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Northern Beaches Council **1 December 2020**
Civic Centre, 725 Pittwater Road,
Dee Why, NSW

Report Number: 11724-ER-1-1
Report Type: Indicative Waste Classification Report
Project Name: Proposed Clubhouse and Sports Centre
Site Location: Kentwell Street, Warringah NSW 2100
Sample Identifiers: In-situ soil materials from Borehole One (BH1) through to Borehole Five (BH5)

Table A – Results summary table (indicative)

Soil Materials Assessed	Indicative Waste Classification
In-situ soil materials within BH1, BH2, BH3, BH4 and BH5,	*Acid Sulfate Soil (untreated) - General Solid Waste*

1. Introduction

Alliance Geotechnical Pty Ltd (AG) was engaged by Northern Beaches Council (the 'client') to determine the indicative waste classification of in-situ soil materials within the Warringah Recreation Centre (herein referred to as 'the site', refer to **Figure 1, Appendix 1**). The purpose of the assessment was to gather an understanding of the contamination characteristics (if any) of soil materials to facilitate offsite dispatch (only).

The following investigation/classification has been undertaken with reference to the relevant sections of the NSW EPA *Waste Classification Guidelines* (2014), however to meet sample design guidelines, further assessment/investigation will be required.

2. History and production of waste

AG was informed by the client that the soil materials were to be generated from the trenching and excavation associated with the proposed construction of a new double-storey clubhouse, surface car parking and hard surface sports courts.

No previous environmental investigation reports/ contamination investigations or the history of waste for this location were provided to AG prior to this assessment.

3. Potential Contaminating Activities

Based on AG's understanding of site history, there is a potential of contaminating activities to have occurred along the site's alignment due to historical uncontrolled filling activities.

4. Acid sulfate soils

A review of https://www.environment.nsw.gov.au/eSpade2Webapp indicated that the site is located in an area mapped as ***Disturbed Terrain*** which may include filled areas, which often occur during reclamation of low lying swamps for urban development. Other disturbed terrain includes areas which have been mined or dredged, or have undergone heavy ground disturbance through general urban development or construction of dams or levees. Soil investigations are required to assess these areas for acid sulfate soils potential.

Further assessment for acid sulfate soils is considered warranted.

5. Geological Survey

The 1:100,000 NSW Department of Mineral Resources Geological Map of the Sydney region (Geological Series Sheet 9130, Edition I – 1983) indicates that the site is predominantly underlain by Quaternary Period Alluvium (Qha). This formation is described as "*Silty to peaty quartz sand, silt and clay. Ferruginous and humic cementation in places, commonly shell layers*ὰ The site is also located near Hawkesbury Sandstone of Wianamatta Group from the east, which is described as "*Medium to coarse-grained quartz sandstone, very minor shale and laminite lenses*ὰ

6. Field work

The site was visited by an appropriately experienced environmental consultant on the below dates and the following observations were made:

9 November 2020

- Five (5) boreholes (BH1 through to BH5) were advanced within the proposed project alignment for the proposed clubhouse and sports centre with the use of a mechanical drill rig , as well as with the assistance of hand tools (shovel) (refer to **Figure 2, Appendix 1** and **Site Photographs, Appendix 2**);
- All boreholes were advanced to a target depth of 5.0m (bgl) for waste classification purposes. Soil samples were collected from within this depth of excavation (refer to **Site Photographs, Appendix 2**);
- A total of forty-two (42) soil samples were collected to facilitate laboratory analysis;
- During sample collection, no hydrocarbon odours, staining or potential asbestos containing materials (PACM) were observed within the sampled in-situ soil materials on site; and
- No shells or jarosite was noted during the sample collection activities.

The materials encountered during excavation were observed to generally comprise:

Table 6.1 – Summary of insitu material profile

Unit	Description	Depth of the encountered unit (metres BGL)				
		BH1	BH2	BH3	BH4	BH5
--	Topsoil	0.0 – 0.3	0.0 – 0.2	0.0 – 0.2 (including pavement)	0.0 – 0.2	0.0 – 0.п
1	Clayey SAND ώbl·űdzǈl·f π !ffdzǾƛdzϒϐ (Loose to Medium Dense)	0.3 – 1.2	0.2 – 0.6	0.2 – 0.7	0.2 – 1.0	0.п – 3.0
2	Organic CLAY, high plasticity (Soft to Firm)	1.2 – 2.0	0.6 – 1.2	--	2.5 – 4.0	--
3	Silty CLAY, medium to high plasticity (Firm to Stiff)	--	--	--	1.0 – 1.5	--
4	SAND, fine to medium grained (loose to medium dense)	--	1.2 – 2.5	0.7 – 5.0	1.5 – 2.5	--
Termination Depth of the Borehole		2.0	2.5	5.0	2.5	3.0

7. Quantity of materials

The average dimensions of the proposed excavation have been advised by the client to be approximately 8,960 meters squared. Depth of excavations have not been provided to AG (at the time of reporting).

8. Laboratory analysis

A total of forty-two (42) soil samples (collected 9 November 2020) 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, Ethyl benzene, Total xylene and Naphthalene (BTEXN);
- Polychlorinated biphenyls (PCBs);
- Organochlorine pesticides (OCPs);
- pH field screen; and
- Asbestos ID.

The sample identifiers for soil samples taken were as follows;

BH1-0.2-0.4, BH1-0.4-0.6, BH2-0.2-0.4, BH2-0.5-0.8, BH3-0.2-0.4, BH3-0.5-0.7, BH4-0.2-0.4, BH4-0.5-0.7, BH5-0.2-0.4, BH5-0.5-0.7, BH1-0.5, BH1-1.0, BH1-1.5, BH1-2.0, BH2-0.5, BH2-1.0, BH2-1.5, BH2-2.0, BH3-0.5, BH3-1.0, BH3-1.5, BH3-2.0, BH3-2.5, BH3-3.0, BH3-3.5, BH3-4.0, BH3-4.5, BH3-5.0, BH4-0.5, BH4-1.0, BH4-1.5, BH4-2.0, BH4-2.5, BH4-3.0, BH4-3.5, BH4-4.0, BH4-4.5, BH4-5.0, BH5-0.5, BH5-1.0, BH5-1.5, and BH5-2.0.

The results of the analysis are presented in **Table 1** and **Table 2, Appendix 3** and **Laboratory Documentation, Appendix 4**.

8.1. Soil sampling and transportation

Upon inspection and logging of the material, discrete 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 | 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 | Environment Testing 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. Acid Sulfate Soils Assessment

Assessment of soil material for acid sulfate soils (ASS) can be divided into two components, preliminary screening and further chemical confirmatory analysis. Measuring the pH values of soil are an initial indication of the potential for ASS. However, depending on results of initial screening, soil material may also require chemical analysis, by a NATA accredited laboratory, comprising of chromium reducible sulfur suite (CRS) to confirm ASS and assess the potential for adverse environmental impact and provide information required for treatment (if required).

The indicators of ASS and the assessment criteria are provided in *Acid Sulfate Soil Management Guidelines,* NSW Acid Sulfate Soil Management Advisory Committee, August 1998 (ASSMAC, 1998). A summary of the values and the associated management measures are outlined in **Table 9.1** below:

Table 9.1 pH_F and pH_{FOX} Indicators of ASS

pH_F Value	pH_{FOX} Value	pH Change	Effervescence	Management
Greater than 5.5	Greater than 4.5	Less than 2	Nil to mild	AASS and PASS unlikely. No action required.
Greater than 5.6	less than 3	Greater than 2	Mild - extreme	PASS suitable for burial below the water table within 16 hours.
Greater than 4.5 but less than 6	Greater than 3.5	Less than 1	Nil to mild	AASS and PASS unlikely. No action required.
Greater than 4 but less than 5.6	less than 3	Greater than 1	Mild - strong	Some AASS possible and PASS may exist. Material requires treatment.
Less than or equal to 4	Less than 4	Less than 1	Non to mild	AASS are likely. Material requires treatment.
Less than or equal to 4	less than 3	Greater than 2	Mild - strong	AASS and PASS likely. Material requires treatment.

Thirty-two (32) soil samples were subjected to pH field screen analysis. The following results were noted:

- All samples reported pH_f values above the preliminary screening criterion of pH_f less than 4 (minimum recorded value = 4.8);
- Twenty-one (21) samples analysed reported pH_{fox} values below the preliminary screening criterion of pH_{fox} less than 3.5.

Based on the above results, and the likelihood for the presence of acid sulfate soils, AG conducted Chromium Reducible Sulfur (CRS) analysis on the below samples:

Table 9.2 CRS results summary

Sample ID	Net Acidity – Sulfur units (% S)	Net Acidity – Acidity units (mol H+/tonne)	Liming Rate (kg CaCO3/t)
BH1 (2.0M)	0.2	130	9.6
BH3 (2.5M)	0.28	180	13
BH3 (3.0M)	0.23	140	11

Sample ID	Net Acidity – Sulfur units (% S)	Net Acidity – Acidity units (mol H+/tonne)	Liming Rate (kg CaCO3/t)
BH4 (2.0M)	0.05	31	2.4
BH4 (2.5M)	0.18	120	8.7

Based on the above, the results and visual assessment of the soil materials, acid sulfate soils are present within the in-situ soil materials down to a depth of 5.0 meters below ground level (limit of investigation).

10. Laboratory results

10.1. Waste classification assessment

The 6-step classification procedure in NSW EPA *Waste Classification Guidelines* 2014 were followed, with the results presented in **Table 10.1.1** below:

Table 10.1.1. NSW EPA *Waste Classification Guidelines* (2014) – 6 Step Classification Procedure

Step		Material Observation
1	*Is the waste special waste?*	**No.** No asbestos fragments were observed or detected.
2	*Is the waste liquid waste?*	**No.** The fill comprised a soil matrix.
3	*Is the waste pre-classified?*	**No.** The fill is not pre-classified with reference to *WCG NSW EPA 2014.*
4	*Does the waste possess hazardous characteristics*	**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	*Waste classification using chemical assessment.*	**Yes**. See Section 10. Benzo(a)pyrene Soil sample 'BH4-0.2-0.4' returned analytical results (1.0 mg/kg) exceeding the general solid waste contaminant threshold (CT1) criteria (0.8 mg/kg) for benzo(a)pyrene. Subsequent toxicity characteristics leaching procedure (TCLP) was undertaken on the samples, and returned values less than the general solid waste TCLP1 criteria for benzo(a)pyrene (0.04 mg/L). Soil samples were also below the revised specific contamination concentration criteria (SCC1) for benzo(a)pyrene (10 mg/kg). All remaining soil samples returned analytical results less than the contaminant thresholds as outlined in the *NSW EPA Waste Classification Guidelines 2014* (refer to **Table 1, Appendix 3** and **Laboratory Results, Appendix 4**).
6	*Is the waste putrescible or non-putrescible?*	**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 NSW EPA, 2014*).

11. Waste classification

Based on AG's laboratory analytical results and fieldwork observations, as per the NSW EPA *Waste Classification Guidelines* (2014), the in-situ soil materials as described in this report are classified as:

Table A – Results summary table (indicative)

Soil Materials Assessed	Indicative Waste Classification
In-situ soil materials within BH1, BH2, BH3, BH4 and BH5,	*Acid Sulfate Soil (untreated) - General Solid Waste*

Based on the information currently available data, AG recommends that:

- Further investigation/assessment is completed as per the NSW EPA Sample Design Guidelines;
- the waste be lawfully disposed of to a site that is licensed by the NSW EPA; and
- the waste generator retains transport and tipping records for all waste removed from site.

Should unexpected finds be uncovered during excavation of the in-situ soil materials 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 below.

12. 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

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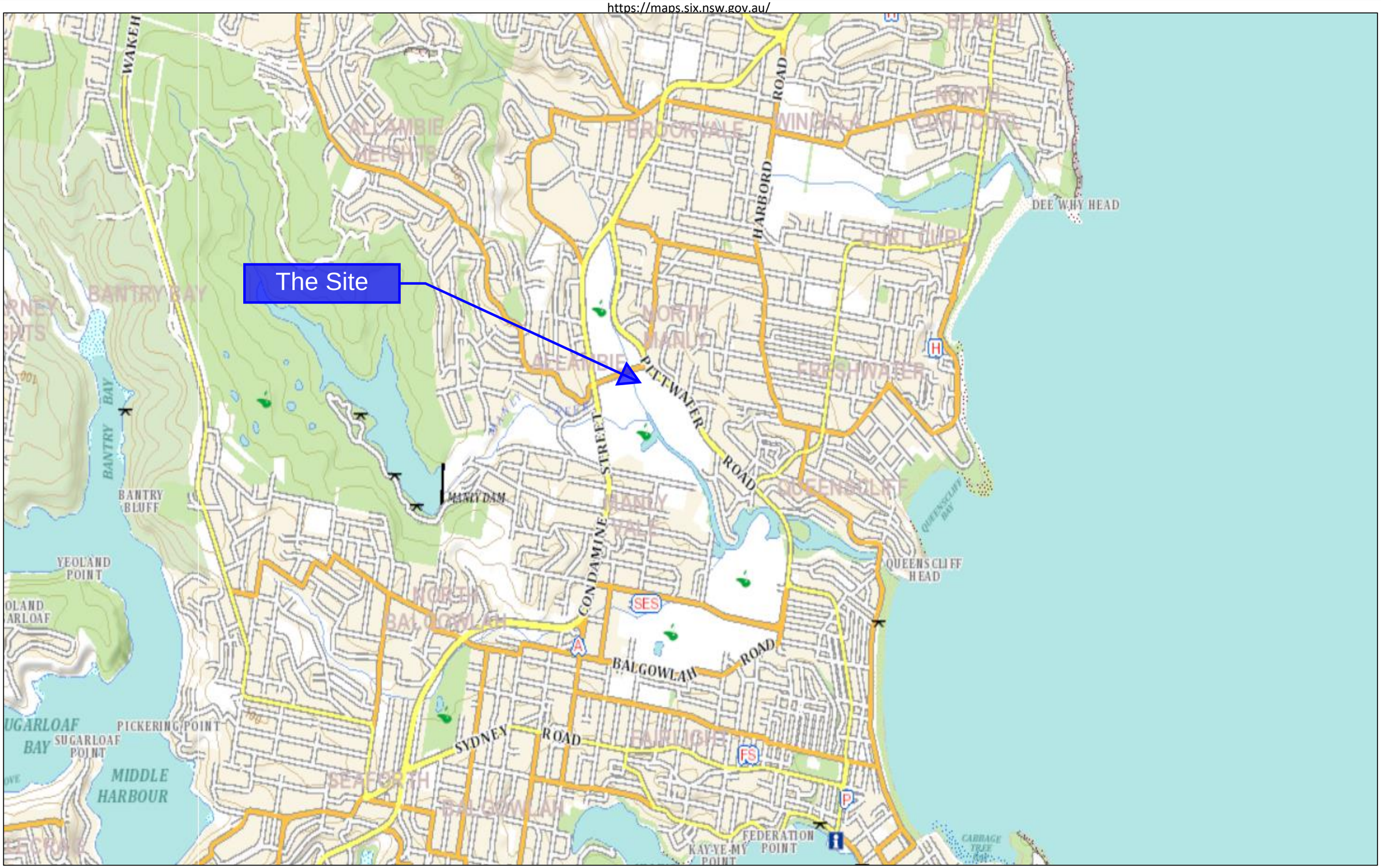
Senior Environmental Scientist

Appendices:

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

APPENDIX 1
FIGURES

https://maps.six.nsw.gov.au/



SOURCE: https://maps.six.nsw.gov.au/

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Site Locality

Client Name:	Northern Beaches Council	Figure Number:	1
Project Name:	Proposed Clubhouse and Sports Centre	Figure Date:	24/11/2020
Project Location:	Kentwell Road, Warringah, NSW	Report Number:	11724-ER-1-1

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Site Plan 1:600 Scale on A3

Client Name:	Northern Beaches Council	N 0 5 10 Meters	Figure Number:	2
Project Name:	Proposed Clubhouse and Sports Centre		Figure/Drawing Date:	24/11/2020
Project Location	Kentwell Road, Warringah, NSW		Report Number:	11724-ER-1-1

APPENDIX 2
SITE PHOTOGRAPHS

Photo 1 – General site overview at the location of BH2, looking southeast

Photo 2 – Condition of Brookvale Creek at the time of AG's investigation

Photo 3 – General site overview along the eastern boundary, looking south

Photo 4 – Drilling rig setup at the location of BH4

Photo 5 – Drill cuttings retrieved at the location of BH5

APPENDIX 3
RESULTS SUMMARY TABLE

Table 1
Warringah, NSW
Waste Assessment Results - Metals, PAHs, TRH, BTEX, ASB, pH, and EC
11724-ER-1-1

Group	Analyte	Units	PQL	Ambient Range MAX	ENM Criteria AVG	ENM Criteria MAX	GSW Criteria CT1	GSW Criteria CT2	GSW Criteria TCLP1	RSW Criteria TCLP2	DATASET AVERAGE	DATASET MINIMUM	DATASET MAXIMUM	BH1(0.2-0.4M) S20-No15624	BH1(0.4-0.6M) S20-No15625	BH2(0.2-0.4M) S20-No15626	BH2(0.5-0.8M) S20-No15627	BH3(0.2-0.4M) S20-No15628	BH3(0.5-0.7M) S20-No15629	BH4(0.2-0.4M) S20-No15630	BH4(0.5-0.7M) S20-No15631	BH5(0.2-0.4M) S20-No15632	BH5(0.5-0.7M) S20-No15633
Metals	Arsenic	mg/kg	2	50	20	40	100	400	*	*	2.9	<2	8.3	< 2	2	2.2	< 2	3.8	< 2	4.6	3.5	8.3	4.9
	Cadmium	mg/kg	0.4	1	0.5	1	20	80	*	*	<0.4	<0.4	<0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	1000	75	150	100	400	*	*	9.4	<5	23	8.1	< 5	6.9	6.9	23	< 5	19	< 5	22	8
	Copper	mg/kg	5	100	100	200	*	*	*	*	4.8	<5	12	7.6	6.3	7.1	< 5	6.9	< 5	12	< 5	8.3	< 5
	Lead	mg/kg	5	200	50	100	100	400	*	*	24.5	<5	51	31	17	39	15	29	< 5	45	5.1	51	13
	Mercury	mg/kg	0.1	0.03	0.5	1	4	16	*	*	0.0	<0.1	0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	500	30	60	40	160	*	*	3.4	<5	13	5.1	< 5	< 5	< 5	13	< 5	10	< 5	5.4	< 5
	Zinc	mg/kg	5	300	150	300	*	*	*	*	32.1	<5	110	32	11	29	25	25	< 5	110	7.7	61	20
PAHS	Acenaphthylene	mg/kg	0.5	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 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	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	1.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.2	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5	*	0.5	1	0.8	3.2	*	*	0.1	<0.5	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene (Leachate)	mg/L	0.5	*	*	*	*	*	0.04	0.16	0.0	<0.5	<0.5	-	-	-	-	-	-	<0.001	-	-	-
	Benzo(a)pyrene TEQ (Low)	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (Med)	mg/kg	0.5	*	*	*	*	*	*	*	0.7	0.6	1.6	0.6	0.6	0.6	0.6	0.6	0.6	1.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (High)	mg/kg	0.5	*	*	*	*	*	*	*	1.3	1.2	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5	*	*	*	*	*	*	*	0.1	<0.5	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5	*	*	*	*	*	*	*	0.6	<0.5	2.7	< 0.5	1.2	0.6	< 0.5	< 0.5	< 0.5	2.7	0.7	0.7	< 0.5
	Fluorene	mg/kg	0.5	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 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	< 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	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5	*	*	*	*	*	*	*	0.4	<0.5	2.4	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	2.4	0.7	< 0.5	< 0.5
	Pyrene	mg/kg	0.5	*	*	*	*	*	*	*	0.6	<0.5	2.8	< 0.5	1	0.6	< 0.5	< 0.5	< 0.5	2.8	0.8	0.7	< 0.5
	Total PAH[1]	mg/kg	0.5	*	20	40	200	800	*	*	2.1	<0.5	13.2	< 0.5	2.8	1.2	< 0.5	< 0.5	< 0.5	13.2	2.2	1.4	< 0.5
TRH/BTEX	Naphthalene	mg/kg	0.5	*	*	*	*	*	*	*	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH C_6 - C_9	mg/kg	20	*	*	*	650	2600	*	*	<20	<20	<20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C_{10}-C_{36}	mg/kg	50	*	250	500	10,000	40,000	*	*	22.7	<50	167	< 50	< 50	< 50	< 50	60	< 50	167	< 50	< 50	< 50
	Benzene	mg/kg	0.1	*	*	0.5	10	40	*	*	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	*	*	25	600	2400	*	*	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 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	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	*	*	65	288	1152	*	*	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	*	*	15	1,000	4,000	*	*	<0.3	<0.3	<0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Asbestos	ACM >7mm	% w/w	0.01%	D	D	D	D	D	*	*	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	AF/FA <7mm	% w/w	0.01%	D	D	D	D	D	*	*	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

UCL - *Upper Confidence Limit* | TEQ - *Toxicity Equivalent Quotient* | PAH - *Polycyclic Aromatic Hydrocarbons* | OCPs - *Organo-chlorine Pesticides* | OPPs - *Organo-phosphorus Pesticides* | PCBs - *Polychlorinated Biphenyls* | *ACM - Asbestos Containing Material* | *AF/FA - Asbestos Fines / Fibrous Asbestos*

ENM - *Excavated Natural Material Order/Exemption* | AVG - *Average* | MAX - *Maximum* | *Ambient Range - Background ranges, taken from the Field Geologist's Manual, compiled by D A Berkman, Third Edition 1989. Publisher – The Australasian Institute of Mining & Metallurgy.*

1	**Total PAH is the sum of 16 USEPA priority PAHs**
2	**'Waste Classification Guidelines' - NSW EPA 2014**
*	**No currently available criterion**
**	**Minimum / Maximum Value**
-	**Not Calculated**
D / ND	**Detect / Non-Detect**

Concentration exceeding Ambient Range
Concentration Exceeding ENM Average Criteria
Concentration Exceeding ENM Max Criteria
Concentration exceeding General Solid Waste Criteria CT1
Concentration exceeding Restricted Solid Waste Criteria CT2
Concentration exceeding General Solid Waste Criteria SCC1 / TCLP1
Concentration exceeding Restricted Solid Waste Criteria SCC2 / TCLP2

Table 2
Warringah Recreational Centre
Laboratory Results Summary Table
11724/ER-1-1

								Reference	BH1 (0.5M)	BH1 (1.0M)	BH1 (1.5M)	BH1 (2.0M)	BH2 (0.5M)	BH2 (1.0M)	BH2 (1.5M)	BH2 (2.0M)	BH3 (0.5M)	BH3 (1.0M)	BH3 (1.5M)	BH3 (2.0M)
								Sample ID	S20-No15678	S20-No15679	S20-No15680	S20-No15681	S20-No15682	S20-No15683	S20-No15684	S20-No15685	S20-No15686	S20-No15687	S20-No15688	S20-No15689
Group	**Analyte**	**Units**	**PQL**	**ASSMAC (1998)**	**DATASET AVERAGE**	**DATASET MINIMUM**	**DATASET MAXIMUM**													
Field Screen	phf	pH Units	0	<4	**6.2**	**4.8**	**8**	8.0	7.8	7.0	7.0	6.6	6.1	5.7	5.0	5.9	5.8	5.8	6.3
	pHfox	pH Units	0	<3.5	**3.2**	**2**	**5.1**	5.1	4.6	4.0	2.0	3.2	3.1	3.1	3.8	3.0	3.5	3.5	2.6
	Reaction Rating	pH Units	0	2	**3.5**	**1**	**4**	3	4	3	4	3	2	2	1	4	4	4	4
Chromium Reducible	CRS Suite - Net Acidity (Sulphur Units)	% S	0.02	> 0.03/0.06/0.1	**0.2**	**0.05**	**0.28**	- =	- =	- =	0.2	- =	- =	- =	- =	- =	- =	- =	- =
	CRS Suite - Net Acidity (Acidity Units)	mol H+/tonne	10	> 18/36/62	**120.2**	**31**	**180**	- =	- =	- =	130	- =	- =	- =	- =	- =	- =	- =	- =
	Liming Rate	Kg CaCo3/T	1.0		**8.9**	**2.4**	**13**	- =	- =	- =	9.6	- =	- =	- =	- =	- =	- =	- =	- =

Concentration exceed/less than the preliminary acid sulphate screening criteria.
Concentration exceeding the adopted action criteria (Table 4.4 ASSMAC Manual)
*** =** **No currently available criterion**
- = **No sample analysed**

BH3 (2.5M)	BH3 (3.0M)	BH3 (3.5M)	BH3 (4.0M)	BH3 (4.5M)	BH3 (5.0M)	BH4 (0.5M)	BH4 (1.0M)	BH4 (1.5M)	BH4 (2.0M)	BH4 (2.5M)	BH4 (3.0M)	BH4 (3.5M)	BH4 (4.0M)	BH4 (4.5M)	BH4 (5.0M)	BH5 (0.5M)	BH5 (1.0M)	BH5 (1.5M)	BH5 (2.0M)
S20-No15690	S20-No15691	S20-No15692	S20-No15693	S20-No15694	S20-No15695	S20-No15696	S20-No15697	S20-No15698	S20-No15699	S20-No15700	S20-No15701	S20-No15702	S20-No15703	S20-No15704	S20-No15705	S20-No15706	S20-No15707	S20-No15708	S20-No15709
5.5	6.1	6.2	6.1	6.2	6.1	6.3	5.0	4.8	5.9	6.1	6.0	5.9	5.8	5.8	5.8	7.9	7.3	7.1	6.7
2.2	2.2	2.7	2.9	2.9	2.7	3.0	4.3	3.4	2.2	2.4	2.5	2.9	2.7	3.1	3.3	5.2	3.8	3.7	4.0
4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	2	4	4	3
0.28	0.23	- =	- =	- =	- =	- =	- =	- =	0.05	0.18	- =	- =	- =	- =	- =	- =	- =	- =	- =
180	140	- =	- =	- =	- =	- =	- =	- =	31	120	- =	- =	- =	- =	- =	- =	- =	- =	- =
13	11	- =	- =	- =	- =	- =	- =	- =	2.4	8.7	- =	- =	- =	- =	- =	- =	- =	- =	- =

APPENDIX 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: **Matt Swinbourn**

Report **755928-S**
Project name WARRINGAH
Project ID 11724
Received Date Nov 10, 2020

Client Sample ID			**BH1 (0.2-0.4M)**	**BH1 (0.4-0.6M)**	**BH2 (0.2-0.4M)**	**BH2 (0.5-0.8M)**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-No15624**	**S20-No15625**	**S20-No15626**	**S20-No15627**
Date Sampled			**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	108	115	98	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH1 (0.2-0.4M)	BH1 (0.4-0.6M)	BH2 (0.2-0.4M)	BH2 (0.5-0.8M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15624	S20-No15625	S20-No15626	S20-No15627
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.2	0.6	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	1.0	0.6	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	2.8	1.2	< 0.5
2-Fluorobiphenyl (surr.)	1	%	88	87	98	96
p-Terphenyl-d14 (surr.)	1	%	83	80	83	86
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	INT	INT	INT	145
Tetrachloro-m-xylene (surr.)	1	%	65	62	73	68
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	INT	INT	INT	145
Tetrachloro-m-xylene (surr.)	1	%	65	62	73	68

Client Sample ID			BH1 (0.2-0.4M)	BH1 (0.4-0.6M)	BH2 (0.2-0.4M)	BH2 (0.5-0.8M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15624	S20-No15625	S20-No15626	S20-No15627
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	< 2	2.0	2.2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.1	< 5	6.9	6.9
Copper	5	mg/kg	7.6	6.3	7.1	< 5
Lead	5	mg/kg	31	17	39	15
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	5.1	< 5	< 5	< 5
Zinc	5	mg/kg	32	11	29	25
% Moisture	1	%	17	11	11	16

Client Sample ID			BH3 (0.2-0.4M)	BH3 (0.5-0.7M)	BH4 (0.2-0.4M)	BH4 (0.5-0.7M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15628	S20-No15629	S20-No15630	S20-No15631
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	96	< 50
TRH C29-C36	50	mg/kg	60	< 50	71	< 50
TRH C10-C36 (Total)	50	mg/kg	60	< 50	167	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	102	104	144	126
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	140	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	140	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.8	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5

Client Sample ID			BH3 (0.2-0.4M)	BH3 (0.5-0.7M)	BH4 (0.2-0.4M)	BH4 (0.5-0.7M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15628	S20-No15629	S20-No15630	S20-No15631
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	2.7	0.7
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	2.4	0.7
Pyrene	0.5	mg/kg	< 0.5	< 0.5	2.8	0.8
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	13.2	2.2
2-Fluorobiphenyl (surr.)	1	%	87	90	71	94
p-Terphenyl-d14 (surr.)	1	%	84	80	65	88
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	INT	143	124	136
Tetrachloro-m-xylene (surr.)	1	%	69	67	50	74
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH3 (0.2-0.4M)	BH3 (0.5-0.7M)	BH4 (0.2-0.4M)	BH4 (0.5-0.7M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15628	S20-No15629	S20-No15630	S20-No15631
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	INT	143	124	136
Tetrachloro-m-xylene (surr.)	1	%	69	67	50	74
Heavy Metals						
Arsenic	2	mg/kg	3.8	< 2	4.6	3.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	23	< 5	19	< 5
Copper	5	mg/kg	6.9	< 5	12	< 5
Lead	5	mg/kg	29	< 5	45	5.1
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1
Nickel	5	mg/kg	13	< 5	10	< 5
Zinc	5	mg/kg	25	< 5	110	7.7
% Moisture	1	%	30	15	16	15

Client Sample ID			BH5 (0.2-0.4M)	BH5 (0.5-0.7M)	BH4 (4.5-4.8M)	BH5 (2.0-2.3M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15632	S20-No15633	S20-No15634	S20-No15635
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	119	106	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	-

Client Sample ID			BH5 (0.2-0.4M)	BH5 (0.5-0.7M)	BH4 (4.5-4.8M)	BH5 (2.0-2.3M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15632	S20-No15633	S20-No15634	S20-No15635
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	0.7	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	0.7	< 0.5	-	-
Total PAH*	0.5	mg/kg	1.4	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	89	86	-	-
p-Terphenyl-d14 (surr.)	1	%	77	78	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-	-
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	INT	140	-	-
Tetrachloro-m-xylene (surr.)	1	%	66	65	-	-

Client Sample ID			BH5 (0.2-0.4M)	BH5 (0.5-0.7M)	BH4 (4.5-4.8M)	BH5 (2.0-2.3M)
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-No15632**	**S20-No15633**	**S20-No15634**	**S20-No15635**
Date Sampled			**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	INT	140	-	-
Tetrachloro-m-xylene (surr.)	1	%	66	65	-	-
Heavy Metals						
Arsenic	2	mg/kg	8.3	4.9	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	22	8.0	-	-
Copper	5	mg/kg	8.3	< 5	-	-
Lead	5	mg/kg	51	13	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	5.4	< 5	-	-
Zinc	5	mg/kg	61	20	-	-
% Moisture	1	%	12	8.2	38	20
Chloride	10	mg/kg	-	-	32	12
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	25	82
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	6.2	7.2
Resistivity*	0.5	ohm.m	-	-	400	120
Sulphate (as SO4)	10	mg/kg	-	-	16	55

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	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Nov 11, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Nov 11, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Nov 11, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Nov 10, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Chloride	Sydney	Nov 11, 2020	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Sydney	Nov 11, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25°C as rec.)	Sydney	Nov 11, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Sydney	Nov 11, 2020	28 Days
- Method: E045 Anions by Ion Chromatography			

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Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147

Project Name: WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 755928
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 10, 2020 6:10 PM
Due: Nov 17, 2020
Priority: 5 Day
Contact Name: Matt Swinbourn

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEXN/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
Mayfield Laboratory								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH1 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15624		X	X
2	BH1 (0.4-0.6M)	Nov 09, 2020		Soil	S20-No15625		X	X
3	BH2 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15626		X	X
4	BH2 (0.5-0.8M)	Nov 09, 2020		Soil	S20-No15627		X	X
5	BH3 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15628		X	X
6	BH3 (0.5-	Nov 09, 2020		Soil	S20-No15629		X	X

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Sample Detail						Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEXN/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
Mayfield Laboratory								
External Laboratory								
	0.7M)							
7	BH4 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15630		X	X
8	BH4 (0.5-0.7M)	Nov 09, 2020		Soil	S20-No15631		X	X
9	BH5 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15632		X	X
10	BH5 (0.5-0.7M)	Nov 09, 2020		Soil	S20-No15633		X	X
11	BH4 (4.5-4.8M)	Nov 09, 2020		Soil	S20-No15634	X	X	
12	BH5 (2.0-2.3M)	Nov 09, 2020		Soil	S20-No15635	X	X	

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Project Name: WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 755928
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 10, 2020 6:10 PM
Due: Nov 17, 2020
Priority: 5 Day
Contact Name: Matt Swinbourn

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEXN/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271			
Sydney Laboratory - NATA Site # 18217	X	X	X
Brisbane Laboratory - NATA Site # 20794			
Perth Laboratory - NATA Site # 23736			
Mayfield Laboratory			
External Laboratory			
Test Counts	2	12	10

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
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
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	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Chloride	mg/kg	< 10			10	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
Sulphate (as SO4)	mg/kg	< 10			10	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	102			70-130	Pass	
TRH C10-C14	%	97			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	105			70-130	Pass	
Ethylbenzene	%	105			70-130	Pass	
m&p-Xylenes	%	114			70-130	Pass	
o-Xylene	%	115			70-130	Pass	
Xylenes - Total*	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	109			70-130	Pass	
TRH C6-C10	%	101			70-130	Pass	
TRH >C10-C16	%	93			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	94			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthylene	%	86			70-130	Pass	
Anthracene	%	87			70-130	Pass	
Benz(a)anthracene	%	97			70-130	Pass	
Benzo(a)pyrene	%	92			70-130	Pass	
Benzo(b&j)fluoranthene	%	85			70-130	Pass	
Benzo(g.h.i)perylene	%	92			70-130	Pass	
Benzo(k)fluoranthene	%	99			70-130	Pass	
Chrysene	%	85			70-130	Pass	
Dibenz(a.h)anthracene	%	89			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	94			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	93			70-130	Pass	
Naphthalene	%	91			70-130	Pass	
Phenanthrene	%	102			70-130	Pass	
Pyrene	%	98			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	101			70-130	Pass	
4.4'-DDD	%	99			70-130	Pass	
4.4'-DDE	%	103			70-130	Pass	
4.4'-DDT	%	123			70-130	Pass	
a-BHC	%	104			70-130	Pass	
Aldrin	%	100			70-130	Pass	
b-BHC	%	111			70-130	Pass	
d-BHC	%	92			70-130	Pass	
Dieldrin	%	108			70-130	Pass	
Endosulfan I	%	123			70-130	Pass	
Endosulfan II	%	85			70-130	Pass	
Endosulfan sulphate	%	117			70-130	Pass	
Endrin	%	108			70-130	Pass	
Endrin aldehyde	%	121			70-130	Pass	
Endrin ketone	%	106			70-130	Pass	
g-BHC (Lindane)	%	102			70-130	Pass	
Heptachlor	%	121			70-130	Pass	
Heptachlor epoxide	%	94			70-130	Pass	
Hexachlorobenzene	%	113			70-130	Pass	
Methoxychlor	%	119			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	119			70-130	Pass	
Aroclor-1260	%	99			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	99			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	95			80-120	Pass	
Nickel	%	99			80-120	Pass	
Zinc	%	98			80-120	Pass	
LCS - % Recovery							
Chloride	%	94			70-130	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	%	92			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Resistivity*			%	92			70-130	Pass	
Sulphate (as SO4)			%	100			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-No11658	NCP	%	93			70-130	Pass	
TRH C10-C14	S20-No13174	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	S20-No11658	NCP	%	90			70-130	Pass	
TRH >C10-C16	S20-No20666	NCP	%	70			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Chrysene	S20-No16780	NCP	%	77			70-130	Pass	
Dibenz(a.h)anthracene	S20-No16780	NCP	%	89			70-130	Pass	
Fluoranthene	S20-No16780	NCP	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-No16780	NCP	%	85			70-130	Pass	
Phenanthrene	S20-No16780	NCP	%	85			70-130	Pass	
Pyrene	S20-No16780	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-No16780	NCP	%	92			70-130	Pass	
4.4'-DDD	S20-No16780	NCP	%	103			70-130	Pass	
4.4'-DDE	S20-No16780	NCP	%	101			70-130	Pass	
4.4'-DDT	S20-No16780	NCP	%	127			70-130	Pass	
a-BHC	S20-No16780	NCP	%	97			70-130	Pass	
Aldrin	S20-No16780	NCP	%	98			70-130	Pass	
b-BHC	S20-No16780	NCP	%	101			70-130	Pass	
d-BHC	S20-No16780	NCP	%	88			70-130	Pass	
Dieldrin	S20-No16780	NCP	%	108			70-130	Pass	
Endosulfan I	S20-No16780	NCP	%	109			70-130	Pass	
Endosulfan II	S20-No16780	NCP	%	88			70-130	Pass	
Endosulfan sulphate	S20-No16780	NCP	%	114			70-130	Pass	
Endrin	S20-No16780	NCP	%	116			70-130	Pass	
Endrin aldehyde	S20-No16780	NCP	%	86			70-130	Pass	
Endrin ketone	S20-No16780	NCP	%	97			70-130	Pass	
g-BHC (Lindane)	S20-No16780	NCP	%	92			70-130	Pass	
Heptachlor	S20-No16780	NCP	%	109			70-130	Pass	
Heptachlor epoxide	S20-No16780	NCP	%	85			70-130	Pass	
Hexachlorobenzene	S20-No16780	NCP	%	83			70-130	Pass	
Methoxychlor	S20-No16780	NCP	%	114			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-No16780	NCP	%	104			70-130	Pass	
Aroclor-1260	S20-No16780	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-No19273	NCP	%	103			75-125	Pass	
Cadmium	S20-No19273	NCP	%	108			75-125	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-No15625	CP	%	91			70-130	Pass	
Toluene	S20-No15625	CP	%	88			70-130	Pass	
Ethylbenzene	S20-No15625	CP	%	86			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	S20-No15625	CP	%	89			70-130	Pass	
o-Xylene	S20-No15625	CP	%	92			70-130	Pass	
Xylenes - Total*	S20-No15625	CP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-No15625	CP	%	93			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-No15625	CP	%	78			70-130	Pass	
Acenaphthylene	S20-No15625	CP	%	70			70-130	Pass	
Anthracene	S20-No15625	CP	%	71			70-130	Pass	
Benz(a)anthracene	S20-No15625	CP	%	80			70-130	Pass	
Benzo(a)pyrene	S20-No15625	CP	%	75			70-130	Pass	
Benzo(b&j)fluoranthene	S20-No15625	CP	%	74			70-130	Pass	
Benzo(g.h.i)perylene	S20-No15625	CP	%	70			70-130	Pass	
Benzo(k)fluoranthene	S20-No15625	CP	%	70			70-130	Pass	
Fluorene	S20-No15625	CP	%	77			70-130	Pass	
Naphthalene	S20-No15625	CP	%	72			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium	S20-No15630	CP	%	122			75-125	Pass	
Copper	S20-No15630	CP	%	116			75-125	Pass	
Lead	S20-No15630	CP	%	121			75-125	Pass	
Mercury	S20-No15630	CP	%	118			75-125	Pass	
Nickel	S20-No15630	CP	%	123			75-125	Pass	
Zinc	S20-No15630	CP	%	117			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	S20-No08471	NCP	%	114			70-130	Pass	
Sulphate (as SO4)	S20-No08471	NCP	%	98			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-No15624	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-No15624	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-No15624	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-No15624	CP	mg/kg	< 50	54	23	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-No15624	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-No15624	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-No15624	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-No15624	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-No15624	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-No15624	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-No15624	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S20-No15624	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-No15624	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-No15624	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-No15624	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-No15624	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-No15624	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-No15624	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-No25415	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S20-No25415	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-No15629	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S20-No15629	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-No15629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S20-No15629	CP	mg/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S20-No15629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S20-No15629	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-No15629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S20-No15629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-No15629	CP	%	15	13	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S20-No08471	NCP	mg/kg	830	970	16	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	S20-No15634	CP	uS/cm	25	23	9.0	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S20-No25395	NCP	pH Units	7.5	7.3	Pass	30%	Pass	
Resistivity*	S20-No21465	NCP	ohm.m	18	20	7.0	30%	Pass	
Sulphate (as SO4)	S20-No08471	NCP	mg/kg	380	440	13	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

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.

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:	Matt Swinbourn
Report	755928-AID
Project Name	WARRINGAH
Project ID	11724
Received Date	Nov 10, 2020
Date Reported	Nov 17, 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 WARRINGAH
Project ID 11724
Date Sampled Nov 09, 2020
Report 755928-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH1 (0.2-0.4M)	20-No15624	Nov 09, 2020	Approximate Sample 46g Sample consisted of: Brown coarse-grained sandy soil and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH1 (0.4-0.6M)	20-No15625	Nov 09, 2020	Approximate Sample 57g Sample consisted of: Brown coarse-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH2 (0.2-0.4M)	20-No15626	Nov 09, 2020	Approximate Sample 51g Sample consisted of: Brown coarse-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH2 (0.5-0.8M)	20-No15627	Nov 09, 2020	Approximate Sample 80g Sample consisted of: Brown coarse-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH3 (0.2-0.4M)	20-No15628	Nov 09, 2020	Approximate Sample 52g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH3 (0.5-0.7M)	20-No15629	Nov 09, 2020	Approximate Sample 64g Sample consisted of: Brown coarse-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH4 (0.2-0.4M)	20-No15630	Nov 09, 2020	Approximate Sample 164g Sample consisted of: Brown coarse-grained sandy soil and sand stone	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH4 (0.5-0.7M)	20-No15631	Nov 09, 2020	Approximate Sample 161g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

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Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH5 (0.2-0.4M)	20-No15632	Nov 09, 2020	Approximate Sample 208g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH5 (0.5-0.7M)	20-No15633	Nov 09, 2020	Approximate Sample 240g Sample consisted of: Brown coarse-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace 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	Nov 10, 2020	Indefinite

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Company Name:	Alliance Geotechnical	**Order No.:**	P4935	**Received:**	Nov 10, 2020 6:10 PM
Address:	10 Welder Road Seven Hills NSW 2147	**Report #:**	755928	**Due:**	Nov 17, 2020
		Phone:	1800 288 188	**Priority:**	5 Day
		Fax:	02 9675 1888	**Contact Name:**	Matt Swinbourn
Project Name:	WARRINGAH				
Project ID:	11724				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEXN/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
Mayfield Laboratory								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH1 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15624		X	X
2	BH1 (0.4-0.6M)	Nov 09, 2020		Soil	S20-No15625		X	X
3	BH2 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15626		X	X
4	BH2 (0.5-0.8M)	Nov 09, 2020		Soil	S20-No15627		X	X
5	BH3 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15628		X	X
6	BH3 (0.5-	Nov 09, 2020		Soil	S20-No15629		X	X

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Company Name: Alliance Geotechnical
Address: 10 Welder Road
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NSW 2147

Project Name: WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 755928
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 10, 2020 6:10 PM
Due: Nov 17, 2020
Priority: 5 Day
Contact Name: Matt Swinbourn

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEX/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
Mayfield Laboratory								
External Laboratory								
	0.7M)							
7	BH4 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15630		X	X
8	BH4 (0.5-0.7M)	Nov 09, 2020		Soil	S20-No15631		X	X
9	BH5 (0.2-0.4M)	Nov 09, 2020		Soil	S20-No15632		X	X
10	BH5 (0.5-0.7M)	Nov 09, 2020		Soil	S20-No15633		X	X
11	BH4 (4.5-4.8M)	Nov 09, 2020		Soil	S20-No15634	X	X	
12	BH5 (2.0-2.3M)	Nov 09, 2020		Soil	S20-No15635	X	X	

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Company Name:	Alliance Geotechnical	**Order No.:**	P4935	**Received:**	Nov 10, 2020 6:10 PM
Address:	10 Welder Road Seven Hills NSW 2147	**Report #:**	755928	**Due:**	Nov 17, 2020
		Phone:	1800 288 188	**Priority:**	5 Day
		Fax:	02 9675 1888	**Contact Name:**	Matt Swinbourn
Project Name:	WARRINGAH				
Project ID:	11724				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Aggressivity Soil Set	Moisture Set	Alliance WAC Suite 2:TRH/BTEXN/PAH/M8/OCP/PCB/Asb
Melbourne Laboratory - NATA Site # 1254 & 14271			
Sydney Laboratory - NATA Site # 18217	X	X	X
Brisbane Laboratory - NATA Site # 20794			
Perth Laboratory - NATA Site # 23736			
Mayfield Laboratory			
External Laboratory			
Test Counts	2	12	10

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

S20-No15624 to S20-No15629: The samples received were not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-samples to be analysed accurately represented the samples received.

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage	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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Attention: **Matt Swinbourn**

Report **755933-S**
Project name WARRINGAH
Project ID 11724
Received Date Nov 10, 2020

Client Sample ID			**BH1 (0.5M)**	**BH1 (1.0M)**	**BH1 (1.5M)**	**BH1 (2.0M)**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-No15678**	**S20-No15679**	**S20-No15680**	**S20-No15681**
Date Sampled			**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.0	7.8	7.0	7.0
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.1	4.6	4.0	2.0
Reaction Ratings*[S05]	-	comment	3.0	4.0	3.0	4.0

Client Sample ID			**BH2 (0.5M)**	**BH2 (1.0M)**	**BH2 (1.5M)**	**BH2 (2.0M)**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-No15682**	**S20-No15683**	**S20-No15684**	**S20-No15685**
Date Sampled			**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.6	6.1	5.7	5.0
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.2	3.1	3.1	3.8
Reaction Ratings*[S05]	-	comment	3.0	2.0	2.0	1.0

Client Sample ID			**BH3 (0.5M)**	**BH3 (1.0M)**	**BH3 (1.5M)**	**BH3 (2.0M)**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-No15686**	**S20-No15687**	**S20-No15688**	**S20-No15689**
Date Sampled			**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**	**Nov 09, 2020**
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.9	5.8	5.8	6.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.0	3.5	3.5	2.6
Reaction Ratings*[S05]	-	comment	4.0	4.0	4.0	4.0

Client Sample ID			BH3 (2.5M)	BH3 (3.0M)	BH3 (3.5M)	BH3 (4.0M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15690	S20-No15691	S20-No15692	S20-No15693
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.5	6.1	6.2	6.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.2	2.2	2.7	2.9
Reaction Ratings*[S05]	-	comment	4.0	4.0	4.0	4.0

Client Sample ID			BH3 (4.5M)	BH3 (5.0M)	BH4 (0.5M)	BH4 (1.0M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15694	S20-No15695	S20-No15696	S20-No15697
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.2	6.1	6.3	5.0
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.9	2.7	3.0	4.3
Reaction Ratings*[S05]	-	comment	4.0	4.0	4.0	4.0

Client Sample ID			BH4 (1.5M)	BH4 (2.0M)	BH4 (2.5M)	BH4 (3.0M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15698	S20-No15699	S20-No15700	S20-No15701
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	4.8	5.9	6.1	6.0
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.4	2.2	2.4	2.5
Reaction Ratings*[S05]	-	comment	2.0	4.0	4.0	4.0

Client Sample ID			BH4 (3.5M)	BH4 (4.0M)	BH4 (4.5M)	BH4 (5.0M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15702	S20-No15703	S20-No15704	S20-No15705
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.9	5.8	5.8	5.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.9	2.7	3.1	3.3
Reaction Ratings*[S05]	-	comment	4.0	4.0	4.0	4.0

Client Sample ID			BH5 (0.5M)	BH5 (1.0M)	BH5 (1.5M)	BH5 (2.0M)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-No15706	S20-No15707	S20-No15708	S20-No15709
Date Sampled			Nov 09, 2020	Nov 09, 2020	Nov 09, 2020	Nov 09, 2020
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	7.9	7.3	7.1	6.7
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.2	3.8	3.7	4.0
Reaction Ratings*[S05]	-	comment	2.0	4.0	4.0	3.0

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
Acid Sulfate Soils Field pH Test	Brisbane	Nov 17, 2020	7 Days

- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests

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Company Name:	Alliance Geotechnical	**Order No.:**	P4935	**Received:**	Nov 10, 2020 6:10 PM
Address:	10 Welder Road Seven Hills NSW 2147	**Report #:**	755933	**Due:**	Nov 17, 2020
		Phone:	1800 288 188	**Priority:**	5 Day
		Fax:	02 9675 1888	**Contact Name:**	Matt Swinbourn
Project Name:	WARRINGAH				
Project ID:	11724				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	BH1 (0.5M)	Nov 09, 2020		Soil	S20-No15678	X
2	BH1 (1.0M)	Nov 09, 2020		Soil	S20-No15679	X
3	BH1 (1.5M)	Nov 09, 2020		Soil	S20-No15680	X
4	BH1 (2.0M)	Nov 09, 2020		Soil	S20-No15681	X
5	BH2 (0.5M)	Nov 09, 2020		Soil	S20-No15682	X
6	BH2 (1.0M)	Nov 09, 2020		Soil	S20-No15683	X
7	BH2 (1.5M)	Nov 09, 2020		Soil	S20-No15684	X
8	BH2 (2.0M)	Nov 09, 2020		Soil	S20-No15685	X
9	BH3 (0.5M)	Nov 09, 2020		Soil	S20-No15686	X

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Company Name: Alliance Geotechnical
Address: 10 Welder Road
Seven Hills
NSW 2147

Project Name: WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 755933
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 10, 2020 6:10 PM
Due: Nov 17, 2020
Priority: 5 Day
Contact Name: Matt Swinbourn

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory						
External Laboratory						
10	BH3 (1.0M)	Nov 09, 2020		Soil	S20-No15687	X
11	BH3 (1.5M)	Nov 09, 2020		Soil	S20-No15688	X
12	BH3 (2.0M)	Nov 09, 2020		Soil	S20-No15689	X
13	BH3 (2.5M)	Nov 09, 2020		Soil	S20-No15690	X
14	BH3 (3.0M)	Nov 09, 2020		Soil	S20-No15691	X
15	BH3 (3.5M)	Nov 09, 2020		Soil	S20-No15692	X
16	BH3 (4.0M)	Nov 09, 2020		Soil	S20-No15693	X
17	BH3 (4.5M)	Nov 09, 2020		Soil	S20-No15694	X
18	BH3 (5.0M)	Nov 09, 2020		Soil	S20-No15695	X
19	BH4 (0.5M)	Nov 09, 2020		Soil	S20-No15696	X
20	BH4 (1.0M)	Nov 09, 2020		Soil	S20-No15697	X

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Company Name: Alliance Geotechnical
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Project Name: WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 755933
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 10, 2020 6:10 PM
Due: Nov 17, 2020
Priority: 5 Day
Contact Name: Matt Swinbourn

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory						
External Laboratory						
21	BH4 (1.5M)	Nov 09, 2020		Soil	S20-No15698	X
22	BH4 (2.0M)	Nov 09, 2020		Soil	S20-No15699	X
23	BH4 (2.5M)	Nov 09, 2020		Soil	S20-No15700	X
24	BH4 (3.0M)	Nov 09, 2020		Soil	S20-No15701	X
25	BH4 (3.5M)	Nov 09, 2020		Soil	S20-No15702	X
26	BH4 (4.0M)	Nov 09, 2020		Soil	S20-No15703	X
27	BH4 (4.5M)	Nov 09, 2020		Soil	S20-No15704	X
28	BH4 (5.0M)	Nov 09, 2020		Soil	S20-No15705	X
29	BH5 (0.5M)	Nov 09, 2020		Soil	S20-No15706	X
30	BH5 (1.0M)	Nov 09, 2020		Soil	S20-No15707	X
31	BH5 (1.5M)	Nov 09, 2020		Soil	S20-No15708	X

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Company Name:	Alliance Geotechnical	**Order No.:**	P4935	**Received:**	Nov 10, 2020 6:10 PM
Address:	10 Welder Road Seven Hills NSW 2147	**Report #:**	755933	**Due:**	Nov 17, 2020
		Phone:	1800 288 188	**Priority:**	5 Day
		Fax:	02 9675 1888	**Contact Name:**	Matt Swinbourn
Project Name:	WARRINGAH				
Project ID:	11724				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory						
External Laboratory						
32	BH5 (2.0M)	Nov 09, 2020		Soil	S20-No15709	X
Test Counts						32

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
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
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	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S20-No15678	CP	pH Units	8.0	8.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S20-No15688	CP	pH Units	5.8	6.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S20-No15698	CP	pH Units	4.8	4.9	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S20-No15708	CP	pH Units	7.1	7.1	pass	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Andrew Black	Analytical Services Manager
Myles Clark	Senior Analyst-SPOCAS (QLD)

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.

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: **Alexander Williams**

Report **757830-L**
Project name ADDITIONAL - WARRINGAH
Project ID 11724
Received Date Nov 19, 2020

Client Sample ID			**BH4-0.2-0.4**
Sample Matrix			**US Leachate**
Eurofins Sample No.			**S20-No32843**
Date Sampled			**Nov 09, 2020**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene	0.001	mg/L	< 0.001
USA Leaching Procedure			
Leachate Fluid[C01]		comment	1.0
pH (initial)	0.1	pH Units	6.7
pH (off)	0.1	pH Units	5.2
pH (USA HCl addition)	0.1	pH Units	1.6

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
Polycyclic Aromatic Hydrocarbons	Sydney	Nov 19, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
USA Leaching Procedure	Sydney	Nov 19, 2020	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

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Company Name: Alliance Geotechnical
Address: 10 Welder Road
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NSW 2147

Project Name: ADDITIONAL - WARRINGAH
Project ID: 11724

Order No.: P4935
Report #: 757830
Phone: 1800 288 188
Fax: 02 9675 1888

Received: Nov 19, 2020 11:17 AM
Due: Nov 20, 2020
Priority: 1 Day
Contact Name: Alexander Williams

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Benzo(a)pyrene	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH4-0.2-0.4	Nov 09, 2020		US Leachate	S20-No32843	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

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6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
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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
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
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							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	%	83			70-130	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (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.

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

- [x] Sydney Laboratory — Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com
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- [ ] Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com
- [ ] Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL	Project №	11724	Project Manager	Matt Swinbourn
Address	10 WELDER ROAD, SEVEN HILLS NSW	Project Name	Caringbah	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	Arash Afzali			Sampler(s)	Arash Afzali
Phone №	0402 500 655			Handed over by	Arash Afzali
Special Directions				Email for Invoice	admin@allgeo.com.au
Purchase Order	P4935			Email for Results	arash@allgeo.com.au / matt@allgeo.com.au
Quote ID №					

Analyses (Note: Where metals are requested, please specify "Total" or "Filtered". | SUITE code must be used to attract SUITE pricing)

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH1 (0.2-0.4m)	9/11/20	S			X		x							
2	BH1 (0.4-0.6m)	9/11/20	S			X		x							
3	BH2 (0.2-0.4m)	9/11/20	S			X		x							
4	BH2 (0.5-0.8)	9/11/20	S			X		x							
5	BH3 (0.2-0.4)	9/11/20	S			X		x							
6	BH3 (0.5-0.7)	9/11/20	S			X		x							
7	BH4 (0.2-0.4)	9/11/20	S			X		x							
8	BH4 (0.5-0.7)	9/11/20	S			X		x							
9	BH5 (0.2-0.4)	9/11/20	S			X		x							
10	BH5 (0.5-0.7)	9/11/20	S			X		x							
	Total Counts							10							

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)

- [ ] Overnight (9am)*
- [ ] 1 Day*
- [x] 2 Day*
- [ ] 3 Day*
- [x] 5 Day
- [ ] Other ( )

* Surcharges apply

Method of Shipment	[x] Courier (#)	[ ] Hand Delivered	[ ] Postal	Name	Signature	Date	Time 4 : 00pm
Eurofins | mgt Laboratory Use Only	Received By [signature]	(SYD) | BNE | MEL | PER | ADL | NTL | DRW	Signature [signature]	Date 10/11/2020	Time 6:10PM	Temperature 14.3°C	
	Received By	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date __/__/__	Time :	Report № 755828	

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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☐ Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL	Project №	11724	Project Manager	Matt Swinbourn
Address	10 WELDER ROAD, SEVEN HILLS NSW	Project Name	Caringbah	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	Arash Afzali				
Phone №	0402 500 655				
Special Directions					
Purchase Order	P4935				
Quote ID №					

Sampler(s)	Arash Afzali				
Handed over by	Arash Afzali				
Email for Invoice	admin@allgeo.com.au				
Email for Results	arash@allgeo.com.au; matt@allgeo.com.au				

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)

☐ Overnight (9am)* ☐ 1 Day* ☑ 2 Day* ☐ 3 Day* ☑ 5 Day

* Surcharges apply

☐ Other ( )

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	Analyses: L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964; WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH4 (4.5-4.8)	9/11/20	S	X				X							
2	BH5 (2.0-2.3)	9/11/20	S	X				X							
3								X							
4								X							
5								X							
6								X							
7								X							
8								X							
9															
10															
	Total Counts							8							

Method of Shipment: ☑ Courier (#) ☐ Hand Delivered ☐ Postal — Name — Signature — Date — Time: 4 : 00pm

Eurofins | mgt Laboratory Use Only									
Received By: Lyanne Ford	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date: 9/11/2020	Time: 6:40PM	Temperature: 14.3°C	
Received By:	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date: / /	Time: :	Report №: 755928	

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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- [ ] Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL	Project №	11724	Project Manager	Matt Swinbourn
Address	10 WELDER ROAD, SEVEN HILLS NSW	Project Name	Caringbah	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	Arash Afzali	Sampler(s)	Arash Afzali	Handed over by	Arash Afzali
Phone №	0402 500 655	Email for Invoice	admin@allgeo.com.au	Email for Results	~~arash@allgeo.com.au~~ matt@allgeo.com.au
Special Directions					
Purchase Order	P4935				
Quote ID №					

Analyses — Note: Where metals are requested, please specify "Total" or "Filtered" if not stated, total will be assumed

Containers: 1L Plastic, 250mL Plastic, 125mL Plastic, 200mL Amber Glass, 40mL VOA vial, 500mL PFAS Bottle, Jar (Glass or HDPE), Other (Asbestos AS4964, WA Guidelines)

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH1 (0.5m)	9/11/20	S		X			X							
2	BH1 (1.0m)	9/11/20	S		X			X							
3	BH1 (1.5m)	9/11/20	S		X			X							
4	BH1 (2.0m)	9/11/20	S		X			X							
5	BH2 (0.5m)	9/11/20	S		X			X							
6	BH2 (1.0m)	9/11/20	S		X			X							
7	BH2 (1.5m)	9/11/20	S		X			X							
8	BH2 (2.0m)	9/11/20	S		X			X							
9															
10															
	Total Counts				8			8							

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)
- [ ] Overnight (9am)*
- [ ] 1 Day*
- [x] 2 Day*
- [ ] 3 Day*
- [x] 5 Day (crossed out)
- [ ] Other ( )

* Surcharges apply

Method of Shipment: [x] Courier (#) [ ] Hand Delivered [ ] Postal — Name — Signature — Date — Time 4 : 00pm

Eurofins | mgt Laboratory Use Only							
Received By	M BIRKETT	SYD | BNE | MEL | PER | ADL | NTL | DRW (SYD circled)	Signature [signature]	Date 10/11/20	Time 6:10pm	Temperature	8.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date __/__/__	Time __:__	Report №	755933

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CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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☐ Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL	Project №	11724	Project Manager	Matt Swinbourn
Address	10 WELDER ROAD, SEVEN HILLS NSW	Project Name	Caringbah	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	Arash Afzali			Sampler(s)	Arash Afzali
Phone №	0402 500 655			Handed over by	Arash Afzali
Special Directions				Email for Invoice	admin@allgeo.com.au
Purchase Order	P4935			Email for Results	arash@allgeo.com.au / matt@allgeo.com.au
Quote ID №					

Analyses (Note: Where metals are requested, please specify "Total" or "Filtered" if SUITE codes must be used to attract SUITE pricing)

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)
1	BH3 (0.5m)	9/11/20	S		X			x						
2	BH3 (1.0m)	9/11/20	S		X			x						
3	BH3 (1.5m)	9/11/20	S		X			x						
4	BH3 (2.0m)	9/11/20	S		X			x						
5	BH3 (2.5m)	9/11/20	S		X			x						
6	BH3 (3.0m)	9/11/20	S		X			x						
7	BH3 (3.5m)	9/11/20	S		X			x						
8	BH3 (4.0m)	9/11/20	S		X			x						
9	BH3 (4.5m)	9/11/20	S		X			x						
10	BH3 (5.0m)	9/11/20	S		X			x						
	Total Counts				10			10						

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)
☐ Overnight (9am)* ☐ 1 Day* ☑ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( )
* Surcharges apply

Sample Comments / Dangerous Goods Hazard Warning

Method of Shipment: ☑ Courier (#) ☐ Hand Delivered ☐ Postal — Name — Signature — Date — Time 4 : 00pm

Eurofins | mgt Laboratory Use Only	Received By	M BIRKETT	(SYD) | BNE | MEL | PER | ADL | NTL | DRW	Signature	[signature]	Date	10/11/20	Time	6.10pm	Temperature	8.5
	Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	/ /	Time	:	Report №	755933

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL
Address	10 WELDER ROAD, SEVEN HILLS NSW
Contact Name	Arash Afzali
Phone №	0402 500 655
Special Directions	
Purchase Order	P4935
Quote ID №	
Project №	11724
Project Name	Caringbah
Project Manager	Matt Swinbourn
EDD Format (ESdat, EQuIS, Custom)	
Sampler(s)	Arash Afzali
Handed over by	Arash Afzali
Email for Invoice	admin@allgeo.com.au
Email for Results	arash@allgeo.com.au / matt@allgeo.com.au

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked): ☐ Overnight (9am)* ☐ 1 Day* ☑ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) * Surcharges apply

Analyses: L2: Aggressivity Suite; Ph Field Screen (pHF & pHFOX); Alliance WAC Suite 2

Containers: 1L Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL VOA vial; 500mL PFAS Bottle; Jar (Glass or HDPE); Other (Asbestos AS4964, WA Guidelines)

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other	Sample Comments / Dangerous Goods Hazard Warning
1	BH4 (0.5m)	9/11/20	S		X			X							
2	BH4 (1.0m)	9/11/20	S		X			X							
3	BH4 (1.5m)	9/11/20	S		X			X							
4	BH4 (2.0m)	9/11/20	S		X			X							
5	BH4 (2.5m)	9/11/20	S		X			X							
6	BH4 (3.0m)	9/11/20	S		X			X							
7	BH4 (3.5m)	9/11/20	S		X			X							
8	BH4 (4.0m)	9/11/20	S		X			X							
9	BH4 (4.5m)	9/11/20	S		X			X							
10	BH4 (5.0m)	9/11/20	S		X			X							
	Total Counts				10			10							

Method of Shipment: ☑ Courier (#) ☐ Hand Delivered ☐ Postal — Name — Signature — Date — Time 4 : 00pm

Eurofins | mgt Laboratory Use Only						
Received By	M BIRKET	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	[signature]	Date 10/11/20	Time 6.10pm	Temperature 8.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date __/__/__	Time __:__	Report № 755983

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CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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- [ ] Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	ALLIANCE GEOTECHNICAL	Project №	11724	Project Manager	Matt Swinbourn
Address	10 WELDER ROAD, SEVEN HILLS NSW	Project Name	Caringbah	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	Arash Afzali			Sampler(s)	Arash Afzali
Phone №	0402 500 655			Handed over by	Arash Afzali
Special Directions				Email for Invoice	admin@allgeo.com.au; arash@allgeo.com.au
Purchase Order	P4935			Email for Results	matt@allgeo.com.au
Quote ID №					

Analyses

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	L2: Aggressivity Suite	Ph Field Screen (pHF & pHFOX)	Alliance WAC Suite 2	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH5 (0.5m)	9/11/20	S		X		X								
2	BH5 (1.0m)	9/11/20	S		X		X								
3	BH5 (1.5m)	9/11/20	S		X		X								
4	BH5 (2.0m)	9/11/20	S		X		X								
5							X								
6							X								
7							X								
8							X								
9							X								
10							X								
	Total Counts				4		10								

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)

- [ ] Overnight (9am)*
- [ ] 1 Day*
- [x] 2 Day*
- [ ] 3 Day*
- [x] 5 Day (struck through)
- [ ] Other ( )

* Surcharges apply

Method of Shipment: [x] Courier (#) [ ] Hand Delivered [ ] Postal — Name — Signature — Date — Time 4 : 00pm

Eurofins | mgt Laboratory Use Only									
Received By	M BIRKETT	(SYD) | BNE | MEL | PER | ADL | NTL | DRW	Signature	[signature]	Date	10/11/20	Time	6.10pm	Temperature 8.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	/ /	Time		Report № 755983

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request.

 QS3009_R7 Modified by Dr H Symons Approved by T Lansland Approved on 17 August 2017

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#AU04_Enviro_Sample_NSW

To: Andrew Black
Subject: RE: 1 DAY TAT ADDITIONAL LEACHATE: FW: Report 755928 : Site WARRINGAH (11724)

From: Alexander Williams <alex@allgeo.com.au>
Sent: Thursday, 19 November 2020 11:13 AM
To: Andrew Black <AndrewBlack@eurofins.com>
Cc: Michael Dunesky <michael@allgeo.com.au>; enviro <enviro@allgeo.com.au>
Subject: Report 755928 : Site WARRINGAH (11724)

EXTERNAL EMAIL*

Hi Andrew,

For the report in the header, could we please run TCLP fro B(a)p on sample BH4-0.2-0.4 on a 24 hr TAT please.

Regards,

Alexander Williams
Graduate Environmental Consultant
Mobile: 0418 343 007 | **Email:** alex@allgeo.com.au

Alliance Geotechnical
ENGINEERING | ENVIRONMENTAL | TESTING
Geotechnical & Environmental Solutions

OHSAS18001 ISO9001 ISO14001 AS/NZS4801
OH&S QUALITY ENVIRONMENT OH&S

Office Email: admin@allgeo.com.au - **Website:** allgeo.com.au - **Office Phone:** 1800 288 188
Postal Address: PO Box 275, Seven Hills NSW 1730 / Office & Laboratory Address: 8-10 Welder Road, Seven Hills NSW 2147

END OF REPORT