

Clarke & Prince Pty Ltd Architects
3 Scott Street
Cairns QLD 4870

Project 216856.00
5 September 2022
L.001.Rev0
BK/DAW

Attention: Martin Majer

Email: martin@clarkeandprince.com.au

Supplementary Letter Report on Limited Contamination Testing
Proposed Ergon Depot
32 -38 Hartley Street, Cairns

1. Introduction

This supplementary letter report presents the results of limited contamination testing conducted by Douglas Partners Pty Ltd (DP) at the above site. The limited contamination testing was undertaken concurrently with a geotechnical investigation (refer DP report 216856.00.R.001.Rev0, dated 1 September 2022). The work was conducted for Clarke & Prince Pty Ltd Architects with reference to DP proposal 216856.00.P.001.Rev1, dated 3 August 2022.

It should be noted that this letter report is supplementary to the above referenced geotechnical report and is intended to provide an overview of the following additional components:

- Results of the contamination register search;
- Methodology of soil sampling for contamination testing;
- Observations (relating to potential contamination) during intrusive field work;
- Laboratory contamination analysis undertaken, rational for adopted assessment criteria, and summary of the results; and
- Discussion of key findings.

Reference to the geotechnical report should be made for the following relevant information:

- Details of the proposed development;
- Site description and photographs;
- Field work details;
- Test pit logs, interpreted CPT plots, and summary of encountered subsurface conditions and groundwater observations; and
- Site and test location plan.

As requested, sampling for contamination testing was limited to collection of samples of fill at the geotechnical test pit locations (Pits 1, 2, and 3) and collection of two samples (designated SPA and SPB) from an existing soil stockpile at the site.

It should be noted that detailed contamination assessment of the site or waste characterisation of the existing stockpile was beyond the scope of this investigation. As requested by the client, soil sampling for contamination testing was opportunistic in nature and limited in scope to provide a preliminary assessment of the contamination status of tested soils.

This letter report should be read in conjunction with the above referenced DP geotechnical report and with the attached notes About this Report and should be kept in its entirety without separation of individual pages or sections.

2. Search of Contamination Registers

The site forms part of Lot 2 RP738082. A search of the Environmental Management Register (EMR) and Contaminated Land Register (CLR), administered by the Queensland Department of Environment and Science (DES), indicates that Lot 2 RP738082 is not listed on the EMR or CLR. A copy of the search response is attached.

3. Contamination Sampling

Sampling for contamination testing was undertaken with reference to standard operating procedures described in DP's Field Procedures Manual, and Standards Australia documents AS4482.1:2005 and AS4482.2:1999 to ensure that samples were representative and to maintain their integrity.

All sample containers were labelled with individual and unique identification, including project number, sample reference, and date and time of sampling. Sample integrity was maintained by storing all samples in sealed jars and in ice-cooled, insulated containers immediately after sampling. Samples were chilled overnight and sent to the laboratory with ice present. All samples were received by the laboratory in the correct containers and within recommended holding times.

It is considered that the integrity of samples was preserved during temporary storage and transportation to the laboratory. Chain of custody and sample receipt documentation is attached with the laboratory reports.

4. Field Work Observations (Relating to Potential Contamination)

Fill generally comprising sands and gravels was encountered to approximately 0.7 m depth in each of the three test pits (designated Pits 1, 2, and 3). The fill was generally free of foreign materials, except in Pit 1, which encountered a single small concrete fragment. The stockpile of soil at the site was observed to comprise sand and clay soils. No visual or olfactory evidence of contamination (such as staining/odours), nor any potential asbestos containing material (PACM) were observed at the test locations.

5. Laboratory Analysis

A total of six primary samples were analysed for the following:

- Total recoverable hydrocarbons (TRH),
- Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN);
- Polycyclic aromatic hydrocarbons (PAH);
- Organochlorine pesticides (OCP);
- Poly chlorinated biphenyl (PCB); and
- Eight heavy metals (As, Cd, Cr, Cu, Pb, Zn, Ni, and Hg).

In addition to the above, three of the samples were also analysed for fibrous asbestos and asbestos fines (FA/AF).

Analysis was undertaken by Envirolab Services Pty Ltd (Envirolab), at 12 Ashley Street, Chatswood NSW. Envirolab is accredited by NATA for all analysis performed.

6. Assessment Criteria

Assessment criteria were adopted from investigation and screening levels of Schedule B1, National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPM). The NEPM guidelines are endorsed by DES under the National Environment Protection Council Act 1994.

The investigation and screening levels are applicable to generic land use settings and include consideration of the soil type for some analytes. The investigation and screening levels applied in the current investigation comprise levels adopted for residential land use scenarios, in order to provide a preliminary assessment of contamination status of tested soils.

7. Laboratory Results

Laboratory reports and chain of custody documentation are attached. The results are summarised in Tables 1, 2, and 3 on the following pages.

In summary, all analyte concentrations were either below the laboratory's practical quantitation limit (PQL) or below the adopted assessment criteria.

Table 1: Analytical Results (Soil) – TRH, BTEXN

Sample ID	Depth (m)	Sampling Date	Lithology	Analyte (mg/kg)										
				C ₆ -C ₁₀	F1	>C ₁₀ -C ₁₆	F2	>C ₁₆ -C ₃₄	>C ₃₄ -C ₄₀	Benzene	Toluene	Ethyl-benzene	Xylenes	Naphthalene
TP1	0.1m	4.8.2022	Fill - Silty sand	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
TP2	0.35m	4.8.2022	Fill - Clayey gravelly sand	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
TP3	0.1m	4.8.2022	Fill - Sand	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
TP3	0.45m	4.8.2022	Fill - Gravelly clayey silt	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
SPA	0.1m	4.8.2022	Fill - Sandy silty clay	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
SPB	0.4m	4.8.2022	Fill - Silty clayey sand	<25	<25	<50	<50	<100	<100	<0.2	<0.5	<1	<1	<1
Site Assessment Criteria														
ESL ¹				~	180	120	~	300	2,800	50	85	70	45*	~
EIL ²				~	~	~	~	~	~	~	~	~	~	170
HSL-A & HSL-B ³				~	45	~	110	~	~	0.5	160	55	40	3

Notes to Table 1:

- 1 NEPM (2013) Ecological screening levels for urban residential and public open space (Schedule B1: Table 1B(6)). Threshold values for coarse soils have been adopted (unless otherwise stated).
 - 2 NEPM (2013) Ecological investigation levels for urban residential and public open space (Schedule B1: Table 1B(5)).
 - 3 NEPM (2013) Health-based soil screening levels for vapour intrusion from sandy soils in low and high density residential premises. Source depth of 0m to 1m (Schedule B1: Table 1A(3)).
- Bold** Indicates detection of an analyte
- ~ No guideline available at time of investigation
- F1 C₆-C₁₀ less BTEX
- F2 >C₁₀-C₁₆ less Naphthalene
- * Threshold value for fine soils adopted.

Table 2: Analytical Results (Soil) – Metals

Test Location	Depth (m)	Sampling Date	Lithology	Moisture (%)	Analyte (mg/kg)							
					Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
TP1	0.1m	4.8.2022	Fill - Silty sand	4.2	<4	<0.4	5	7	19	3	29	<0.1
TP2	0.35m	4.8.2022	Fill - Clayey gravelly sand	6.4	6	<0.4	12	25	86	24	68	<0.1
TP3	0.1m	4.8.2022	Fill - Sand	2.2	<4	<0.4	3	3	5	2	11	<0.1
TP3	0.45m	4.8.2022	Fill - Gravelly clayey silt	9.6	<4	5.2	5	16	91	4	180	<0.1
SPA	0.1m	4.8.2022	Fill - Sandy silty clay	14	18	<0.4	17	21	12	9	32	<0.1
SPB	0.4m	4.8.2022	Fill - Silty clayey sand	6.9	13	<0.4	12	11	12	4	35	<0.1
Site Assessment Criteria												
EIL ¹					100	~	190*	190	1,100	170	400	~
HIL-A ²					100	20	100**	6,000	300	400	7,400	40 [^]

Notes to Table 2:

- NEPM (2013) Ecological investigation levels for urban residential and public open space. In the absence of ambient background concentrations (ABC), the most conservative added concentration limits (ACL) for soil pH of 6.0 and/or CEC of 10 cmol_e/kg with a clay content of 1% have been adopted (Schedule B1: Tables 1B(1) to 1B(5)).
- NEPM (2013) Health-based investigation levels for residential premises with garden/accessible soil (Schedule B1: Table 1A(1)).

Bold Indicates detection of an analyte

~ No guideline available at time of investigation

* Threshold for Chromium III in soil with 1% clay content.

** Chromium threshold for Chromium VI

^ Inorganic mercury

Table 3: Analytical Results (Soil) – PAH

Test Location	Depth (m)	Sampling Date	Lithology	Analyte (mg/kg)		
				Total PAH*	BaP	Carcinogenic PAHs** (as BaP TEQ)
TP1	0.1m	4.8.2022	Fill - Silty sand	0.6***	0.1	<0.5
TP2	0.35m	4.8.2022	Fill - Clayey gravelly sand	0.2****	0.06	<0.5
TP3	0.1m	4.8.2022	Fill - Sand	<0.05	<0.05	<0.5
TP3	0.45m	4.8.2022	Fill - Gravelly clayey silt	<0.05	<0.05	<0.5
SPA	0.1m	4.8.2022	Fill - Sandy silty clay	<0.05	<0.05	<0.5
SPB	0.4m	4.8.2022	Fill - Silty clayey sand	<0.05	<0.05	<0.5
Site Assessment Criteria						
ESL ¹				~	0.7	~
HIL-C ²				300	~	3

Notes to Table 3:

1 NEPM (2013) Ecological screening levels for urban residential public open space (Schedule B1: Table 1B(6)).

2 NEPM (2013) Health-based investigation levels for public open space (Schedule B1: Table 1A(1)).

* Based on sum of standard 16 PAHs (including BaP) most commonly reported for contaminated sites

** Analyte concentrations less than PQL have been assumed to equal zero

BaP Benzo(a)pyrene

Bold Indicates detection of an analyte

*** Includes 0.1 mg/kg Fluoranthene, 0.2 mg/kg Pyrene, 0.1 mg/kg Benzo(a)anthracene, 0.1 mg/kg Chrysene, and 0.1 mg/kg BaP.

**** Includes 0.1 mg/kg Pyrene, and 0.06 mg/kg BaP.

~ No guideline available at time of investigation

Table 4: Analytical Results (Soil) – OCP, PCB, Asbestos

Sample ID	Depth (m)	Sampling Date	Lithology			Asbestos in Soil
				OCP	PCBs	
TP1	0.1m	4.8.2022	Fill - Silty sand	<0.1	<0.1	NAD
TP2	0.35m	4.8.2022	Fill - Clayey gravelly sand	<0.1	<0.1	NAD
TP3	0.1m	4.8.2022	Fill - Sand	<0.1	<0.1	-
TP3	0.45m	4.8.2022	Fill - Gravelly clayey silt	<0.1	<0.1	NAD
SPA	0.1m	4.8.2022	Fill - Sandy silty clay	<0.1	<0.1	-
SPB	0.4m	4.8.2022	Fill - Silty clayey sand	<0.1	<0.1	-
Site Assessment Criteria						
ESL ¹				~	~	NA
HIL-A ²				Various	1	NA

Notes to Table 4:

1 NEPM (2013) Ecological screening level for urban residential and public open space (Schedule B1: Table 1B(6)). Thresh value for coarse soils have been adopted.

2 NEPM (2013) Health-based investigation levels for residential premises with garden/accessible soil (Schedule B1: Table 1A(1)).

Bold Indicates detection of an analyte

~ No guideline available at time of investigation

- Not tested.

NAD No asbestos detected

8. Limitations

Douglas Partners (DP) has prepared this report for this project at 32-38 Hartley Street, Cairns with reference to DP's proposal 216856.00.P.001.Rev1 dated 3 August 2022 and acceptance received from Mr Martin Majer of Clarke and Prince Pty Ltd of even date. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Clarke and Prince Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully

Douglas Partners Pty Ltd



Ben Koci

Associate / Environmental Scientist

Reviewed by

Dean Woods

Principal

Attachments: About this Report
 EMR/CLR Search Response
 Laboratory Reports

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454 Brisbane QLD 4001 AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 50798406 EMR Site Id: 04 August 2022
This response relates to a search request received for the site:
Lot: 2 Plan: RP738082

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please email emr.clr.registry@des.qld.gov.au

Administering Authority

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: Douglas Partners

Contact Person: Ben Koci

Project Mgr: Dan Martin

Sampler: Pat Wilkins

Address: 13 Industrial Avenue, Stratford, QLD 4870

Phone: Mob: 437723011

Email: ben.koci@douglaspartners.com.au

Client Project Name / Number / Site etc (ie report title):

Proposed Ergon Depot - 216856.00

PO No.: CN150169

Envirolab Quote No. :

NA

Date results required:

Or choose: Standard

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

[illegible]

White - Lab copy / Blue - Client copy / Pink - Retain in Book

Page No: 1 of 1

302614

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners (Cairns) Pty Ltd
Attention	Dan Martin

Sample Login Details

Your reference	Proposed Ergon Depot - 216856.00
Envirolab Reference	302614
Date Sample Received	09/08/2022
Date Instructions Received	09/08/2022
Date Results Expected to be Reported	16/08/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	18 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



EnviroLab Services Pty Ltd

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM	On Hold
TP1-0.1	✓	✓	✓	✓	✓	✓	✓	
TP2-0.35	✓	✓	✓	✓	✓	✓	✓	
TP3-0.1	✓	✓	✓	✓	✓	✓		
TP3-0.45	✓	✓	✓	✓	✓	✓	✓	
SPA-0.1	✓	✓	✓	✓	✓	✓		
SPB-0.4	✓	✓	✓	✓	✓	✓		
TP1-0.3								✓
TP1-0.45								✓
TP1-0.6								✓
TP1-1.0								✓
TP2-0.1								✓
TP2-0.45								✓
TP2-0.6								✓
TP2-1.0								✓
TP3-0.2								✓
TP3-0.3								✓
TP3-0.9								✓
R1-								✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

CERTIFICATE OF ANALYSIS 302614

Client Details

Client	Douglas Partners (Cairns) Pty Ltd
Attention	Dan Martin
Address	13 Industrial Ave, Stratford, QLD, 4870

Sample Details

Your Reference	<u>Proposed Ergon Depot - 216856.00</u>
Number of Samples	18 Soil
Date samples received	09/08/2022
Date completed instructions received	09/08/2022

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	16/08/2022
Date of Issue	16/08/2022
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Analyst: Lucy Zhu
 Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Josh Williams, Organics and LC Supervisor
 Kyle Gavril, Senior Chemist
 Liam Timmins, Organic Instruments Team Leader
 Loren Bardwell, Development Chemist
 Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference	UNITS	TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
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	%	94	88	95	94	92

vTRH(C6-C10)/BTEXN in Soil

Our Reference		302614-6
Your Reference	UNITS	SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date extracted	-	10/08/2022
Date analysed	-	10/08/2022
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	%	83

svTRH (C10-C40) in Soil						
Our Reference	UNITS	302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference		TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022
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	%	87	86	87	87	88

svTRH (C10-C40) in Soil		
Our Reference	UNITS	302614-6
Your Reference		SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date extracted	-	10/08/2022
Date analysed	-	13/08/2022
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	%	88

PAHs in Soil						
Our Reference		302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference	UNITS	TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
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	0.2	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	0.1	0.06	<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	0.60	0.2	<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 <i>p</i> -Terphenyl-d14	%	73	68	73	73	69

PAHs in Soil		
Our Reference		302614-6
Your Reference	UNITS	SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date extracted	-	10/08/2022
Date analysed	-	12/08/2022
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	%	70

Organochlorine Pesticides in soil						
Our Reference		302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference	UNITS	TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
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	%	82	88	90	82	88

Organochlorine Pesticides in soil		
Our Reference		302614-6
Your Reference	UNITS	SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date extracted	-	10/08/2022
Date analysed	-	12/08/2022
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	%	86

PCBs in Soil						
Our Reference		302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference	UNITS	TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
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	%	82	88	90	82	88

PCBs in Soil		
Our Reference		302614-6
Your Reference	UNITS	SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date extracted	-	10/08/2022
Date analysed	-	12/08/2022
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	%	86

Acid Extractable metals in soil						
Our Reference	UNITS	302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference		TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Arsenic	mg/kg	<4	6	<4	<4	18
Cadmium	mg/kg	<0.4	<0.4	<0.4	5.2	<0.4
Chromium	mg/kg	5	12	3	5	17
Copper	mg/kg	7	25	3	16	21
Lead	mg/kg	19	86	5	91	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	24	2	4	9
Zinc	mg/kg	29	68	11	180	32

Acid Extractable metals in soil		
Our Reference	UNITS	302614-6
Your Reference		SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date prepared	-	11/08/2022
Date analysed	-	12/08/2022
Arsenic	mg/kg	13
Cadmium	mg/kg	<0.4
Chromium	mg/kg	12
Copper	mg/kg	11
Lead	mg/kg	12
Mercury	mg/kg	<0.1
Nickel	mg/kg	4
Zinc	mg/kg	35

Client Reference: Proposed Ergon Depot - 216856.00

Moisture						
Our Reference		302614-1	302614-2	302614-3	302614-4	302614-5
Your Reference	UNITS	TP1	TP2	TP3	TP3	SPA
Depth		0.1	0.35	0.1	0.45	0.1
Date Sampled		04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Moisture	%	4.2	6.4	2.2	9.6	14

Moisture		
Our Reference		302614-6
Your Reference	UNITS	SPB
Depth		0.4
Date Sampled		04/08/2022
Type of sample		Soil
Date prepared	-	10/08/2022
Date analysed	-	11/08/2022
Moisture	%	6.9

Asbestos ID - soils NEPM				
Our Reference		302614-1	302614-2	302614-4
Your Reference	UNITS	TP1	TP2	TP3
Depth		0.1	0.35	0.45
Date Sampled		04/08/2022	04/08/2022	04/08/2022
Type of sample		Soil	Soil	Soil
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Sample mass tested	g	2,119.7	2,485.7	2,437.4
Sample Description	-	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-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*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—
FA and AF Estimation*	g	—	—	—
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

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	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. Results reported denoted with * are outside our scope of NATA accreditation. 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) 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. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
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	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

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)-BTX 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)-BTX 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: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	87	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	91	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	82	[NT]	[NT]	[NT]	[NT]	86	[NT]

Client Reference: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			13/08/2022	[NT]	[NT]	[NT]	[NT]	13/08/2022	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	94	[NT]	[NT]	[NT]	[NT]	91	[NT]

Client Reference: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[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]	79	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[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]	100	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	107	[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]	93	[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]	76	[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	72	[NT]	[NT]	[NT]	[NT]	90	[NT]

Client Reference: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[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]	83	[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]	99	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	[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]	98	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[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]	86	[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]	71	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	[NT]	[NT]	[NT]	[NT]	86	[NT]

Client Reference: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[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]	112	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	81	[NT]	[NT]	[NT]	[NT]	86	[NT]

Client Reference: Proposed Ergon Depot - 216856.00

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			11/08/2022	[NT]	[NT]	[NT]	[NT]	11/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]

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.

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.