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22 August 2022

Mr John Sabbouh
Richard Crookes Constructions
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Artarmon NSW 2064

RE: REMOVAL OF ASBESTOS CONTAMINATED FILL SOIL IN THE FORMER TENNIS COURT / NEW WELLNESS CENTRE AREA AT ST JOHN OF GOD RICHMOND HOSPITAL AT 177 GROSE VALE ROAD, NORTH RICHMOND NSW

Dear Sir,

We refer to our visual inspection and soil sample collection undertaken on Thursday 18 August 2022 following the discovery of buried waste in the area on which the former tennis court was located within the St John of God Richmond Hospital at 177 Grose Vale Road, North Richmond NSW (the site). A new wellness centre is to be constructed in this area of the site.

Following completion of the demolition of the two former tennis court and removal of the road base subgrade material, a test pit investigation was undertaken to ascertain the depth of fill soil across this area. This investigation found the fill soil to extend to depths ranging between 0.3 metre and 1.2 metres. The deeper area of the fill soil contains a large quantity of rubbish that includes brown glass, steel, vehicle wheel rims, building debris and pieces of asbestos cement sheet debris.

Sample Collection and Analysis

During the site inspection on 18 August 2022, six soil samples were collected from the excavated fill soil for laboratory analysis to ascertain the levels of potential chemical contaminants to enable a waste classification of the fill soil to be prepared to allow for this soil to be disposed of to a suitably licenced landfill site. Three soil samples were also collected from the fill soil for analysis to determine the presence and weight for weight concentration of asbestos as asbestos containing material (ACM) (non-friable asbestos) and asbestos fines (AF) / fibrous asbestos (FA) (friable asbestos).

A piece of the asbestos cement sheet debris was also collected for laboratory analysis to confirm the presence of asbestos in this material of which there a numerous pieces within the fill soil that has been exposed across the former tennis court area.

The three soil samples collected for asbestos analysis each comprised a minimum of 500 ml of soil and were placed into laboratory supplied clean resealable plastic bags which were marked with the sample number / location.

The soil samples were delivered to Envirolab Services NATA accredited laboratory in Chatswood NSW and were analysed in accordance with Envirolab Services NATA accredited method ASB-001 and methodology in accordance with as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. The table below lists the sample locations and the results of the laboratory analysis:

Soil Sample Area	Laboratory Sample No.	Asbestos ID in soil	ACM >7mm estimation	FA and AF (<7mm) estimation
TP1 stockpile	303477-1	Chrysotile asbestos detected	Not present	0.0432 g (est.) 0.0066% w/w
TP3 stockpile	303477-2	No asbestos detected	Not present	Not present
TP5 stockpile	303477-3	No asbestos detected	Not present	Not present

The soil sample which was taken from the fill soil removed from TP 1 located in the north western part of the excavation area within the site was found to containing asbestos as AF / FA above the acceptance criteria of 0.001%. The asbestos material in this sample is classifiable as friable asbestos containing material.

The piece of asbestos cement sheet debris that was collected from the fill soil was placed into a plastic resealable sample bag and was analysed by Envirolab using their NATA endorsed method ASB-001 and methodology consistent with AS4964-2004.

Analysis of this materials found it to contain chrysotile asbestos.

A copy of the laboratory analysis report is attached. See pages 11 and 12 for the asbestos sample results.

Scope of Asbestos Removal Work

The following scope of work is to be completed to remove the asbestos contaminated surface fill soil from within the former tennis court area at the site.

1. A notification of friable asbestos removal work for the asbestos contaminated soil removal is to be lodged with SafeWork NSW by the Class A friable licenced asbestos removal contractor.
2. A barricade with asbestos warning signs is to be erected around the asbestos contaminated soil removal work area at the site.

3. Wet decontamination facilities and asbestos PPE change area is to be established at the entry to the friable asbestos removal work area.
4. Water spray is to be used to control dust generated by the work. Work should not be undertaken during periods of high wind that could carry dust potentially containing asbestos fibres into adjoining areas.
5. The in-situ fill soil within the former tennis court area at the site is to be excavated and loaded out for disposal as friable asbestos contaminated waste at a landfill facility licenced by the NSW EPA to accept the waste soil. This fill soil is classified as general solid waste – special waste asbestos for the purpose of off-site disposal.

This fill soil is to be excavated from the across the area to the depth of the underlying natural clay sub soil.

6. After the asbestos contaminated fill soil has been removed and the remaining soil within the excavation areas has been inspected and found to be free of visible asbestos containing material debris, six soil samples are to be collected from across the excavated area for asbestos content analysis.
7. Following receipt of the laboratory analysis results conforming the remaining soil to have asbestos below the site acceptance criteria (<0.01% w/w for ACM and <0.001% w/w for AF/FA), a written clearance certification is to be compiled verifying that the asbestos contaminated fill soil has been removed and the asbestos contaminated soil removal area and also the remainder of the site may be accessed for the construction work to be undertaken without the use of asbestos PPE.
8. Monitoring for airborne asbestos fibres is to be carried out on the barricades surrounding the removal work area during the friable asbestos contaminated soil removal work.

Requirements for Friable Asbestos Removal Work

The asbestos removal work shall be contained within the former tennis court excavation area located within the St John of God Richmond Hospital site at 177 Grose Vale Road, North Richmond NSW.

Prior to the commencement of asbestos removal work, the Class A licenced asbestos removal contractor is to prepare a project specific Asbestos Management Plan for the removal of the asbestos contaminated soil from the nominated area of the site in accordance with the requirements of section 3.5 of the How to Safely Remove Asbestos Code of Practice issued by the NSW Government in August 2019. This asbestos removal control plan is to be kept on site for the duration of the asbestos removal work.



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Shade cloth is to be placed on the temporary fencing surrounding the asbestos contaminated soil excavation area and asbestos removal warning signs are to be placed on this fencing. Warning signs are to also be placed at the entry to the asbestos removal work area and should read "Asbestos Work Area, No Unauthorised Entry". These signs are to comply with Australian Standard 1319-1983: Safety signs for the occupational environment.

A change area and wet decontamination facility are to be located at the entry to the 'friable' asbestos removal work area. All persons entering this asbestos removal work area are to change into asbestos protective equipment in the change area and undergo decontamination prior to leaving the work area. All asbestos PPE is to be removed in the decontamination area when exiting the asbestos removal work area.

The contractor will be liable for all damage caused during the work to construction materials that do not form part of this scope of work. Should any damage occur during the course of the asbestos removal work, all costs associated with the repairs to the affected areas will be met by the asbestos removal contractor.

Training and Health Assessment

The asbestos removal contractor shall provide instruction to all persons involved in the work that may be exposed to asbestos in the course of the work regarding the danger to health and the statutory requirements that are required to provide safe working conditions.

The asbestos contractor's staff involved with the removal of the asbestos containing materials must also be formally trained in safe friable asbestos removal working procedures and in the wearing and maintenance of protective clothing and equipment.

The supervisor on the site is to have completed formal training in the supervision of friable asbestos removal. Evidence of this training must be held on site. The friable asbestos removal supervisor is to be on site at all times during the removal of the friable asbestos contaminated soil.

All persons involved in the licenced asbestos removal work are to have completed current health assessments in accordance with Clauses 435 and 436 of the NSW WHS Regulation 2017.



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Personal Protective Equipment

All persons entering the work areas (to undertake asbestos removal work) are to wear disposable coveralls, Class P3 respiratory protective equipment (RPE) and washable laceless boots or disposable boot covers.

RPE is to be issued to each person entering the work area and are to be cleaned prior to leaving the asbestos work area.

Persons entering the work areas for supervision or inspection of the work are to wear disposable coveralls, RPE and washable laceless boots.

All persons entering the work area are to be instructed on the correct fit and wearing of the RPE. No person with a beard shall be permitted to enter an asbestos removal work area.

Disposable items of PPE are not to be taken outside of the asbestos removal work area.

The laundering of approved reusable protective clothing shall be carried out in accordance with the procedures approved by SafeWork NSW. Waste water from washing of contaminated clothing is to be filtered prior to disposal to the sewer and clothes dryers used for drying clothes or towels are to be filtered through a HEPA filter.

Decontamination Facilities

For the removal of friable asbestos containing and contaminated materials, a decontamination unit with showers that can be divided into three distinct regions is to be established at the entry to the work area.

These three regions are:

- 1) Dirty decontamination area
- 2) Clean decontamination area
- 3) Clean changing area.

The wet decontamination facilities shall be sited at the entry to the friable asbestos removal work area. All persons exiting the asbestos removal work area are to undergo full wet decontamination prior to exiting the area.



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Water supply to the decontamination unit is to be taken from the nearest available location. Waste water is to be filtered of all asbestos and disposed of via the sewer system. Used water filters are to be disposed of as asbestos waste.

The decontamination unit is to be maintained in a clean and sanitary condition at all times. It is not to be used for the storage of equipment or other items whilst the work is in progress.

Bagging and Disposal of Asbestos Contaminated Waste

All asbestos contaminated waste from the work is to be placed into covered leak proof vehicles for disposal at a landfill facility licenced by the NSW Environment Protection Authority (NSW EPA) to accept friable asbestos contaminated soil as per the waste classification report prepared for the soil.

The transport of the asbestos contaminated waste is to be undertaken in covered leak proof trucks or bins and is to be disposed of at a landfill site that can lawfully receive this waste in accordance with the 'Section 42 - Special Requirements Relating to Asbestos Waste' as detailed in the Protection of the Environment Operations (Waste) Regulation 2014.

Small items of asbestos contaminated waste such as used disposable PPE are to be double bagged in 0.2 mm asbestos waste bags for disposal at a landfill facility licenced by the NSW Environment Protection Authority (NSW EPA) to accept friable asbestos containing material.

The waste material is to be placed into the first asbestos waste bag at the work face and sealed. This bag is to then be placed into a second waste bag away from the work face (but within the work area). Each bag is to separately 'goose necked' and sealed with tape. The waste material is to be wetted prior to placement in the bag.

The bagged asbestos waste is to be transported to the landfill site in leak proof vehicles or bins which are to be lined with two layers of 0.2 mm plastic. This plastic lining is to be fully tape sealed over the waste to prevent water leakage and dust emissions during transport to the landfill site.

Documentary evidence of the correct disposal of the waste shall be provided. This documentation will include name of authorised tip, weigh bridge docket and registration number of vehicle for every disposal. All waste removed from the site is to be registered with the NSW EPA waste locate app.



Airborne Asbestos Fibre Monitoring

Monitoring for airborne asbestos fibres is to be carried out at all times throughout the duration of the friable asbestos removal work. The monitoring will be undertaken by a licenced asbestos assessor engaged directly by the client.

Monitoring is to be carried out in accordance with the requirements of the 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres' 2nd edition [NOHSC:3003(2005)]. Analysis of the air monitoring filters is to be carried out by a NATA accredited laboratory.

Air monitors are to be placed in the decontamination unit / change area and on the temporary fencing / barricade surrounding the asbestos removal work area.

The daily reports of the results of the air monitoring will be forwarded to the client. A copy should be held on site.

The NOHSC recommended exposure level for airborne asbestos fibres, measured as a time weighted average over an 8 hour work shift, is 0.1 fibres per millilitre of air (0.1 fibres/ml).

The NOHSC Code of Practice for the Safe Removal of Asbestos details control levels for airborne asbestos fibre concentrations that are to be observed during the work. These control levels are as follows:

<i>Airborne fibre concentration (fibres/ml)</i>	<i>Control Measure</i>
<0.01	Continue work using existing asbestos dust control measures
≥0.01	Continue work and review asbestos dust control measures
≥0.02	Stop work, identify cause of dust emissions and revise dust control measures.

Regulatory Requirements

The removal and disposal of asbestos containing construction materials in NSW is overseen by various authorities including SafeWork NSW (SafeWork), the NSW Environment Protection Authority (NSW EPA), local government (council) by administering various legislation, regulations and codes of practice. Statutory documents that are applicable to the work include (but are not limited to) the following:

- NSW Work Place Health & Safety Act 2011.
- NSW Work Place Health & Safety Regulation 2017.
- How to Safely Remove Asbestos Code of Practice issued by the NSW Government in August 2019.
- Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC1003(1995)].
- NSW Protection of the Environment Operations (General) Regulation 2009: Reg 92.
- NSW Protection of the Environment Operations (Waste) Regulation 2014: 'Sections 77 - 81.

Risk Assessment and Asbestos Classification

Health risk from asbestos containing materials only occurs from airborne asbestos fibres. Whilst asbestos containing materials remain undisturbed and there are no fibres being released from these materials then there is no actual risk posed. Materials which contain loose fibres have a high potential to generate airborne when disturbed.

In accordance with the NSW Work, Health and Safety Regulation 2017, asbestos containing materials are classified as either 'friable' or 'non-friable' materials.

'Friable' asbestos containing materials are any material that contains asbestos and is in the form of a powder or can be crumbled, pulverised or reduced to powder by hand pressure when dry.

'Non-friable' asbestos containing material means any material (other than friable asbestos material) that contains asbestos.

Soil sample No. 7 that was collected from excavated fill soil in the former tennis court area of the site on 18 August 2022 for asbestos classification analysis was found to contain a small amount of fibrous asbestos material less than 7mm in size as asbestos fines (AF) and fibrous asbestos (FA). Asbestos in this form is classifiable as friable asbestos containing material.

The asbestos contaminated fill soil located in the former tennis court area within the St John of God Richmond Hospital at 177 Grose Vale Road, North Richmond NSW is classified as 'friable' asbestos containing material for the purpose of asbestos removal.

All of the fill soil within this area of the site in which there is asbestos material debris and also metal glass and building debris is to be removed from the site for disposal of as special waste – asbestos.

Asbestos Removal Procedure

The removal of the asbestos contaminated fill soil containing asbestos cement material debris and small asbestos material debris and asbestos fibres is to be undertaken in accordance with the procedure detailed below.

1. The temporary fencing erected around the perimeter of the asbestos removal work area / fill soil excavation area is to be covered with plastic sheeting. Asbestos removal warning signs are to be placed at the entry to the asbestos removal work area.
2. The asbestos contaminated soil in this area of the site is classified as 'friable asbestos containing material' due to the presence of asbestos material in the form of asbestos fines (AF) and fibrous asbestos (FA).
3. The asbestos contaminated soil to be removed from the site is notifiable friable asbestos removal work. The Class A friable licenced asbestos removal contractor is to submit a notification of friable asbestos removal work to SafeWork NSW prior to the commencement of the work. There is a five day wait period between submission of the notification to SafeWork NSW and the commencement of the work on site.
4. A site and project specific safe work method statement and risk assessment for the proposed work including details of the asbestos related precautions to be incorporated into the asbestos removal work as required by section 299 of the Work Health and Safety Regulation 2017 at the site is to be compiled by the asbestos removal contractor undertaking the work.
5. The asbestos removal contractor must compile an asbestos removal control plan as per section 3.5 of the How to Safely Remove Asbestos Code of Practice.
6. Water spray is to be used to control dust generated by the work. Work should not be undertaken during periods of high wind that could carry asbestos fibres into adjoining areas.
7. The in-situ fill soil across the former tennis court area which contains friable asbestos is to be excavated to the depth of the underlying natural clay sub soil and is to be loaded out for disposal as asbestos contaminated waste at a landfill facility licenced by the NSW EPA to accept the waste soil.
8. The transport of the asbestos contaminated waste is to be undertaken in covered leak proof bins and is to be disposed of at a landfill site that can lawfully receive this waste in accordance with the 'Section 42 - Special Requirements Relating to Asbestos Waste' as detailed in the Protection of the Environment Operations (Waste) Regulation 2014. Documentary evidence of the correct disposal of the waste shall be provided. This documentation will include name of authorised tip, weigh bridge docket and registration number of vehicle for every disposal.



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8. Following completion of the removal of the asbestos contaminated soil, the excavation equipment and all other items of plant and tools used in the work are to be cleaned of asbestos contamination and asbestos contaminated soil. Cleaning is to be carried out prior to the plant and equipment leaving the site.
9. After the fill soil has been removed, the exposed soil within the excavation area is to be inspected to confirm that no visible asbestos cement sheet debris present. Six soil samples are to be collected from across the excavation area for asbestos content analysis.
10. Following receipt of the laboratory results conforming the soil samples to have asbestos concentrations below the site acceptance criteria (<0.01% w/w for ACM and <0.001% for AF / FA), written clearance certification is to be compiled verifying that the asbestos contaminated waste has been removed and the asbestos removal area at the site may be accessed for the construction work to be undertaken without the use of asbestos PPE.
11. Monitoring for airborne asbestos fibres is to be carried out at all times that the friable asbestos removal work is being carried out.

If you require any further information, please contact the undersigned on 0437 251 358.

Yours faithfully

P. CLIFTON & ASSOCIATES PTY LTD

Philip Clifton
Principal
BOHS IP402 Certified
SafeWork NSW Licenced Asbestos Assessor

Attachments: Aerial Photograph, Photographs, Laboratory Report



AERIAL PHOTOGRAPH

22 August 2022



Aerial photograph of the former tennis court area at 177 Grose Vale Road, North Richmond NSW showing the asbestos soil sample locations that were collected on 18 August 2022.

Sample 7 in the north west part of the area contains chrysotile asbestos in the form of friable asbestos



PHOTOGRAPHS

22 August 2022



Fill soil in former tennis court area containing metal, glass and pieces of asbestos cement sheet debris. Arrow indicates asbestos cement sheet debris



Fill soil in former tennis court area containing metal, glass and pieces of asbestos cement sheet debris. Arrows indicates asbestos cement sheet debris



LABORATORY REPORT



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CERTIFICATE OF ANALYSIS 303477

Client Details

Client	P Clifton & Assoc
Attention	Phil Clifton
Address	PO Box 447, Pymble Business Ctre, NSW, 2073

Sample Details

Your Reference	<u>North Richmond</u>
Number of Samples	9 Soil, 1 Material
Date samples received	18/08/2022
Date completed instructions received	18/08/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

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

Report Details

Date results requested by 19/08/2022

Date of Issue 19/08/2022

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Asbestos Approved By

Analysed by Asbestos Approved Analyst: Lucy Zhu

Authorised by Asbestos Approved Signatory: Matt Mansfield

Results Approved By

Hannah Nguyen, Metals Supervisor

Josh Williams, Organics and LC Supervisor

Kyle Gavrilov, Senior Chemist

Liam Timmins, Organic Instruments Team Leader

Lucy Zhu, Asbestos Supervisor

Matt Mansfield, QHSE manager

Authorised By

Nancy Zhang, Laboratory Manager

Client Reference: North Richmond

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	100	99	104	103

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date extracted	-	18/08/2022
Date analysed	-	19/08/2022
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	103

Client Reference: North Richmond

svTRH (C10-C40) in Soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	71	73	73	72	72

svTRH (C10-C40) in Soil		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date extracted	-	18/08/2022
Date analysed	-	18/08/2022
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	74

Client Reference: North Richmond

PAHs in Soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	70	72	71	73	71

PAHs in Soil		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date extracted	-	18/08/2022
Date analysed	-	19/08/2022
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	73

Client Reference: North Richmond

Organochlorine Pesticides in soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	83	80	81	83	82

Organochlorine Pesticides in soil		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date extracted	-	18/08/2022
Date analysed	-	19/08/2022
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	83

Client Reference: North Richmond

PCBs in Soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	83	80	81	83	82

PCBs in Soil		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date extracted	-	18/08/2022
Date analysed	-	19/08/2022
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	83

Client Reference: North Richmond

Acid Extractable metals in soil						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Arsenic	mg/kg	10	11	11	<4	18
Cadmium	mg/kg	2	<0.4	<0.4	<0.4	2
Chromium	mg/kg	21	21	12	5	22
Copper	mg/kg	2,100	33	44	19	140
Lead	mg/kg	120	48	47	9	200
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	16	11	8	4	16
Zinc	mg/kg	350	78	550	19	1,200

Acid Extractable metals in soil			
Our Reference		303477-6	303477-11
Your Reference	UNITS	6 TP6	1 TP1 - [TRIPLICATE]
Depth		SP	SP
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date prepared	-	19/08/2022	19/08/2022
Date analysed	-	19/08/2022	19/08/2022
Arsenic	mg/kg	11	8
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	18	19
Copper	mg/kg	39	250
Lead	mg/kg	65	73
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	8	15
Zinc	mg/kg	120	260

Client Reference: North Richmond

Moisture						
Our Reference		303477-1	303477-2	303477-3	303477-4	303477-5
Your Reference	UNITS	1 TP1	2 TP2	3 TP3	4 TP4	5 TP5
Depth		SP	SP	SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Moisture	%	8.2	12	11	12	6.0

Moisture		
Our Reference		303477-6
Your Reference	UNITS	6 TP6
Depth		SP
Date Sampled		18/08/2022
Type of sample		Soil
Date prepared	-	18/08/2022
Date analysed	-	19/08/2022
Moisture	%	18

Client Reference: North Richmond

Asbestos ID - soils NEPM - ASB-001				
Our Reference		303477-7	303477-8	303477-9
Your Reference	UNITS	7 TP1	8 TP3	9 TP5
Depth		SP	SP	SP
Date Sampled		18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil
Date analysed	-	18/08/2022	18/08/2022	18/08/2022
Sample mass tested	g	658.71	643	516.24
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Chrysotile	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	-	-	-
FA and AF Estimation*	g	0.0432	-	-
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	0.0066	<0.001	<0.001

Client Reference: North Richmond

Asbestos ID - materials		
Our Reference		303477-10
Your Reference	UNITS	10 Fibro
Depth		SP
Date Sampled		18/08/2022
Type of sample		Material
Date analysed	-	19/0/22
Mass / Dimension of Sample	-	55x50x7mm
Sample Description	-	Beige fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected
Trace Analysis	-	[NT]

Client Reference: North Richmond

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	<p>Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004.</p> <p>Results reported denoted with * are outside our scope of NATA accreditation.</p> <p>NOTE #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF)</p> <p>NOTE #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.</p> <p>Estimation = Estimated asbestos weight</p> <p>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.</p>
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.</p> <p>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.</p>
Org-020	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.</p> <p>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.</p> <p>Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).</p>
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Client Reference: North Richmond

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS.
	Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Client Reference: North Richmond

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	109	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	109	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	114	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	109	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	106	[NT]	[NT]	[NT]	[NT]	108	[NT]

Client Reference: North Richmond

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	78	[NT]	[NT]	[NT]	[NT]	98	[NT]

Client Reference: North Richmond

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	84	[NT]	[NT]	[NT]	[NT]	84	[NT]

Client Reference: North Richmond

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	89	[NT]	[NT]	[NT]	[NT]	93	[NT]

Client Reference: North Richmond

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	89	[NT]	[NT]	[NT]	[NT]	93	[NT]

Client Reference: North Richmond

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	303477-2
Date prepared	-			19/08/2022	1	19/08/2022	19/08/2022		19/08/2022	19/08/2022
Date analysed	-			19/08/2022	1	19/08/2022	19/08/2022		19/08/2022	19/08/2022
Arsenic	mg/kg	4	Metals-020	<4	1	10	10	0	101	77
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	2	<0.4	133	98	74
Chromium	mg/kg	1	Metals-020	<1	1	21	20	5	96	80
Copper	mg/kg	1	Metals-020	<1	1	2100	980	73	95	103
Lead	mg/kg	1	Metals-020	<1	1	120	170	34	97	#
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	<0.1	0	102	98
Nickel	mg/kg	1	Metals-020	<1	1	16	19	17	98	78
Zinc	mg/kg	1	Metals-020	<1	1	350	260	30	100	#

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

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

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos-ID in soil: NEPM

This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Factual description of asbestos identified in the soil samples: NEPM

Sample 303477-7; Chrysotile asbestos identified in 0.0540g of fibrous matted material

Acid Extractable Metals in Soil:

- The laboratory RPD acceptance criteria has been exceeded for 303477-1 for Cu. Therefore a triplicate result has been issued as laboratory sample number 303477-11.

- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.



CHAIN OF CUSTODY FORM - Client

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Company: P Clifton & Assoc		Client Project Name/Number/Site, etc (ie report title): North Richmond
Contact Person:		PO No. (if applicable):
Project Mgr:		Envirolab Quote No.:
Sampler:		Date results required: <input type="checkbox"/> Standard <input type="checkbox"/> Same Day <input checked="" type="checkbox"/> 1 day <input type="checkbox"/> 2 day <input type="checkbox"/> 3 day
Address:		Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Phone:	Mob:	Additional report format: <input type="checkbox"/> Esdat <input type="checkbox"/> Equis
Email Results to: phil@pca.com		Lab Comments:
Email Invoice to:		

Sample Information					Tests Required								Comments	
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combo	MEPM	Asbestos							Provide as much information about the sample as you can
1	TP1	SP	18/8	Soil	✓									
2	TP2	✓	✓	✓	✓									
3	TP3	✓	✓	✓	✓									
4	TP4	✓	✓	✓	✓									
5	TP5	✓	✓	✓	✓									
6	TP6	✓	✓	✓	✓									
7	TP1	✓	✓	✓			✓							
8	TP3	✓	✓	✓			✓							
9	TP5	✓	✓	✓			✓							
10	Fibro	✓	✓	Fibro										

Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis

Relinquished by (Company): P Clifton & Assoc	Received by (Company): EL 5 510	Lab Use Only	
Print Name: Phil Clifton	Print Name: Christine	Job number: 503477	Cooling: Ice / Ice pack / None
Date & Time: 18-8-22 18:18	Date & Time: 18/08/22 18:15	Temperature: 14°C	Security seal: Intact / Broken / None
Signature: P. Clifton	Signature: [Signature]	TAT Req - SAME day (1) 2 3 4 STD	