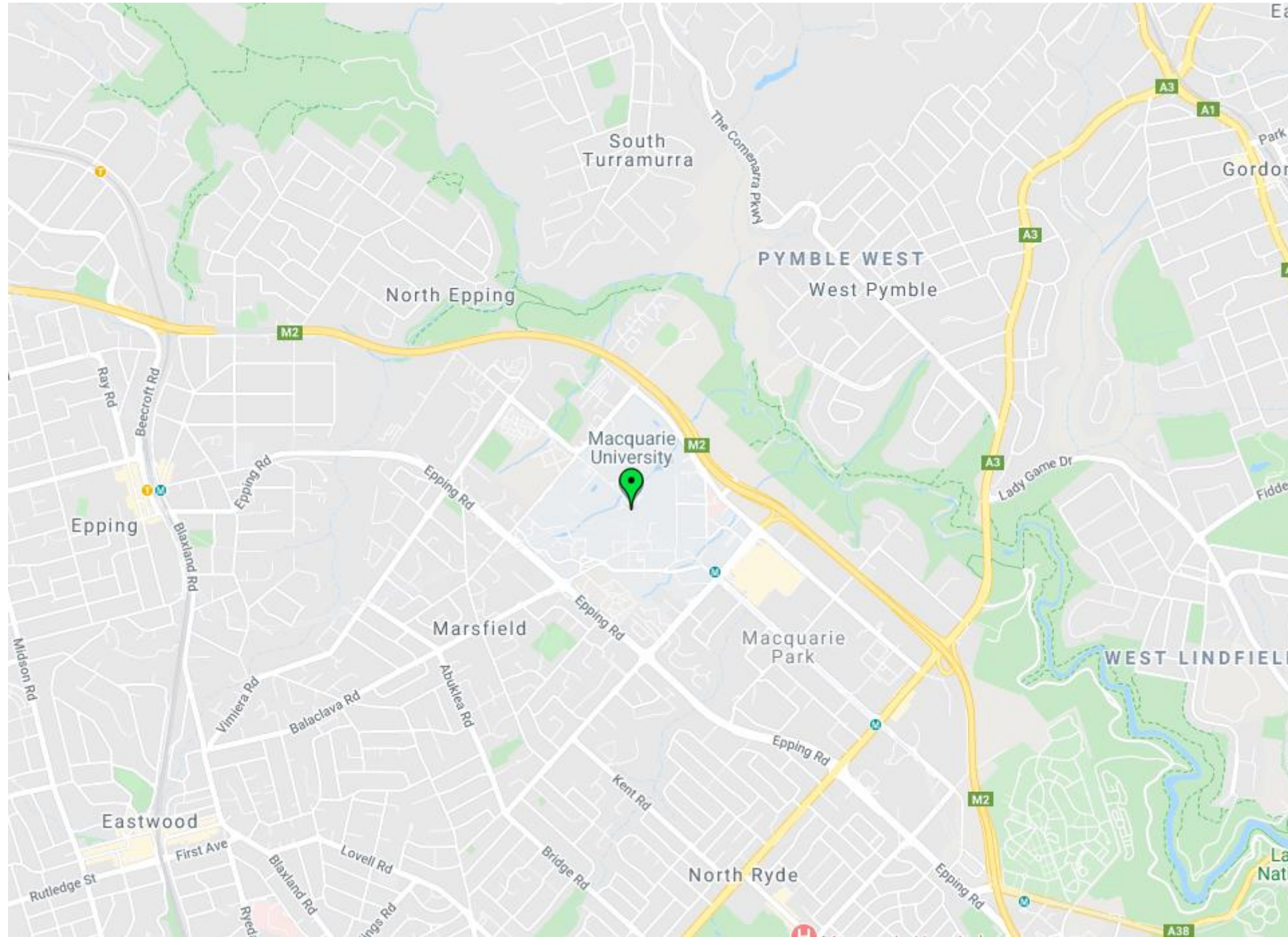
Michael Dunesky
B. Ap Sci (Env Mgt)
Senior Environmental Scientist

Attachments:

- 1) *Figures*
- 2) *Site Photograph*
- 3) *Results Summary Tables*
- 4) *Laboratory Reports and Chain of Custody Documentation*

ATTACHMENT 1

FIGURES



Legend

Site Location 

Source: Nearmap

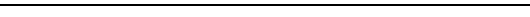


Legend

Approximate Stockpile Location (SP1)



Source: Nearmap

 Alliance Geotechnical ENGINEERING ENVIRONMENTAL TESTING Manage the earth, eliminate the risk	Sample Location					
	Client Name:	D & W Plumbing and Civil Contractors Pty Ltd			Figure Number:	2
	Project Name:	Stormwater Installation			Figure Date:	16 June 2019
	Project Location:	Gymnasium Road, Macquarie Park (Macquarie University)			Report Number:	11118-ER-1-1

ATTACHMENT 2

SITE PHOTOGRAPHS



Stockpiled soil Material (SP1) looking SE as observed 15.06.20



Stockpiled soil material (SP1) looking NW as observed 15.06.20

 Alliance Geotechnical ENGINEERING ENVIRONMENTAL TESTING Manage the earth, eliminate the risk	Site Photographs					
	Client Name:	D & W Plumbing and Civil Contractors Pty Ltd			Figure Number:	-
	Project Name:	Stormwater Installation			Figure Date:	16 June 2019
	Project Location:	Gymnasium Road, Macquarie Park (Macquarie University)			Report Number:	11118-ER-1-1





Suspected asbestos fragment within stockpiled soil material (SP1) as observed 15.06.20

ATTACHMENT 3
RESULTS SUMMARY TABLES

Table 1
Macquarie Park (Macquarie University)
Soil Results & Waste Assessment Criteria
11118/ER-1-1

												Sample ID			SP1-1	SP1-2	SP1-3	SP1-FRAG
												Reference			S20-Jn23967	S20-Jn23968	S20-Jn23969	S20-Jn23970
Group	Analyte	Units	PQL	GSW Criteria CT1	RSW Criteria CT2	GSW Criteria TCLP1 (mg/L)	GSW Criteria SCC1 (mg/kg)	RSW Criteria TCLP2 (mg/L)	RSW Criteria SCC2 (mg/kg)	ENM Maximum Average	ENM Absolute Maximum	DATASET AVERAGE	DATASET MINIMUM	DATASET MAXIMUM				
Metals	Arsenic	mg/kg	2	100	400	*	500	*	2,000	20	40	5.5	4.2	7.3	4.9	7.3	4.2	-
	Cadmium	mg/kg	0.4	20	80	*	100	*	400	0.5	1	<0.4	<0.4	<0.4	< 0.4	< 0.4	< 0.4	-
	Chromium	mg/kg	5	100	400	*	1,900	*	7,600	75	150	20.3	16	27	18	27	16	-
	Copper	mg/kg	5	*	*	*	*	*	*	100	200	17	13	24	24	14	13	-
	Lead	mg/kg	5	100	400	*	1,500	*	6,000	50	100	21.3	20	23	20	23	21	-
	Mercury	mg/kg	0.1	4	16	*	50	*	200	0.5	1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Nickel	mg/kg	5	40	160	*	1,050	*	4,200	30	60	7.3	5.9	8.6	7.5	8.6	5.9	-
	Zinc	mg/kg	5	*	*	*	*	*	*	150	300	33	28	37	37	34	28	-
PAHS	Acenaphthylene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Acenaphthene	mg/kg	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	-
	Benz(a)anthracene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene	mg/kg	0.5	0.8	3.2	*	10	*	23	0.5	1	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	0.6	0.6	0.6	0.6	0.6	0.6	-
	Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	1.2	1.2	1.2	1.2	1.2	1.2	-
	Benzo(b&j)fluoranthene	mg/kg	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	-
	Benzo(k)fluoranthene	mg/kg	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	-
	Dibenz(a,h)anthracene	mg/kg	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	-
	Fluorene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Naphthalene	mg/kg	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	-
	Pyrene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Total PAH*	mg/kg	0.5	200	800	N/A	200	N/A	800	20	40	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
TRH/BTEX	TRH C ₆ - C ₉	mg/kg	20	650	2,600	N/A	650	N/A	2,600	*	*	<20	<20	<20	< 20	< 20	< 20	-
	TRH C ₁₀ - C ₃₆	mg/kg	50	10,000	40,000	N/A	10,000	N/A	40,000	250	500	<50	<50	<50	< 50	< 50	< 50	-
	Benzene	mg/kg	0.1	10	40	*	18	*	72	*	0.5	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Ethylbenzene	mg/kg	0.1	600	2,400	*	1,080	*	4,320	*	25	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	m&p-Xylenes	mg/kg	0.2	*	*	*	*	*	*	*	*	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	-
	o-Xylene	mg/kg	0.1	*	*	*	*	*	*	*	*	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Toluene	mg/kg	0.1	288	1,152	*	518	*	2,073	*	65	<0.10	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Xylenes - Total	mg/kg	0.3	1,000	4,000	*	1,800	*	7,200	*	15	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.3	-
OC Pesticides	Endosulfan ^a	mg/kg	0.05	60	240	*	108	*	432	*	*	<0.05	<0.05	<0.05	< 0.2	< 0.2	< 0.2	-
	Scheduled Chemicals ^b	mg/kg	0.05	<50	<50	*	<50	*	<50	*	*	<0.05	<0.05	<0.05	< 0.2	< 0.2	< 0.2	-
PCB	Polychlorinated Biphenyls	mg/kg	0.5	<50	<50	*	<50	*	<50	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
Physical Parameters	pH	pH units	-	*	*	*	*	*	*	5 - 9	4.5 - 10	9.6	9.1	10	10.0	9.1	9.8	-
	EC	dS/m	0.005	*	*	*	*	*	*	1.5	3	0.1	0.1	0.15	0.15	0.1	0.14	-
Asbestos	Asbestos ID	%	0.01	Detection	Detection	*	Detection	*	Detection	Detection	Detection				No	No	No	Yes

Concentration exceeding General Solid Waste Criteria CT1 (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria CT2 (NSW EPA Waste Classification Guidelines)

Concentration exceeding General Solid Waste Criteria TCLP1 (mg/L) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria TCLP2 (mg/L) SCC1 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding General Solid Waste Criteria SCC1 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria SCC2 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Excavated Natural Material Maximum Average Criteria (ENM Order 2014)

Concentration exceeding Excavated Natural Material Absolute Maximum Criteria (ENM Order 2014)

* =

No currently available criterion

- =

No sample analysed

a =

Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan Sulfate

b =

Scheduled Chemicals means the total of Aldrin, Alpha-BHC, Beta-BHC, Gamma-BHC (Lindane), Delta BHC, Chlordane, DDD, DDE, DDT, Dieldrin, Endrin and Endrin Aldehyde

ATTACHMENT 4

LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

Alliance Geotechnical
10 Welder Road
Seven Hills
NSW 2147



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Michael Dunesky**

Report **725617-S**
 Project name **MACQ UNI**
 Project ID **11118**
 Received Date **Jun 15, 2020**

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
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
4-Bromofluorobenzene (surr.)	1	%	50	57	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	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
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

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
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
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	%	92	87	87
p-Terphenyl-d14 (surr.)	1	%	76	64	80
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05
α-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
β-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
δ-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
γ-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Dibutylchloroendate (surr.)	1	%	93	128	128
Tetrachloro-m-xylene (surr.)	1	%	88	104	89
Polychlorinated Biphenyls					
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	93	128	128
Tetrachloro-m-xylene (surr.)	1	%	88	104	89

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
Test/Reference	LOR	Unit			
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	150	100	140
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	10	9.1	9.8
% Moisture	1	%	14	15	14
Heavy Metals					
Arsenic	2	mg/kg	4.9	7.3	4.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	27	16
Copper	5	mg/kg	24	14	13
Lead	5	mg/kg	20	23	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.5	8.6	5.9
Zinc	5	mg/kg	37	34	28

Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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	Sydney	Jun 15, 2020	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Jun 15, 2020	14 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 15, 2020	14 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 15, 2020	28 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Jun 15, 2020	180 Days
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Sydney	Jun 15, 2020	7 Days
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Sydney	Jun 15, 2020	7 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Jun 15, 2020	14 Days

Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147
Project Name: MACQ UNI
Project ID: 11118

Order No.:
Report #: 725617
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Jun 15, 2020 5:29 PM
Due: Jun 16, 2020
Priority: 1 Day
Contact Name: Michael Dunesky

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos Absence /Presence	Conductivity (1:5 aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Moisture Set	Alliance WAC Suite 2-TRH/BTEXN/PAH/M8/OC/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SP1-1	Jun 15, 2020		Soil	S20-Jn23967		X	X	X	X
2	SP1-2	Jun 15, 2020		Soil	S20-Jn23968		X	X	X	X
3	SP1-3	Jun 15, 2020		Soil	S20-Jn23969		X	X	X	X
4	SP1-FRAG	Jun 15, 2020		Building Materials	S20-Jn23970	X				
Test Counts						1	3	3	3	3

Internal Quality Control Review and Glossary

General

1. 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.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	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.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. 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.
2. 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.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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	
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	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	82			70-130	Pass	
TRH C10-C14	%	103			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	112			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	103			70-130	Pass	
m&p-Xylenes	%	108			70-130	Pass	
o-Xylene	%	113			70-130	Pass	
Xylenes - Total*	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	73			70-130	Pass	
TRH C6-C10	%	81			70-130	Pass	
TRH >C10-C16	%	103			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	84			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benzo(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	%	86			70-130	Pass	
Benzo(g,h,i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	79			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a,h)anthracene	%	106			70-130	Pass	
Fluoranthene	%	92			70-130	Pass	
Fluorene	%	88			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	101			70-130	Pass	
Naphthalene	%	87			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chlordanes - Total				%	109			70-130	Pass	
4.4'-DDD				%	103			70-130	Pass	
4.4'-DDE				%	119			70-130	Pass	
4.4'-DDT				%	129			70-130	Pass	
a-BHC				%	110			70-130	Pass	
Aldrin				%	107			70-130	Pass	
b-BHC				%	117			70-130	Pass	
d-BHC				%	122			70-130	Pass	
Dieldrin				%	120			70-130	Pass	
Endosulfan I				%	122			70-130	Pass	
Endosulfan II				%	129			70-130	Pass	
Endosulfan sulphate				%	106			70-130	Pass	
Endrin				%	110			70-130	Pass	
Endrin aldehyde				%	76			70-130	Pass	
Endrin ketone				%	110			70-130	Pass	
g-BHC (Lindane)				%	125			70-130	Pass	
Heptachlor				%	116			70-130	Pass	
Heptachlor epoxide				%	85			70-130	Pass	
Hexachlorobenzene				%	112			70-130	Pass	
Methoxychlor				%	120			70-130	Pass	
LCS - % Recovery										
Polychlorinated Biphenyls										
Aroclor-1016				%	108			70-130	Pass	
Aroclor-1260				%	112			70-130	Pass	
LCS - % Recovery										
Conductivity (1:5 aqueous extract at 25°C as rec.)				%	96			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	96			70-130	Pass	
Cadmium				%	94			70-130	Pass	
Chromium				%	97			70-130	Pass	
Copper				%	95			70-130	Pass	
Lead				%	97			70-130	Pass	
Mercury				%	95			70-130	Pass	
Nickel				%	96			70-130	Pass	
Zinc				%	92			70-130	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	S20-Jn23962	NCP	%		71			70-130	Pass	
TRH C10-C14	S20-Jn23739	NCP	%		81			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
TRH >C10-C16	S20-Jn13246	NCP	%		77			70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Acenaphthene	S20-Jn23962	NCP	%		97			70-130	Pass	
Acenaphthylene	S20-Jn23962	NCP	%		82			70-130	Pass	
Anthracene	S20-Jn23962	NCP	%		93			70-130	Pass	
Benz(a)anthracene	S20-Jn23962	NCP	%		86			70-130	Pass	
Benzo(a)pyrene	S20-Jn23962	NCP	%		89			70-130	Pass	
Benzo(b&i)fluoranthene	S20-Jn23962	NCP	%		81			70-130	Pass	
Benzo(g,h,i)perylene	S20-Jn23962	NCP	%		94			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn23962	NCP	%		90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	S20-Jn23962	NCP	%	103			70-130	Pass	
Dibenz(a,h)anthracene	S20-Jn23962	NCP	%	97			70-130	Pass	
Fluoranthene	S20-Jn23962	NCP	%	73			70-130	Pass	
Fluorene	S20-Jn23962	NCP	%	90			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23962	NCP	%	94			70-130	Pass	
Naphthalene	S20-Jn23962	NCP	%	88			70-130	Pass	
Phenanthrene	S20-Jn23962	NCP	%	97			70-130	Pass	
Pyrene	S20-Jn23962	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	S20-Jn23962	NCP	%	109			70-130	Pass	
4.4'-DDE	S20-Jn23962	NCP	%	112			70-130	Pass	
4.4'-DDT	S20-Jn23962	NCP	%	117			70-130	Pass	
a-BHC	S20-Jn23962	NCP	%	106			70-130	Pass	
Aldrin	S20-Jn23962	NCP	%	89			70-130	Pass	
b-BHC	S20-Jn23962	NCP	%	98			70-130	Pass	
d-BHC	S20-Jn23962	NCP	%	118			70-130	Pass	
Dieldrin	S20-Jn23962	NCP	%	101			70-130	Pass	
Endosulfan I	S20-Jn23962	NCP	%	98			70-130	Pass	
Endosulfan II	S20-Jn23962	NCP	%	107			70-130	Pass	
Endosulfan sulphate	S20-Jn23962	NCP	%	94			70-130	Pass	
Endrin	S20-Jn23962	NCP	%	98			70-130	Pass	
Endrin aldehyde	S20-Jn23962	NCP	%	119			70-130	Pass	
Endrin ketone	S20-Jn23962	NCP	%	103			70-130	Pass	
g-BHC (Lindane)	S20-Jn23962	NCP	%	119			70-130	Pass	
Heptachlor	S20-Jn23962	NCP	%	105			70-130	Pass	
Hexachlorobenzene	S20-Jn23962	NCP	%	95			70-130	Pass	
Methoxychlor	S20-Jn23962	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Jn23962	NCP	%	115			70-130	Pass	
Aroclor-1260	S20-Jn23962	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Jn13438	NCP	%	88			70-130	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	S20-Jn23961	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-Jn23294	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Jn23961	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Jn23961	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S20-Jn23961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S20-Jn23961	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S20-Jn23294	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S20-Jn23294	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
d-BHC	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Heptachlor	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S20-Jn12378	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S20-Jn11951	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Total PCB*	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	S20-Jn14307	NCP	uS/cm	15	15	2.0	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	S20-Jn14307	NCP	pH Units	5.7	5.7	Pass	30%	Pass
% Moisture	S20-Jn23785	NCP	%	24	21	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S20-Jn18320	NCP	mg/kg	8.9	12	33	30%	Fail
Cadmium	S20-Jn18320	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S20-Jn18320	NCP	mg/kg	200	200	3.0	30%	Pass
Copper	S20-Jn18320	NCP	mg/kg	19	18	7.0	30%	Pass
Lead	S20-Jn18320	NCP	mg/kg	70	78	12	30%	Pass
Mercury	S20-Jn18320	NCP	mg/kg	0.2	0.2	2.0	30%	Pass
Nickel	S20-Jn18320	NCP	mg/kg	19	18	5.0	30%	Pass
Zinc	S20-Jn18320	NCP	mg/kg	97	98	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	No
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 Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson 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 or please [click here](#).

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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025—Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Alliance Geotechnical
10 Welder Road
Seven Hills
NSW 2147

Attention: Michael Dunesky
Report 725617-AID
Project Name MACQ UNI
Project ID 11118
Received Date Jun 15, 2020
Date Reported Jun 16, 2020

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples 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, AS4964 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 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g 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 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "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". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name MACQ UNI
Project ID 11118
Date Sampled Jun 15, 2020
Report 725617-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
SP1-1	20-Jn23967	Jun 15, 2020	Approximate Sample 260g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-2	20-Jn23968	Jun 15, 2020	Approximate Sample 305g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-3	20-Jn23969	Jun 15, 2020	Approximate Sample 300g Sample consisted of: Brown coarse-grained clayey soil, brick, cement fragments and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-FRAG	20-Jn23970	Jun 15, 2020	Approximate Sample 7g / 35x25x5mm Sample consisted of: Grey fibre cement fragment	Chrysotile and amosite asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Asbestos - LTM-ASB-8020	Sydney	Jun 15, 2020	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Jun 15, 2020	Indefinite

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN – 50 005 085 521

web : www.eurofins.com.au

e.mail : EnviroSales@eurofins.com

Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147
Project Name: MACQ UNI
Project ID: 11118

Order No.:
Report #: 725617
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Jun 15, 2020 5:29 PM
Due: Jun 16, 2020
Priority: 1 Day
Contact Name: Michael Dunesky

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos Absence /Presence	Conductivity (1:5 aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Moisture Set	Alliance WAC Suite 2-TRH/BTEXN/PAH/M8/OC/PCBI/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SP1-1	Jun 15, 2020		Soil	S20-Jn23967		X	X	X	X
2	SP1-2	Jun 15, 2020		Soil	S20-Jn23968		X	X	X	X
3	SP1-3	Jun 15, 2020		Soil	S20-Jn23969		X	X	X	X
4	SP1-FRAG	Jun 15, 2020		Building Materials	S20-Jn23970	X				
Test Counts						1	3	3	3	3

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 blue colour, 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 '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 Sample Receipt Advice.

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: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to "non-bonded / friable".
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
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.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	No
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
N/A	Not applicable

Asbestos Counter/Identifier:

Chamath JHM Annakkage Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias Senior Analyst-Asbestos (NSW)



Glenn Jackson
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 or please [click here](#).

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Company		ALLIANCE GEOTECHNICAL		Project №		11118		Project Manager		M. Durely		Sampler(s)													
Address		10 WELDER ROAD, SEVEN HILLS NSW		Project Name		Macq Uni		EDD Format (ESdat, EQUIS, Custom)				Handed over by													
Contact Name				Analyses (Note: Where results are requested, please specify "Total" or "Filtered") SUITE code must be used to enter SUITE pricing		WAC Suite 2 pH/EC Asbestos ID								Email for Invoice		Michael Calligo.									
Phone №														Email for Results		com.au									
Special Directions		Purchase Order												Quote ID №											
No		Client Sample ID		Sampled Date/Time (dd/mm/yy hh:mm)		Matrix (Solid (S) Water (W))																			
1		SP1-1		15.6.20		S		/		/															
2		SP1-2						/		/															
3		SP1-3						/		/															
4		SP1 - Frag				Fragment		/		/															
5																									
6																									
7																									
8																									
9																									
10																									
Total Counts																									
Method of Shipment		☒ Courier (#) ☐ Hand Delivered ☐ Postal		Name				Signature		M. D		Date		15.6.20		Time									
Eurofins mgt		Received By		SYD BNE MEL PER ADL NTL DRW		Signature						Date		15.6.20		Time									
Laboratory Use Only		Received By		KATHY N (SYD BNE MEL PER ADL NTL DRW		Signature						Date		15.6.20		Time									

23 June 2020

Remedial Civil Solutions
2/22 Centenary Ave,
Moorebank NSW 2170

Letter of Material Acceptance for Macquarie University - Stormwater Pipe Installation Works

To whom it may concern,

Asbestos soil material from Gymnasium Road (Macquarie Uni), MACQUARIE PARK has been accepted and approved to dispose at our landfill site at 1 Kangaroo Ave Eastern Creek based on the information provided in the waste classification report document provided below.

- Report Number: 11118-ER-1-1
- Volume Accepted: 500 tonnes (SP1)
- Job # supplied: A499

Eastern Creek Landfill Licence No: EPL No 13426

Yours sincerely

M Walters

Maxzine Walters
Resource Recovery
M: 0418 600 008
E: maxzine.walters@bingoindustries.com.au

23 June 2020

Remedial Civil Solutions
2/22 Centenary Ave,
Moorebank NSW 2170

Letter of Material Acceptance for Macquarie University - Stormwater Pipe Installation Works

To whom it may concern,

Asbestos soil material from Gymnasium Road (Macquarie Uni), MACQUARIE PARK has been accepted and approved to dispose at our landfill site at 1 Kangaroo Ave Eastern Creek based on the information provided in the waste classification report document provided below.

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Eastern Creek Landfill Licence No: EPL No 13426

Yours sincerely

M Walters

Maxzine Walters
Resource Recovery
M: 0418 600 008
E: maxzine.walters@bingoindustries.com.au

Notice of intent to remove friable asbestos

Notification number: 943R-00268860-03

Date of notice: 26/02/2020

Notification status: Accepted

LICENCE DETAILS

Asbestos removal licence number: 212137

Expiry date: 26/03/2025

Licence holder name: Remedial Civil Solutions Pty Ltd

Class(es): Class A / ASA/ Class B / ASB

Registered business name: Remedial Civil Solutions Pty Ltd

A.B.N: 45162770283

Daytime contact number: 0406664665

WORK/ SITE DETAILS

Proposed work start date: 27/02/2020

Proposed work finish date: 31/08/2020

Site name: Gymnasium Rd Macquarie University

Site address: 192 Balaclava Rd North Ryde NSW 2113

Site owner: Fdc Construction

Telephone:

Approximate quantity of asbestos: 200

Amount of bonded asbestos: 0 Square metres

Detail location of asbestos on site: In Ground

Details of removal including method used to enclose the removal area: Exclusion zone with erected temporary fencing around the work zone with plastic sheeting on fencing and warning signs on display. Plastic or geofabric to cover stockpile material. Water to suppress dust

Waste disposal site name: Genesis

CLEARANCE CERTIFICATE PROVIDER

Competent person:

Telephone:

Licensed asbestos assessor: Anthony Richard

Number: LAA000181

Telephone: 85868705

SUPERVISOR/ WORKER DETAILS

Number of workers for this removal work: 3

Number of workers who have successfully completed relevant competency unit: 6

Supervisor	DOB	Competency	Telephone
MR Rithy Cheng	08/08/1972	ASA ASB	0423354880

All work is to be carried out in accordance with the *Work Health and Safety Regulation 2017* and the associated codes of practice. This notification to remove asbestos is required by clause 466 of the *Work Health and Safety Regulation 2017*. See Section 268 of the *Work Health and Safety Act 2011* for offences relating to the giving of false or misleading information under the Act or the Regulation.



D & W Plumbing and Civil Contractors Pty Ltd

2/22 Northumberland Road

Caringbah NSW 2229

16 June 2020

Report Number: 11118-ER-1-1
Project Name: Stormwater Pipe Installation Works
Site Location: Gymnasium Road, Macquarie Park NSW 2113 (Macquarie University)
Report Type: Waste Classification Report
Sample Locations: Stockpiled Soil Material (SP1)

Summary Table

Material Assessed	Stockpiled soil material (SP1) approximately 500 tonnes.
Material Classification	<i>Special Waste (non-friable asbestos) as General Solid Waste (CT1)</i>

Based on Alliance Geotechnical Pty Ltd's (AG) assessment, fieldwork observations and laboratory analytical data, as of the date of this report, the stockpiled soil material (SP1) assessed is classified as ***Special Waste (non-friable asbestos) as General Solid Waste (CT1)*** as per the NSW EPA *Waste Classification Guidelines* (2014) (WCG EPA, 2014).

1. Introduction

Alliance Geotechnical Pty Ltd (AG) was engaged by D & W Plumbing and Civil Contractors Pty Ltd (the client) to assess stockpiled soil material located at Gymnasium Road, Macquarie Park (within Macquarie University) NSW 2113 (refer to **Figure 1, Attachment 1**). The purpose of this assessment was to understand the contamination characteristics (if any) of soil materials to facilitate offsite disposal (only).

The following investigation/classification has been undertaken with reference to the relevant sections of WCG EPA, 2014.

2. History and production of waste

AG were informed that the stockpiled soil material was excavated from an underground stormwater pipe installation located onsite. No other information in regards to history and production of waste were provided to AG.

3. Potential contaminating activities

Based on AG's understanding of site history, there is potential for soil contaminating activities to have occurred at the site including uncontrolled filling activities.

4. Geological Survey

The Geological Sheet of Sydney (Scale 1:250,000) indicated the residual soils within the site to be underlain by the Wianamatta Group (Rwa), which features black to dark-shale and laminate.

5. Acid sulfate soils

A review of NSW Department of Planning, Industry and Environment 'eSpade' acid sulfate soils risk indicated that the site is located in an area mapped as *No Known Occurrence*. Soil investigations to assess for acid sulfate soils (ASS) was deemed unwarranted.

6. Fieldwork

The site was visited by an experienced Geotechnical consultant from AG on 15 June 2020 and the following observations were made:

- A total of three (3) soil samples (SP1-1 to SP1-3) were collected from one (1) stockpile of soil material (SP1), refer to **Figure 2, Attachment 1** and **Site Photographs, Attachment 2**;
- The soil material was generally comprised of Silty Gravely Clay;
- During sample collection foreign materials including suspected asbestos containing material was observed with one fragment (SP1-Frag) collected for laboratory analysis; and
- No hydrocarbons or staining were observed.

7. Quantity of materials

The weight of the stockpiled soil material (SP1) is estimated to be approximately 500 tonnes, assuming a bulk density of 1.8 t/m³.

The frequency of soil sampling was consistent with the requirements of NSW EPA *Excavated Natural Material Order 2014*.

8. Laboratory analysis

All samples collected were scheduled for analysis at a NATA accredited laboratory for a selected range of the following parameters:

- arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (Heavy metals);
- total recoverable hydrocarbons (TRHs);
- polycyclic aromatic hydrocarbons (PAHs);
- benzene, toluene, ethylbenzene, total xylene (BTEX);
- polychlorinated biphenyls (PCBs);
- organochlorine pesticides (OCPs);
- pH/EC; and
- asbestos ID.

The identifiers for samples were taken as follows:

SP1 – 1, SP1 – 2, SP1 – 3 and SP1 – Frag.

The results of the analysis are presented in **Table 1, Attachment 3** and **Laboratory Documentation, Attachment 4**.

8.1. Soil sampling and transportation

Upon inspection and logging of the material, soil samples were recovered by an appropriately experienced environmental consultant from AG and sent to a NATA accredited laboratory for analysis. The samples were recovered from site using disposable nitrile gloves and transferred into laboratory supplied 250mL glass jars, which were sealed with Teflon lids, and zip lock sealed 500mL asbestos bags. The sealed samples were placed into a chilled esky and transported to Eurofins Scientific | mgt, under Chain of Custody (COC) procedures. A new pair of nitrile gloves were used at each sample location to prevent cross-contamination.

8.2. Laboratory quality assurance and quality control

Eurofins Scientific | mgt is registered by NATA for chemical testing (1261) and quality system compliance to ISO/IEC 17025. A component of this quality system is checks on the analytical equipment to assess the accuracy of the results. Duplicates, spikes and blanks were not collected. However, based on the following AG considers the quality of the data to be acceptable:

- Primary samples were analysed by a NATA accredited laboratory;
- No evidence of odours or staining was observed in samples collected;
- Soil samples were collected using disposable gloves, in order to reduce the risk of cross contamination;
- Samples were placed in insulated containers with ice during storage and transport;

- Laboratory results for samples analysed for volatile contaminants of concern were less than the limit of reporting;
- Laboratory analytical results of primary samples were within the expected ranges in the context of this project and based on field observations; and
- AG considers the risk of volatile losses during storage and handling to be low.

9. Waste classification assessment

The 6-step classification procedure in *WCG EPA, 2014* was followed, with the results presented in **Table 8.1** below:

Table 8.1. NSW EPA Waste Classification Guidelines (2014) – 6 Step Classification Procedure

Step	Material Observation
1 <i>Is the waste special waste?</i>	Yes. Asbestos was detected within sample fragment 'SP1-Frag' in the form of grey fibre cement fragment (35x25x5mm).
2 <i>Is the waste liquid waste?</i>	No. The fill comprised a soil matrix.
3 <i>Is the waste pre-classified?</i>	No. The fill is not pre-classified with reference to <i>WCG EPA, 2014</i> .
4 <i>Does the waste possess hazardous characteristics</i>	No. The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5 <i>Waste classification using chemical assessment.</i>	Yes. All soil samples returned analytical results less than the General Solid Waste (CT1) criteria, as outlined in the <i>WCG EPA, 2014</i> .
6 <i>Is the waste putrescible or non-putrescible?</i>	Non-putrescible. The fill does not contain materials considered to be putrescible. *

*wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (*WCG EPA, 2014*).

10. Material classification

Based on Alliance Geotechnical Pty Ltd's (AG) assessment, fieldwork observations and laboratory analytical data, as of the date of this report, the stockpiled soil material (SP1) assessed is classified as **Special Waste (non-friable asbestos) as General Solid Waste (CT1)** as per the NSW EPA Waste Classification Guidelines (2014) (*WCG EPA, 2014*).

If the material was to be excavated and disposed based on the currently available data, AG recommends that:

- all waste be disposed offsite to an appropriately NSW EPA licenced waste facility;
- the asbestos impacted soil be handled by a Class B licenced contractor under the supervision of a qualified occupational hygienist, with the appropriate controls in place, as per the SafeWork NSW Codes of Practice: How to Safely Remove Asbestos (2016) and the site Environmental Management Plan (if available); and
- the waste generator retains transport and tipping records for all waste removed from site.

Should unexpected finds be uncovered during excavation of the stockpiled material described in this waste classification, works are to cease and a suitably qualified environmental consultant engaged to assess the potential implication with regard to this waste classification.

This conclusion must be read in conjunction with the statement of limitations presented in **Section 11**.

11. Statement of limitations

The findings presented in this report are based on chemical analysis, physical observations made during a site inspection, and anecdotal information that were made available during the course of this investigation. To the best of our knowledge, these observations represent a reasonable interpretation of the general condition of the site at the time of report completion.

This report has been prepared solely for the use of the client to whom it is addressed and no other party is entitled to rely on its findings.

No warranties are made as to the information provided in this report. All conclusions and recommendations made in this report are of the professional opinions of personnel involved with the project and while normal checking of the accuracy of data has been conducted, any circumstances outside the scope of this report or which are not made known to personnel and which may impact on those opinions is not the responsibility of Alliance Geotechnical Pty Ltd.

Should you need any further information, please do not hesitate to contact the undersigned.

For and on behalf of,
Alliance Geotechnical Pty Ltd



Alexander Williams
B. Env. (Sci & Management)
Graduate Environmental Consultant

Reviewed by:



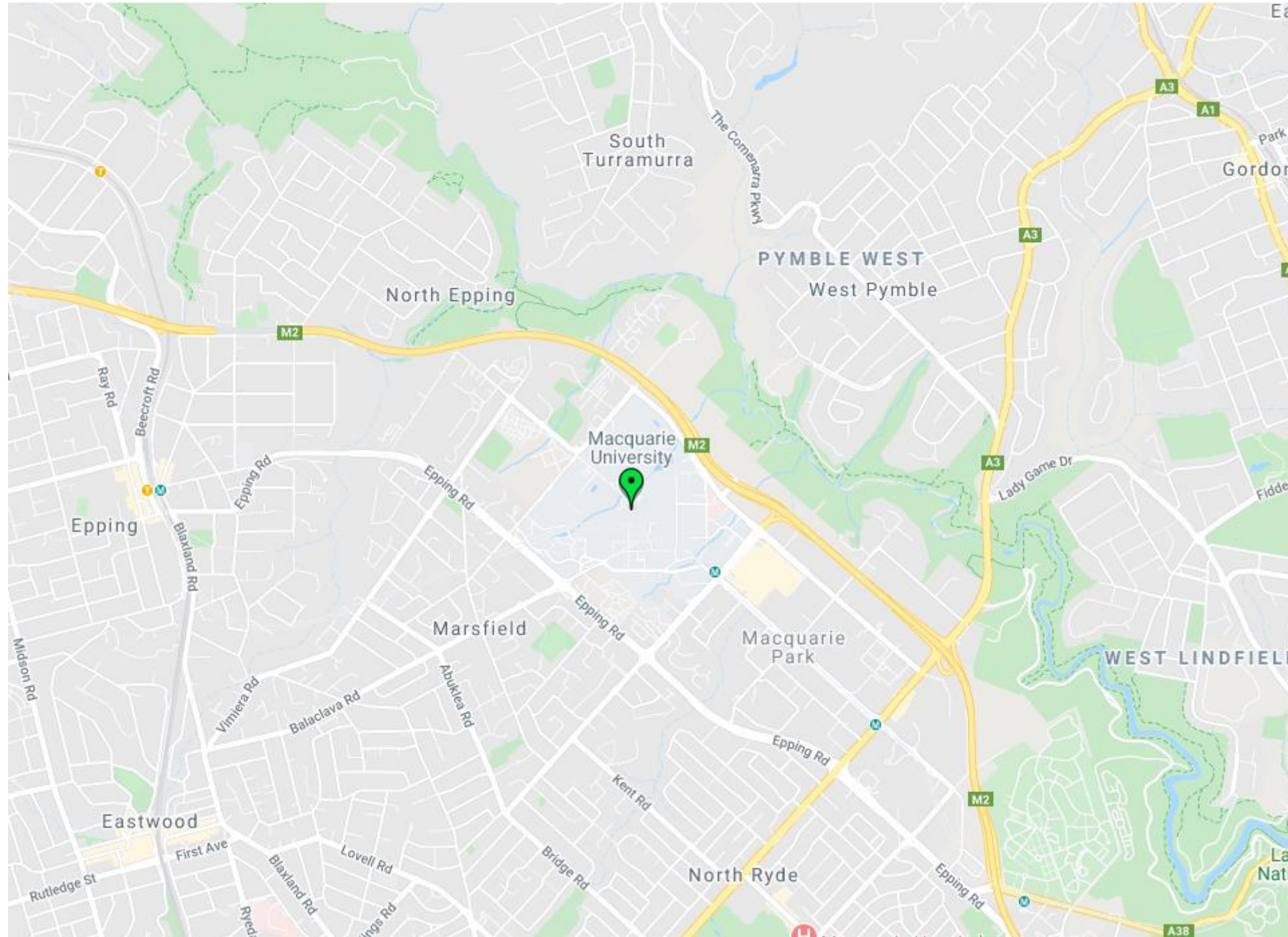
Michael Dunesky
B. Ap Sci (Env Mgt)
Senior Environmental Scientist

Attachments:

- 1) *Figures*
- 2) *Site Photograph*
- 3) *Results Summary Tables*
- 4) *Laboratory Reports and Chain of Custody Documentation*

ATTACHMENT 1

FIGURES



Legend

Site Location 

Source: Nearmap



Legend

Approximate Stockpile Location (SP1)



Source: Nearmap

 Alliance Geotechnical ENGINEERING ENVIRONMENTAL TESTING Manage the earth, eliminate the risk	Sample Location			Figure Number: 2	
	Client Name:	D & W Plumbing and Civil Contractors Pty Ltd			Figure Date: 16 June 2019
	Project Name:	Stormwater Installation			Report Number: 11118-ER-1-1
	Project Location:	Gymnasium Road, Macquarie Park (Macquarie University)			



ATTACHMENT 2

SITE PHOTOGRAPHS



Stockpiled soil Material (SP1) looking SE as observed 15.06.20



Stockpiled soil material (SP1) looking NW as observed 15.06.20

 Alliance Geotechnical ENGINEERING ENVIRONMENTAL TESTING Manage the earth, eliminate the risk	Site Photographs					
	Client Name:	D & W Plumbing and Civil Contractors Pty Ltd			Figure Number:	-
	Project Name:	Stormwater Installation			Figure Date:	16 June 2019
	Project Location:	Gymnasium Road, Macquarie Park (Macquarie University)			Report Number:	11118-ER-1-1





Suspected asbestos fragment within stockpiled soil material (SP1) as observed 15.06.20

 Alliance Geotechnical ENGINEERING ENVIRONMENTAL TESTING Manage the earth, eliminate the risk	Site Photographs					
	Client Name:	D & W Plumbing and Civil Contractors Pty Ltd			Figure Number:	-
	Project Name:	Stormwater Installation			Figure Date:	16 June 2019
	Project Location:	Gymnasium Road, Macquarie Park (Macquarie University)			Report Number:	11118-ER-1-1



ATTACHMENT 3
RESULTS SUMMARY TABLES

Table 1
Macquarie Park (Macquarie University)
Soil Results & Waste Assessment Criteria
11118/ER-1-1

												Sample ID			SP1-1	SP1-2	SP1-3	SP1-FRAG
												Reference			S20-Jn23967	S20-Jn23968	S20-Jn23969	S20-Jn23970
Group	Analyte	Units	PQL	GSW Criteria CT1	RSW Criteria CT2	GSW Criteria TCLP1 (mg/L)	GSW Criteria SCC1 (mg/kg)	RSW Criteria TCLP2 (mg/L)	RSW Criteria SCC2 (mg/kg)	ENM Maximum Average	ENM Absolute Maximum	DATASET AVERAGE	DATASET MINIMUM	DATASET MAXIMUM				
Metals	Arsenic	mg/kg	2	100	400	*	500	*	2,000	20	40	5.5	4.2	7.3	4.9	7.3	4.2	-
	Cadmium	mg/kg	0.4	20	80	*	100	*	400	0.5	1	<0.4	<0.4	<0.4	< 0.4	< 0.4	< 0.4	-
	Chromium	mg/kg	5	100	400	*	1,900	*	7,600	75	150	20.3	16	27	18	27	16	-
	Copper	mg/kg	5	*	*	*	*	*	*	100	200	17	13	24	24	14	13	-
	Lead	mg/kg	5	100	400	*	1,500	*	6,000	50	100	21.3	20	23	20	23	21	-
	Mercury	mg/kg	0.1	4	16	*	50	*	200	0.5	1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Nickel	mg/kg	5	40	160	*	1,050	*	4,200	30	60	7.3	5.9	8.6	7.5	8.6	5.9	-
	Zinc	mg/kg	5	*	*	*	*	*	*	150	300	33	28	37	37	34	28	-
PAHS	Acenaphthylene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Acenaphthene	mg/kg	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	-
	Benz(a)anthracene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene	mg/kg	0.5	0.8	3.2	*	10	*	23	0.5	1	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	0.6	0.6	0.6	0.6	0.6	0.6	-
	Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	*	*	*	*	*	*	*	*	1.2	1.2	1.2	1.2	1.2	1.2	-
	Benzo(b&j)fluoranthene	mg/kg	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	-
	Benzo(k)fluoranthene	mg/kg	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	-
	Dibenz(a,h)anthracene	mg/kg	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	-
	Fluorene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Naphthalene	mg/kg	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	-
	Pyrene	mg/kg	0.5	*	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
	Total PAH*	mg/kg	0.5	200	800	N/A	200	N/A	800	20	40	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
TRH/BTEX	TRH C ₆ - C ₉	mg/kg	20	650	2,600	N/A	650	N/A	2,600	*	*	<20	<20	<20	< 20	< 20	< 20	-
	TRH C ₁₀ - C ₃₆	mg/kg	50	10,000	40,000	N/A	10,000	N/A	40,000	250	500	<50	<50	<50	< 50	< 50	< 50	-
	Benzene	mg/kg	0.1	10	40	*	18	*	72	*	0.5	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Ethylbenzene	mg/kg	0.1	600	2,400	*	1,080	*	4,320	*	25	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	m&p-Xylenes	mg/kg	0.2	*	*	*	*	*	*	*	*	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	-
	o-Xylene	mg/kg	0.1	*	*	*	*	*	*	*	*	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Toluene	mg/kg	0.1	288	1,152	*	518	*	2,073	*	65	<0.10	<0.1	<0.1	< 0.1	< 0.1	< 0.1	-
	Xylenes - Total	mg/kg	0.3	1,000	4,000	*	1,800	*	7,200	*	15	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.3	-
OC	Endosulfan ^a	mg/kg	0.05	60	240	*	108	*	432	*	*	<0.05	<0.05	<0.05	< 0.2	< 0.2	< 0.2	-
Pesticides	Scheduled Chemicals ^b	mg/kg	0.05	<50	<50	*	<50	*	<50	*	*	<0.05	<0.05	<0.05	< 0.2	< 0.2	< 0.2	-
PCB	Polychlorinated Biphenyls	mg/kg	0.5	<50	<50	*	<50	*	<50	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	-
Physical Parameters	pH	pH units	-	*	*	*	*	*	*	5 - 9	4.5 - 10	9.6	9.1	10	10.0	9.1	9.8	-
	EC	dS/m	0.005	*	*	*	*	*	*	1.5	3	0.1	0.1	0.15	0.15	0.1	0.14	-
Asbestos	Asbestos ID	%	0.01	Detection	Detection	*	Detection	*	Detection	Detection	Detection				No	No	No	Yes

Concentration exceeding General Solid Waste Criteria CT1 (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria CT2 (NSW EPA Waste Classification Guidelines)

Concentration exceeding General Solid Waste Criteria TCLP1 (mg/L) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria TCLP2 (mg/L) SCC1 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding General Solid Waste Criteria SCC1 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Restricted Solid Waste Criteria SCC2 (mg/kg) (NSW EPA Waste Classification Guidelines)

Concentration exceeding Excavated Natural Material Maximum Average Criteria (ENM Order 2014)

Concentration exceeding Excavated Natural Material Absolute Maximum Criteria (ENM Order 2014)

* =

No currently available criterion

- =

No sample analysed

a =

Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan Sulfate

b =

Scheduled Chemicals means the total of Aldrin, Alpha-BHC, Beta-BHC, Gamma-BHC (Lindane), Delta BHC, Chlordane, DDD, DDE, DDT, Dieldrin, Endrin and Endrin Aldehyde

ATTACHMENT 4

LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

Alliance Geotechnical
10 Welder Road
Seven Hills
NSW 2147



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Michael Dunesky

Report 725617-S
Project name MACQ UNI
Project ID 11118
Received Date Jun 15, 2020

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
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
4-Bromofluorobenzene (surr.)	1	%	50	57	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	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
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

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
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
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	%	92	87	87
p-Terphenyl-d14 (surr.)	1	%	76	64	80
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05
α-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
β-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
δ-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
γ-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Dibutylchloroendate (surr.)	1	%	93	128	128
Tetrachloro-m-xylene (surr.)	1	%	88	104	89
Polychlorinated Biphenyls					
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	93	128	128
Tetrachloro-m-xylene (surr.)	1	%	88	104	89

Client Sample ID			SP1-1	SP1-2	SP1-3
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23967	S20-Jn23968	S20-Jn23969
Date Sampled			Jun 15, 2020	Jun 15, 2020	Jun 15, 2020
Test/Reference	LOR	Unit			
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	150	100	140
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	10	9.1	9.8
% Moisture	1	%	14	15	14
Heavy Metals					
Arsenic	2	mg/kg	4.9	7.3	4.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	27	16
Copper	5	mg/kg	24	14	13
Lead	5	mg/kg	20	23	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.5	8.6	5.9
Zinc	5	mg/kg	37	34	28

Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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	Sydney	Jun 15, 2020	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jun 15, 2020	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Jun 15, 2020	14 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 15, 2020	14 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 15, 2020	28 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Jun 15, 2020	180 Days
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Sydney	Jun 15, 2020	7 Days
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Sydney	Jun 15, 2020	7 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Jun 15, 2020	14 Days

Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147
Project Name: MACQ UNI
Project ID: 11118

Order No.:
Report #: 725617
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Jun 15, 2020 5:29 PM
Due: Jun 16, 2020
Priority: 1 Day
Contact Name: Michael Dunesky

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos Absence /Presence	Conductivity (1:5 aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Moisture Set	Alliance WAC Suite 2-TRH/BTEXN/PAH/M8/OC/PCBI/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SP1-1	Jun 15, 2020		Soil	S20-Jn23967		X	X	X	X
2	SP1-2	Jun 15, 2020		Soil	S20-Jn23968		X	X	X	X
3	SP1-3	Jun 15, 2020		Soil	S20-Jn23969		X	X	X	X
4	SP1-FRAG	Jun 15, 2020		Building Materials	S20-Jn23970	X				
Test Counts						1	3	3	3	3

Internal Quality Control Review and Glossary

General

1. 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.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	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.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. 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.
2. 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.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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	
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	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	82			70-130	Pass	
TRH C10-C14	%	103			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	112			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	103			70-130	Pass	
m&p-Xylenes	%	108			70-130	Pass	
o-Xylene	%	113			70-130	Pass	
Xylenes - Total*	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	73			70-130	Pass	
TRH C6-C10	%	81			70-130	Pass	
TRH >C10-C16	%	103			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	84			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benzo(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	%	86			70-130	Pass	
Benzo(g,h,i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	79			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a,h)anthracene	%	106			70-130	Pass	
Fluoranthene	%	92			70-130	Pass	
Fluorene	%	88			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	101			70-130	Pass	
Naphthalene	%	87			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chlordanes - Total				%	109			70-130	Pass	
4.4'-DDD				%	103			70-130	Pass	
4.4'-DDE				%	119			70-130	Pass	
4.4'-DDT				%	129			70-130	Pass	
a-BHC				%	110			70-130	Pass	
Aldrin				%	107			70-130	Pass	
b-BHC				%	117			70-130	Pass	
d-BHC				%	122			70-130	Pass	
Dieldrin				%	120			70-130	Pass	
Endosulfan I				%	122			70-130	Pass	
Endosulfan II				%	129			70-130	Pass	
Endosulfan sulphate				%	106			70-130	Pass	
Endrin				%	110			70-130	Pass	
Endrin aldehyde				%	76			70-130	Pass	
Endrin ketone				%	110			70-130	Pass	
g-BHC (Lindane)				%	125			70-130	Pass	
Heptachlor				%	116			70-130	Pass	
Heptachlor epoxide				%	85			70-130	Pass	
Hexachlorobenzene				%	112			70-130	Pass	
Methoxychlor				%	120			70-130	Pass	
LCS - % Recovery										
Polychlorinated Biphenyls										
Aroclor-1016				%	108			70-130	Pass	
Aroclor-1260				%	112			70-130	Pass	
LCS - % Recovery										
Conductivity (1:5 aqueous extract at 25°C as rec.)				%	96			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	96			70-130	Pass	
Cadmium				%	94			70-130	Pass	
Chromium				%	97			70-130	Pass	
Copper				%	95			70-130	Pass	
Lead				%	97			70-130	Pass	
Mercury				%	95			70-130	Pass	
Nickel				%	96			70-130	Pass	
Zinc				%	92			70-130	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	S20-Jn23962	NCP	%		71			70-130	Pass	
TRH C10-C14	S20-Jn23739	NCP	%		81			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
TRH >C10-C16	S20-Jn13246	NCP	%		77			70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Acenaphthene	S20-Jn23962	NCP	%		97			70-130	Pass	
Acenaphthylene	S20-Jn23962	NCP	%		82			70-130	Pass	
Anthracene	S20-Jn23962	NCP	%		93			70-130	Pass	
Benz(a)anthracene	S20-Jn23962	NCP	%		86			70-130	Pass	
Benzo(a)pyrene	S20-Jn23962	NCP	%		89			70-130	Pass	
Benzo(b&i)fluoranthene	S20-Jn23962	NCP	%		81			70-130	Pass	
Benzo(g,h,i)perylene	S20-Jn23962	NCP	%		94			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn23962	NCP	%		90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	S20-Jn23962	NCP	%	103			70-130	Pass	
Dibenz(a,h)anthracene	S20-Jn23962	NCP	%	97			70-130	Pass	
Fluoranthene	S20-Jn23962	NCP	%	73			70-130	Pass	
Fluorene	S20-Jn23962	NCP	%	90			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23962	NCP	%	94			70-130	Pass	
Naphthalene	S20-Jn23962	NCP	%	88			70-130	Pass	
Phenanthrene	S20-Jn23962	NCP	%	97			70-130	Pass	
Pyrene	S20-Jn23962	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	S20-Jn23962	NCP	%	109			70-130	Pass	
4.4'-DDE	S20-Jn23962	NCP	%	112			70-130	Pass	
4.4'-DDT	S20-Jn23962	NCP	%	117			70-130	Pass	
a-BHC	S20-Jn23962	NCP	%	106			70-130	Pass	
Aldrin	S20-Jn23962	NCP	%	89			70-130	Pass	
b-BHC	S20-Jn23962	NCP	%	98			70-130	Pass	
d-BHC	S20-Jn23962	NCP	%	118			70-130	Pass	
Dieldrin	S20-Jn23962	NCP	%	101			70-130	Pass	
Endosulfan I	S20-Jn23962	NCP	%	98			70-130	Pass	
Endosulfan II	S20-Jn23962	NCP	%	107			70-130	Pass	
Endosulfan sulphate	S20-Jn23962	NCP	%	94			70-130	Pass	
Endrin	S20-Jn23962	NCP	%	98			70-130	Pass	
Endrin aldehyde	S20-Jn23962	NCP	%	119			70-130	Pass	
Endrin ketone	S20-Jn23962	NCP	%	103			70-130	Pass	
g-BHC (Lindane)	S20-Jn23962	NCP	%	119			70-130	Pass	
Heptachlor	S20-Jn23962	NCP	%	105			70-130	Pass	
Hexachlorobenzene	S20-Jn23962	NCP	%	95			70-130	Pass	
Methoxychlor	S20-Jn23962	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Jn23962	NCP	%	115			70-130	Pass	
Aroclor-1260	S20-Jn23962	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Jn13438	NCP	%	88			70-130	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	S20-Jn23961	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-Jn23294	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Jn23961	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Jn23961	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Jn23961	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S20-Jn23961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S20-Jn23961	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S20-Jn23294	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S20-Jn23294	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S20-Jn23294	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S20-Jn12378	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
d-BHC	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S20-Jn12378	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Heptachlor	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S20-Jn12378	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S20-Jn12378	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S20-Jn11951	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Total PCB*	S20-Jn11951	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	S20-Jn14307	NCP	uS/cm	15	15	2.0	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	S20-Jn14307	NCP	pH Units	5.7	5.7	Pass	30%	Pass
% Moisture	S20-Jn23785	NCP	%	24	21	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S20-Jn18320	NCP	mg/kg	8.9	12	33	30%	Fail
Cadmium	S20-Jn18320	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S20-Jn18320	NCP	mg/kg	200	200	3.0	30%	Pass
Copper	S20-Jn18320	NCP	mg/kg	19	18	7.0	30%	Pass
Lead	S20-Jn18320	NCP	mg/kg	70	78	12	30%	Pass
Mercury	S20-Jn18320	NCP	mg/kg	0.2	0.2	2.0	30%	Pass
Nickel	S20-Jn18320	NCP	mg/kg	19	18	5.0	30%	Pass
Zinc	S20-Jn18320	NCP	mg/kg	97	98	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	No
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 Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson 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 or please [click here](#).

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Alliance Geotechnical
10 Welder Road
Seven Hills
NSW 2147



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025—Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: Michael Dunesky
Report 725617-AID
Project Name MACQ UNI
Project ID 11118
Received Date Jun 15, 2020
Date Reported Jun 16, 2020

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples 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, AS4964 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 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g 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 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "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". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name MACQ UNI
Project ID 11118
Date Sampled Jun 15, 2020
Report 725617-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
SP1-1	20-Jn23967	Jun 15, 2020	Approximate Sample 260g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-2	20-Jn23968	Jun 15, 2020	Approximate Sample 305g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-3	20-Jn23969	Jun 15, 2020	Approximate Sample 300g Sample consisted of: Brown coarse-grained clayey soil, brick, cement fragments and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SP1-FRAG	20-Jn23970	Jun 15, 2020	Approximate Sample 7g / 35x25x5mm Sample consisted of: Grey fibre cement fragment	Chrysotile and amosite asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Asbestos - LTM-ASB-8020	Sydney	Jun 15, 2020	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Jun 15, 2020	Indefinite

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN – 50 005 085 521

web : www.eurofins.com.au

e.mail : EnviroSales@eurofins.com

Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147
Project Name: MACQ UNI
Project ID: 11118

Order No.:
Report #: 725617
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Jun 15, 2020 5:29 PM
Due: Jun 16, 2020
Priority: 1 Day
Contact Name: Michael Dunesky

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos Absence /Presence	Conductivity (1:5 aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Moisture Set	Alliance WAC Suite 2-TRH/BTEXN/PAH/M8/OC/P/PCBI/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SP1-1	Jun 15, 2020		Soil	S20-Jn23967		X	X	X	X
2	SP1-2	Jun 15, 2020		Soil	S20-Jn23968		X	X	X	X
3	SP1-3	Jun 15, 2020		Soil	S20-Jn23969		X	X	X	X
4	SP1-FRAG	Jun 15, 2020		Building Materials	S20-Jn23970	X				
Test Counts						1	3	3	3	3

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 blue colour, 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 '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 Sample Receipt Advice.

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: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to "non-bonded / friable".
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
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.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	No
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
N/A	Not applicable

Asbestos Counter/Identifier:

Chamath JHM Annakkage Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias Senior Analyst-Asbestos (NSW)



Glenn Jackson
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 or please [click here](#).

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