

Supplementary report to the Detailed Site Investigation Report

407 & 457 Crookwell Rd, Kingsdale, NSW

Reference No:	DSI2022-218-Supp
Survey Date:	4 August 2023
Prepared by:	CSH Consulting PTY LTD

Contents

1. Executive Summary	4
2. Introduction	5
3. Scope of works.....	5
4. Sampling and analysis quality plan and sampling methodology	5
5. Results	6
6. Conclusions and recommendations	7
7. References.....	7
8. Limitations	8
9. Council Meeting Agenda.....	9
10. Summary of Results.....	12
11. Envirolab results	3

Revision	Details	Date	Amended By
00	Final version	4 August 2023	Julia Noonan

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Signed:

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Signed:



Date: 4 August 2023

Distribution: Client by PDF

1. Executive Summary

CSH Consulting Pty Ltd were engaged by IPG Invest Projects to carry out additional sampling of soils at the property at 407 Crookwell Rd, Kingsdale. The sampling is to support the previous sampling conducted for the Detailed Site Investigation Report (DSI reference No DSI2022-18) to support the rezoning and development application.

The objective of this report is to provide more detailed and definitive information to evaluate the likelihood of contamination on the land.

Soil samples were collected on 26/07/2023 with the sampling carried in areas that were determined to be potential areas of concern and to evaluate the likelihood of contamination on the land.

The house, garage and sheds were not sampled as the buildings are still being occupied by the owners and will be surveyed and sampled as a pre-demolition survey as per the remedial action plan.

Based on the analysis report No 329032 by Envirolab, all values reported are below the relevant criteria set by NEPM, meets the requirements for ENM as per the *NSW EPA Excavated natural material order* and can be classified as general solid waste (GSW) as determined by the *NSW EPA Waste Classification Guidelines Part 1: Classifying waste*.

Due to the age of the house, it is presumed to contain asbestos.

The two areas of concern identified in the DSI, the house and garage (PAEC01) and the sheds north of the house (PAEC06), and the potential contaminants area assumed to be present. Soil sampling around the sheds and house were completed, see figure 1 for sampling locations, and indicate there is low risk to human and environmental health.

Section 7 in the remediation action plan (reference No RAP2023-218, dated 7 March 2023) developed for the sampling, management of the demolition of house, garage and sheds and the removal of contaminated waste is to be followed to ensure the minimalization of contamination during the demolition process and the sampling to validate the areas are free from contaminants.

Overall, based on the analysis of the soil, reported values were below the relevant criteria and the likelihood of contamination of that land is low. As a result, the site is deemed suitable for rezoning and development on the basis that remediation action plan is followed.

2. Introduction

CSH Consulting Pty Ltd were engaged by IPG Invest Projects to carry out additional sampling of soils at the property at 407 Crookwell Rd, Kingsdale. The sampling is to support the Detailed Site Investigation Report (DSI reference No DSI2022-218 dated 24 November 2022) to support the rezoning and development application.

The objective of this report is to provide more detailed and definitive information to evaluate the likelihood of contamination on the land.

3. Scope of works

This report is written to supplement the Detailed Site Investigation Report (DSI2022-218-01) to satisfy the requirements from the Ordinary Council Meeting Agenda, 16.2 Planning proposal – zoning and minimum lot size amendment to 407 & 457 Crookwell Rd, Kingsdale, Recommendation point 4.a. dated 18 July 2023 (Appendix A).

This report covers the additional sampling of soils, the analysis results and conclusions and recommendations based on the site visit, analysis results and review of previous information in the DSI.

4. Sampling and analysis quality plan and sampling methodology

Soil samples were collected on 26/07/2023 with the sampling carried out in areas that were determined to be potential areas of concern and to evaluate the likelihood of contamination on the land. Sampling locations are shown in Figure 1 below.

Soils were collected using a stainless-steel shovel cleaned after every sample, and contained in virgin high strength plastic sample bags, 250 mL virgin glass jar with Teflon sealed screw caps. All samples were labelled at the time they were taken. Samples were immediately stored in cooled storage bins prior to being delivered to the environmental laboratory under strict Chain-of-Custody conditions.

The house, garage and sheds were not sampled as the buildings are still being occupied by the owners and will be surveyed and sampled as a pre-demolition survey as per the remedial action plan.



Figure 1: sampling locations

5. Results

The analysis results for the soil samples collected were compared to Health investigation levels (HIL), HIL A (residential); Health Screening Levels (HSL), HSL A & HSL B (Low – high density residential); and Ecological Investigation levels (EILs); set by *NEPM*; Specific contaminant concentration (SCC) and toxicity characteristics leaching procedure (TCLP) test values in *NSW EPA Waste Classification Guidelines Part 1: Classifying waste*; and the chemical concentrations stipulated in the *NSW EPA Excavated natural material order*.

Based on the analysis report No 329032 by Envirolab, all values reported are below the relevant criteria set by NEPM, meets the requirements for ENM as per the *NSW EPA Excavated natural material order* and can be classified as general solid waste (GSW) as determined by the *NSW EPA Waste Classification Guidelines Part 1: Classifying waste*.

A summary of results in comparison to the assessment/investigation criteria can be found in Appendix B. The Analysis results for Report No 329032 can be found in Appendix C.

Due to the information obtained from the PSI, DSI and age of the house, it is presumed the house contains asbestos and paint to contain lead.

6. Conclusions and recommendations

Based on the results from the chemical analysis of the soil samples collected from the various locations, as indicated in figure 1, on 407 Crookwell Rd, Kingsdale, there is a low risk to human and environmental health.

The two areas of concern identified in the DSI, the house and garage (PAEC01) and the sheds north of the house (PAEC06), and the potential contaminants area assumed to be present. Soil sampling around the sheds and house were completed, see figure 1 for sampling locations, and indicate there is low risk to human and environmental health.

Section 7 in the remediation action plan (reference No RAP2023-218, dated 7 March 2023) developed for the sampling, management of the demolition of house, garage and sheds and the removal of contaminated waste is to be followed to ensure the minimalization of contamination during the demolition process and the sampling to validate the areas are free from contaminants.

Overall, based on the analysis of the soil, reported values were below the relevant criteria and the likelihood of contamination of that land is low. As a result, the site is deemed suitable for rezoning and development on the basis that remediation action plan is followed.

7. References

CSH Consulting (2022), *Detailed Site Investigation Report*, prepared for IPG Invest Projects (Ref: DSI2022-218-01, dated 24 November 2022).

CSH Consulting (2023), *Remedial Action Plan*, prepared for IPG Invest Projects (Ref: RAP2023-218-01, dated 8 March 2023).

NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure 1999, as amended in 2013, National Environment Protection Council.

NSW EPA, Contaminated Land Guidelines, Consultants Reporting on Contaminated Land, April 2020.

NSW EPA, *The excavated natural material order 2014*, Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation, 2014.

NSW EPA Waste Classification guidelines, Part 1 Classifying Waste, 2014.

8. Limitations

This investigation consisted of a visual survey of the site and sampling of soils in selected areas. The house, garage and sheds have not been surveyed as the survey will be completed as a pre-demolition survey.

Any person acting or relying on this report, in whole or in part, does so subject to the limitations expressed in this report and at their own risk.

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The Executive Summary must not be read in isolation, but should be read in conjunction with all sections of this report.

9. Council Meeting Agenda

16.2 PLANNING PROPOSAL - ZONING AND MINIMUM LOT SIZE AMENDMENT TO 407 & 457 CROOKWELL ROAD KINGSDALE

Author: Senior Strategic Planner

Director Planning & Environment

Authoriser: Marina Hollands, Acting Chief Executive Officer

Attachments:

1. Planning Proposal Form [!\[\]\(9479d69b60a82161c6862eaa53eb4db3_img.jpg\)](#) [!\[\]\(9cb1b85c969a35aca7c9928803bf46a0_img.jpg\)](#)
2. Concept Subdivision Design [!\[\]\(b7741eaba42295a6bedc26fe41504993_img.jpg\)](#) [!\[\]\(f54ac2cef244e638df59a8dced5223e1_img.jpg\)](#)
3. Urban and Fringe Housing Strategy Sooley Precinct [!\[\]\(ccb072066eca2a4ceaa512451cbee89b_img.jpg\)](#) [!\[\]\(fab2d2fb9501b9bf5adfea6cd93c6078_img.jpg\)](#)

Reference to LSPS:	Planning Priority 4: Housing – Vision 2040 - A range and diversity in housing type, which is contextual and affordable and is primarily centred around Goulburn and Marulan.
Address:	Lot 70, 73 & 77 DP 1006688, 407 & 457 Crookwell Road Kingsdale

RECOMMENDATION

That:

1. The report from the Senior Strategic Planner regarding the proposed zoning and minimum lot size amendment to Goulburn Mulwaree Local Environmental Plan 2009 be received.
2. Council prepare a Planning Proposal to amend the Goulburn Mulwaree Local Environmental Plan 2009 to rezone Lot 70, 73 & 77 DP 1006688 from RU6 Transition to R5 Large Lot Residential, R2 Low Density Residential, part C2 Environmental Conservation and RE1 Public Recreation, and to amend the minimum lot size from 10 hectares to 700m² (for the proposed R2 zone), and 4,000m² and 2 hectares (for the proposed R5 zone), with the C2 and RE1 zone having no minimum lot size.
3. Council amend the Goulburn Mulwaree Local Environmental Plan 2009 to include Lot 70, 73 & 77 DP 1006688, 407 & 457 Crookwell Road Kingsdale as an Urban Release Area (URA).
4. The development proponent is required to submit to Council, the following additional information, prior to the Planning Proposal being submitted to the Department of Planning and Environment for a gateway determination:
 - a. An updated Detailed Site Investigation (DSI) that further considers and evaluates the likelihood of contamination on the land, and makes conclusions and recommendations as to whether or not the site is capable of accommodating future residential uses.
 - b. An amended Water Cycle Management Study to address the requirement for unserviced future Large Lot Residential zoned land as applicable.
 - c. An amended Traffic and Parking Assessment report to address the requirements of Transport for NSW.
 - d. An amended Strategic Bushfire Study to address the impacts of potential road alterations to reflect an updated concept plan for road/access and staging and limitation of reticulated water servicing to south of the High Pressure Gas Pipeline.
 - e. A revised concept layout and staging plan that addresses the concerns raised by Transport for NSW, relating to limiting new access points to Crookwell Road and providing internal road connections between this Planning Proposal and the Planning Proposal to the north (515 Crookwell Road, Kingsdale). The revised concept layout shall also incorporate revisions required because of the need to achieve compliance with Ministerial Directions relating to bushfire protection and water quality.
5. The Planning Proposal is to be forwarded to the NSW Department of Planning and

Environment for a gateway determination, with further community and government consultation undertaken in accordance with the directions of the gateway determination.

6. Council requests that the NSW Department of Planning and Environment make Council the delegated plan making authority for this Planning Proposal.
7. Council prepares a Precinct specific Chapter to the Goulburn Mulwaree Development Control Plan 2009 for the Sooley Precinct and place it on public exhibition with the Planning Proposal for a minimum of 28 days.
8. Council amends the Goulburn Mulwaree Development Control Plan (DCP) 2009 to include Urban Release Area (URA) provisions for the Sooley Precinct that address the relevant requirements of Part 6 of the Goulburn Mulwaree Local Environmental Plan (LEP) 2009.

Section 375A of the *Local Government Act 1993* requires General Managers to record which Councillors vote for and against each planning decision of the Council, and to make this information publicly available.

INTRODUCTION

This report considers a Planning Proposal for No's 407 & 457 Crookwell Road, Kingsdale, submitted to Council via the Planning Portal on the 2 March 2023. The Planning Portal reference is PP-2023-414 and Council's reference is REZ/0001/2223.

The Planning Proposal is seeking an amendment of the *Goulburn Mulwaree Local Environmental Plan (LEP) 2009* as follows:

- Rezoning part of the land identified within the Goulburn and Marulan *Urban Fringe Housing Strategy* (the Strategy) within the Sooley Precinct (the southern portion), from RU6 Transition to part R5 Large Lot Residential and R2 Low Density Residential; and
- Amendment to the Minimum Lot Size maps, from 10 hectares to part 3,500m² and 2 ha (for the proposed R5 zone) and 700m² (for the proposed R2 zone).

A copy of the submitted Planning Proposal document is in **Attachment 1**.

The subject site comprises three lots (Lots 70, 73 & 77 DP 1006688) with a total area of 52.9 hectares and is located on the corner of Chinaman's Lane and Crookwell Road, immediately north of the urban fringe. The land contains an established dwelling house and ancillary development at the Crookwell Road frontage. Most of the land is used for the grazing of livestock and contains ancillary buildings to cater for the agricultural use of the land. A copy of the aerial image of the site is shown below in **Figure 1**.

10. Summary of Results

NEPM, HILs A Comparison

Laboratory Analysis against NEPM 1999																	
Table 1A(1)	Health investigation levels for soil contaminants						Sample Reference	329032-1	329032-2	329032-3	329032-4	329032-5	329032-6	329032-7	329032-8	329032-9	329032-10
							Sample Name	218/1	218/2	218/3	218/4	218/5	218/6	218/7	218/8	218/9	218/10
							Date Sampled	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
								brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	brown coarse-grained soil and rocks	Beige fine-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	brown coarse-grained soil and rocks	brown coarse-grained soil and rocks	Beige fine-grained soil and rocks
Group	Chemical	Residential A	Dataset mean	Dataset median	Dataset standard deviation	95% UCL	Dataset maximum	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm
Metals	Arsenic	100	4.00	4.00	0	0	4	4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Cadmium	20	<0.4	<0.4	0	0	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	Chromium	100	44.20	10.50	49.04	35.08	130	82	87	130	98	5	7	9	3	11	10
	Copper	6000	9.20	3.00	12.21	8.73	40	13	14	40	14	<1	2	1	1	4	2
	Lead	300	8.70	9.50	5.29	3.79	17	17	13	11	14	2	3	6	2	10	9
	Mercury	40	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	400	13.00	4.00	17.54	12.55	57	17	26	57	14	2	2	2	3	5	2
	Zinc	7400	16.50	17.00	7.84	5.6	28	22	24	28	11	7	12	7	22	22	10
PAHs	Benzo(a)anthracene	0.1	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene	1	<0.05	<0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Benzo(b,j,k)fluoranthene	0.1	<0.2	<0.2	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzo(g,h,i)perylene	0.01	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	0.01	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibenzo(a,h)anthracene	1	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene TEQ calc(PQL)	3	<0.5	<0.5	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticides	Total +ve PAHs ⁷	300	<0.05	>0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Aldrin	6	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	6	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan I	270	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan II		<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan Sulphate		<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin	10	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Apha-chlordane	50	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	gamma-chlordane		<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	HCB	10	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	6	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	300	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total +ve DDT+DDD+DDE	240	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
organophosphorus Pesticides	Chlorpyrifos	160	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCBs	Total +ve PCBs(1016-1260)	1	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

NEPM, HSLs Comparison

Laboratory Analysis against NEPM 1999																				
Table 1A(3)		Soil HSLs for vapour intrusion (mg/kg)							Sample Reference	329032-1	329032-2	329032-3	329032-4	329032-5	329032-6	329032-7	329032-8	329032-9	329032-10	
									Sample Name	218/1	218/2	218/3	218/4	218/5	218/6	218/7	218/8	218/9	218/10	
									Date Sampled	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	
										Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Beige fine-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Beige fine-grained soil and rocks	
Chemical	Soil texture	HSL A & HSL B 0m to <1m	Soil texture	HSL A & HSL B 0m to <1m	Dataset mean	Dataset median	Dataset standard deviation	95% UCL	Dataset maximum	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	
Toluene	Sand	160	Silt	390	<0.5	<0.5	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	Sand	55	Silt	NL	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Xylenes	Sand	40	Silt	95	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Napthalene	Sand	3	Silt	4	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Benzene	Sand	0.5	Silt	0.6	<0.2	<0.2	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
F1	Sand	45	Silt	40	<25	<25	0	0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
F2	Sand	110	Silt	230	<50	<50	0	0	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

Results split up between sand and silt

Table 1A(3)		Soil HSLs for vapour intrusion (mg/kg)						Sample Reference		329032-1	329032-2	329032-3	329032-4	329032-6	329032-7	329032-8	329032-9
								Sample Name		218/1	218/2	218/3	218/4	218/6	218/7	218/8	218/9
								Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
										Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks
Chemical	Soil texture	HSL A & HSL B 0m to <1m	Dataset mean	Dataset median	Dataset standard deviation	95% UCL	Dataset maximum	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm
Toluene	Silt	160	<0.5	<0.5	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	Silt	55	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes	Silt	40	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Napthalene	Silt	3	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	Silt	0.5	<0.2	<0.2	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
F1	Silt	45	<25	<25	0	0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
F2	Silt	110	<50	<50	0	0	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Table 1A(3)		Soil HSLs for vapour intrusion (mg/kg)						Sample Reference		329032-5	329032-10
								Sample Name		218/5	218/10
								Date Sampled		26/07/2023	26/07/2023
										Beige fine-grained soil and rocks	Beige fine-grained soil and rocks
Chemical	Soil texture	HSL A & HSL B 0m to <1m	Dataset mean	Dataset median	Dataset standard deviation	95% UCL	Dataset maximum	200 mm	200 mm		
Toluene	Silt	160	<0.5	<0.5	0	0	<0.5	<0.5	<0.5		
Ethylbenzene	Silt	55	<1	<1	0	0	<1	<1	<1		
Xylenes	Silt	40	<1	<1	0	0	<1	<1	<1		
Napthalene	Silt	3	<1	<1	0	0	<1	<1	<1		
Benzene	Silt	0.5	<0.2	<0.2	0	0	<0.2	<0.2	<0.2		
F1	Silt	45	<25	<25	0	0	<25	<25	<25		
F2	Silt	110	<50	<50	0	0	<50	<50	<50		

NEPM, ESLs Comparison

Laboratory Analysis against NEPM 1999																			
Table 1B(6)	ESLs for TPH fractions F1-F4, BTEX and B(a)P in soils							Sample Reference	329032-1	329032-2	329032-3	329032-4	329032-5	329032-6	329032-7	329032-8	329032-9	329032-10	
								Sample Name	218/1	218/2	218/3	218/4	218/5	218/6	218/7	218/8	218/9	218/10	
								Date Sampled	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	
									Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Beige fine-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Beige fine-grained soil and rocks	
Chemical	Soil texture	Areas of ecological significance	Urban residential and public open space	Dataset mean	Dataset median	Dataset standard deviation	95% UCL	Dataset maximum	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	
F1 C6-C10	Coarse/fine	125	180	<25	<25	0	0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
F2 >C10-C16	Coarse/fine	25	120	<50	<50	0	0	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
F3 >C16-C34	Coarse	-	300	108.75	100.00	21	17.56	160	<100	<100	<100	<100	<100	<100	<100	110	160	<100	
F3 >C16-C34	fine		1300	<100	<100	0	0	<100					<100					<100	
F4 >C34-C40	Coarse	-	2800	<100	<100	0	0	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F4 >C34-C40	fine	-	5600	<100	<100	0	0	<100					<100					<100	
Benzene	coarse	10	50	<0.2	<0.2	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Benzene	fine	10	65	<0.2	<0.2	0	0	<0.2					<0.2					<0.2	
Toluene	Coarse	10	85	<0.5	<0.5	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Toluene	fine	65	105	<0.5	<0.5	0	0	<0.5					<0.5					<0.5	
Ethylbenzene	Coarse	1.5	70	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Ethylbenzene	fine	40	125	<1	<1	0	0	<1					<1					<1	
Xylenes	Coarse	10	105	<1	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Xylenes	fine	1.6	45	<1	<1	0	0	<1					<1					<1	
Benzo(a)pyrene	Coarse/fine	0.7	0.7	<0.05	<0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

EPA Waste Classification Comparison

Laboratory Analysis against EPA Waste Classification				Sample Reference			329032-1	329032-2	329032-3	329032-4	329032-5	329032-6	329032-7	329032-8	329032-9	329032-10
				Sample Name			218/1	218/2	218/3	218/4	218/5	218/6	218/7	218/8	218/9	218/10
				Date Sampled			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
				Soil Matrix			Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Beige fine-grained soil and rocks	Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Brown Coarse-grained soil and rocks	Beige fine-grained soil and rocks
Group	Chemical	General Solid Waste CT1 (mg/kg)	Restricted solid waste CT2 (mg/kg)	Dataset Average	Standard deviation	95% UCL	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm
TRH/BTEX	C ₆ -C ₉	650	2600	<25	0	0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	Total +ve TRH (>C ₁₀ -C ₃₆)	10000	40000	55	15.81	11.31	<50	<50	<50	<50	<50	<50	<50	<50	100	<50
	Benzene	10	40	<0.2	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Toluene	288	1152	<0.5	0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethylbenzene	600	2400	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Total +ve Xylenes	1000	400	<1	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	F1 (C ₆ -C ₁₀ less BTEX)						<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	naphthalene						<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PAHs	F2 (>C ₁₀ -C ₃₆ less Naphthalene)						<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	naphthalene															
	Acenaphthene															
	Acenaphthylene															
	Anthracene															
	Benzo(a)anthracene															
	Benzo(a)pyrene	0.8	3.2	<0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Benzo(b,j,k)fluoranthene															
	Benzo(g,h,i)perylene															
	Chrysene															
	Dibenzo(a,h)anthracene															
	Fluoranthene															
	Fluorene															
	Indeno(1,2,3-c,d)pyrene															
	Phenanthrene															
Organochlorine Pesticides	pyrene															
	Benzo(a)pyrene TEQ calc(PQL)															
	Total +ve PAHs ¹	200	800	<0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Aldrin	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	alpha-BHC	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	beta-BHC	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	delta-BHC	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan I	60	240	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan II			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan Sulphate			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin Aldehyde	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	gamma-BHC	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha-chlordane			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCBs	gamma-chlordane			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	HCB			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor Epoxide	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor			<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total +ve DDT+DDD+DDE	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aroclor 1016															
	Aroclor 1221															
	Aroclor 1232															
	Aroclor 1242															
	Aroclor 1248															
	Aroclor 1254															
	Aroclor 1260															
	Total +ve PCBs(1016-1260)	<50	<50	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metals	Arsenic	100	400	4.00	0	0	4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Cadmium	20	80	<0.4	0	0	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	Chromium	100	400	44.20	49.04	35.08	82	87	130	98	5	7	9	3	11	10
	Copper			9.20	12.21	8.73	13	14	40	14	<1	2	1	1	4	2
	Lead	100	400	8.70	5.29	3.79	17	13	11	14	2	3	6	2	10	9
	Mercury	4	16	<0.1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	40	160	13.00	17.54	12.55	17	26	57	14	2	2	2	3	5	2
	Zinc			16.50	7.84	5.6	22	24	28	11	7	12	7	22	22	10
							NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF

EPA Waste Classification TCLP Comparison

TCLP Analysis against EPA Waste Classification											
						Sample Reference					
						Sample Name					
						Date Sampled					
						sample Matrix					
Group	Chemical	General Solid Waste		Restricted Solid Waste		TCLP Concentration			Specific Contaminant conc.		
		Leachable conc. TCLP1 (mg/L)	Specific Contaminant Conc. SCC1 (mg/kg)	Leachable conc. TCLP2 (mg/L)	Specific Contaminant Conc. SCC2 (mg/kg)	Dataset Average	Standard deviation	95% UCL	Dataset Average	Standard deviation	95% UCL
	Benzo(a)pyrene	0.04	10	0.16	23	<0.001	0	0	<0.05	0	0
	Total +ve PAHs7	N/A	200	N/A	800	NIL (+)VE	0	0	<0.05	0	0
Metals	Arsenic	5	500	5	2000	<0.05	0	0	4	0	0
	Cadmium	1	100	1	400	<0.01	0	0	<0.4	0	0
	Chromium	5	1900	5	7600	<0.01	0	0	44.20	49.04	35.08
	Lead	5	1500	5	6000	<0.03	0	0	8.70	5.29	3.79
	Mercury	0.2	50	0.2	200	<0.0005	0	0	<0.1	0	0
	Nickel	2	1050	2	4200	<0.02	0	0	13.00	17.54	12.55

Sample Reference	329032-1		329032-2		329032-3		329032-4		329032-5		329032-6		329032-7		329032-8		329032-9		329032-10		
Sample Name	218/1		218/2		218/3		218/4		218/5		218/6		218/7		218/8		218/9		218/10		
Date Sampled	26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		26/07/2023		
sample Matrix	Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Beige fine-grained soil and rocks		Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Brown coarse-grained soil and rocks		Beige fine-grained soil and rocks		
aminant conc.	200 mm		200 mm		200 mm		200 mm		200 mm		200 mm		200 mm		200 mm		200 mm		200 mm		
		TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration	TCLP (mg/L)	reported specific contamination concentration
		<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05	<0.001	<0.05
		NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05	NIL (+)VE	<0.05
		<0.05	4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4	<0.05	<4
		<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4	<0.01	<0.4
		<0.01	82	<0.01	87	<0.01	130	<0.01	98	<0.01	5	<0.01	7	<0.01	9	<0.01	3	<0.01	11	<0.01	10
		<0.03	17	<0.03	13	<0.03	11	<0.03	14	<0.03	2	<0.03	3	<0.03	6	<0.03	2	<0.03	10	<0.03	9
		<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1	<0.0005	<0.1
		<0.02	17	<0.02	26	<0.02	57	<0.02	14	<0.02	2	<0.02	2	<0.02	2	<0.02	3	<0.02	5	<0.02	2

EPA ENM comparison

EPA ENM 2014				
Analyte	Table 1		Envirolab Analysis Report	
	Column 2	Column 3	329032	
	Maximum average concentration for characterisation	Absolute maximum concentration	Average reported concentration	maximum reported concentration
	Units in mg/kg unless indicated			
Mercury	0.5	1	<0.1	<0.1
Cadmium	0.5	1	<0.4	<0.4
Lead	50	100	8.70	17
Arsenic	20	40	4.00	4
Chromium (Total)	75	150	44.20	130
Copper	100	200	9.20	40
Nickel	30	60	13.00	57
Zinc	150	300	16.50	28
Electrical conductivity	1.5 dS/m	3 dS/m	0.53	0.91
pH*	5 to 9	4.5 to 10	6.02	6.8
Total PAHs	20	40	<0.05	<0.05
Benzo(a)pyrene	0.5	1	<0.05	<0.05
Benzene	N/A	0.5	<0.2	<0.2
Toluene	N/A	65	<0.5	<0.5
Ethyl benzene	N/A	25	<1	<1
Xylene	N/A	15	<1	<1
TRH C10 – C36	250	500	55	100
Rubber, plastic, bitumen (% by mass)	0.05%	0.1%	<0.05	<0.05
paper, cloth, paint & wood (% by mass)	0.05%	0.1%	<0.05	<0.05
Asbestos	-		NAD, OF	NAD, OF

Depth

μS/cm

pH units

%

%

329032-1 218/1	329032-2 218/2	329032-3 218/3	329032-4 218/4	329032-5 218/5	329032-6 218/6	329032-7 218/7	329032-8 218/8	329032-9 218/9	329032-10 218/10
200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
17	13	11.00	14	2	3	6	2	10	9
4	<4	<4	<4	<4	<4	<4	<4	<4	<4
82	87	130.00	98	5	7	9	3	11	10
13	14	40.00	14	<1	2	1	1	4	2
17	26	57.00	14	2	2	2	3	5	2
22	24	28.00	11	7	12	7	22	22	10
44	74	130.00	77	98	93	65	65	64	42
5.2	5.5	6.40	6.6	6	6.8	6.5	6.1	5.5	5.6
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<50	<50	<50	<50	<50	<50	<50	<50	100	<50
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF	NAD, OF

11. Envirolab results

CERTIFICATE OF ANALYSIS 329032

Client Details

Client	CSH Consulting Pty Ltd
Attention	Kevin King
Address	3 Pass Ave, Thirroul, NSW, 2515

Sample Details

Your Reference	218
Number of Samples	10 Soil
Date samples received	27/07/2023
Date completed instructions received	27/07/2023

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.

Report Details

Date results requested by	28/07/2023
Date of Issue	28/07/2023
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Asbestos Approved By

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

Results Approved By

Diego Bigolin, Inorganics Supervisor
 Dragana Tomas, Senior Chemist
 Greta Petzold, Operation Manager
 Loren Bardwell, Development Chemist
 Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	93	93	76	80	102

vTRH(C6-C10)/BTEXN in Soil

Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	81	87	74	83	78

svTRH (C10-C40) in Soil						
Our Reference	UNITS	329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference		218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	83	82	85	84	82

svTRH (C10-C40) in Soil						
Our Reference	UNITS	329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference		218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	100	<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	110	160	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	110	160	<50
Surrogate o-Terphenyl	%	82	82	82	82	81

PAHs in Soil						
Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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 <i>p</i> -Terphenyl-d14	%	102	103	109	99	105

PAHs in Soil						
Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	99	108	98	98	96

Organochlorine Pesticides in soil						
Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	114	112	116	111	111

Organochlorine Pesticides in soil						
Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	110	112	110	110	108

Organophosphorus Pesticides in Soil						
Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	114	112	116	111	111

Organophosphorus Pesticides in Soil						
Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	112	110	110	108

PCBs in Soil						
Our Reference	UNITS	329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference		218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	114	112	116	111	111

PCBs in Soil						
Our Reference	UNITS	329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference		218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
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	%	110	112	110	110	108

Acid Extractable metals in soil

Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Arsenic	mg/kg	4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	82	87	130	98	5
Copper	mg/kg	13	14	40	14	<1
Lead	mg/kg	17	13	11	14	2
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	26	57	14	2
Zinc	mg/kg	22	24	28	11	7

Acid Extractable metals in soil

Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	9	3	11	10
Copper	mg/kg	2	1	1	4	2
Lead	mg/kg	3	6	2	10	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	2	3	5	2
Zinc	mg/kg	12	7	22	22	10

Misc Inorg - Soil						
Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
pH 1:5 soil:water	pH Units	5.2	5.5	6.4	6.6	6.0
Electrical Conductivity 1:5 soil:water	µS/cm	44	74	130	77	98

Misc Inorg - Soil						
Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
pH 1:5 soil:water	pH Units	6.8	6.5	6.1	5.5	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	93	65	65	64	42

Client Reference: 218

Moisture						
Our Reference	UNITS	329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference		218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Moisture	%	13	15	25	17	9.7

Moisture						
Our Reference	UNITS	329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference		218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Moisture	%	12	11	6.5	13	9.0

Asbestos ID - soils						
Our Reference	UNITS	329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference		218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Sample mass tested	g	Approx. 70g	Approx. 30g	Approx. 45g	Approx. 80g	Approx. 45g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Beige fine-grained soil & rocks
Asbestos ID in soil	-	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	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	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference	UNITS	329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference		218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Sample mass tested	g	Approx. 55g	Approx. 75g	Approx. 50g	Approx. 90g	Approx. 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Beige fine-grained soil & rocks
Asbestos ID in soil	-	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	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	No asbestos detected	No asbestos detected

Metals from Leaching Fluid pH 2.9 or 5

Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
pH of soil for fluid# determ.	pH units	4.9	5.4	5.4	5.7	5.1
pH of soil TCLP (after HCl)	pH units	1.7	1.8	1.8	1.7	1.7
Extraction fluid used		1	1	1	1	1
pH of final Leachate	pH units	4.9	4.9	4.9	4.9	4.9
Arsenic	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Mercury	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02

Metals from Leaching Fluid pH 2.9 or 5

Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
pH of soil for fluid# determ.	pH units	5.6	5.9	5.7	5.2	5.7
pH of soil TCLP (after HCl)	pH units	1.7	1.7	1.7	1.7	1.7
Extraction fluid used		1	1	1	1	1
pH of final Leachate	pH units	4.9	4.9	4.9	4.9	4.9
Arsenic	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Mercury	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	<0.02	<0.02	0.03	0.04	<0.02

PAHs in TCLP (USEPA 1311)						
Our Reference		329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference	UNITS	218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(b)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	82	73	64	67	61

PAHs in TCLP (USEPA 1311)						
Our Reference		329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference	UNITS	218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(b,j,k)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	73	72	70	74	72

Excavated natural material order						
Our Reference	UNITS	329032-1	329032-2	329032-3	329032-4	329032-5
Your Reference		218/1	218/2	218/3	218/4	218/5
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Sample Mass Tested	g	6,100	5,800	6,600	6,600	6,100
Rubber, plastic, bitumen	%	<0.05	<0.05	<0.05	<0.05	<0.05
paper, cloth, paint and wood	%	<0.05	<0.05	<0.05	<0.05	<0.05

Excavated natural material order						
Our Reference	UNITS	329032-6	329032-7	329032-8	329032-9	329032-10
Your Reference		218/6	218/7	218/8	218/9	218/10
Depth		200m	200m	200m	200m	200m
Date Sampled		26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2023	27/07/2023	27/07/2023	27/07/2023	27/07/2023
Date analysed	-	28/07/2023	28/07/2023	28/07/2023	28/07/2023	28/07/2023
Sample Mass Tested	g	6,800	6,400	6,300	6,700	6,300
Rubber, plastic, bitumen	%	<0.05	<0.05	<0.05	<0.05	<0.05
paper, cloth, paint and wood	%	<0.05	<0.05	<0.05	<0.05	<0.05

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.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-080	This method is based on RTA T276 and as per NSW DECC Resource Recovery Exemption Guidelines. RTA T276 requires at least 6kg of sample for this test. Where foreign materials are found, more details may be available on the types and/or quantities in the Comments section of the report.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-021	Determination of Mercury by Cold Vapour AAS following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
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.

Method ID	Methodology Summary
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.
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	Leachates are extracted 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 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.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	1	<25	<25	0	104	85
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	1	<25	<25	0	104	85
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	109	90
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	102	83
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	101	83
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	103	84
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	108	87
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	99	1	93	83	11	98	89

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	1	<50	<50	0	112	110
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	1	<100	<100	0	122	124
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	1	<100	<100	0	100	90
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	1	<50	<50	0	112	110
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	1	<100	<100	0	122	124
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	1	<100	<100	0	100	90
Surrogate o-Terphenyl	%		Org-020	85	1	83	84	1	92	82

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	88
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	87
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	84
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	86
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	98
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	95
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	85
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	90	92
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	100	1	102	100	2	92	100

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	96
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	98
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	89
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	95
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	96
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	105
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	114
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	105
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	98
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	97
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	113	1	114	112	2	113	111

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	107	109
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	97
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	105
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	105
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	100
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	101
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	102
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	113	1	114	112	2	113	111

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date extracted	-			27/07/2023	1	27/07/2023	27/07/2023		27/07/2023	27/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	103	100
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	113	1	114	112	2	113	111

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	329032-2
Date prepared	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Arsenic	mg/kg	4	Metals-020	<4	1	4	<4	0	106	91
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	102	96
Chromium	mg/kg	1	Metals-020	<1	1	82	84	2	109	103
Copper	mg/kg	1	Metals-020	<1	1	13	13	0	100	104
Lead	mg/kg	1	Metals-020	<1	1	17	15	12	113	102
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	111	112
Nickel	mg/kg	1	Metals-020	<1	1	17	17	0	102	95
Zinc	mg/kg	1	Metals-020	<1	1	22	22	0	107	95

Client Reference: 218

QUALITY CONTROL: Misc Inorg - Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date prepared	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	[NT]
Date analysed	-			28/07/2023	1	28/07/2023	28/07/2023		28/07/2023	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	5.2	5.2	0	99	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	44	54	20	103	[NT]

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	329032-4
Date extracted	-			28/07/2023	3	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Date analysed	-			28/07/2023	3	28/07/2023	28/07/2023		28/07/2023	28/07/2023
Arsenic	mg/L	0.05	Metals-020	<0.05	3	<0.05	<0.05	0	99	99
Cadmium	mg/L	0.01	Metals-020	<0.01	3	<0.01	<0.01	0	91	91
Chromium	mg/L	0.01	Metals-020	<0.01	3	<0.01	<0.01	0	90	92
Copper	mg/L	0.01	Metals-020	<0.01	3	<0.01	<0.01	0	93	95
Lead	mg/L	0.03	Metals-020	<0.03	3	<0.03	<0.03	0	89	93
Mercury	mg/L	0.0005	Metals-021	<0.0005	3	<0.0005	<0.0005	0	109	98
Nickel	mg/L	0.02	Metals-020	<0.02	3	<0.02	<0.02	0	87	90
Zinc	mg/L	0.02	Metals-020	<0.02	3	<0.02	<0.02	0	90	91

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			28/07/2023	3	28/07/2023	28/07/2023		28/07/2023	[NT]
Date analysed	-			28/07/2023	3	28/07/2023	28/07/2023		28/07/2023	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	74	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	76	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	73	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	78	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	77	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	79	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	78	[NT]
Benzo(b)k)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	3	<0.002	<0.002	0	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	68	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	3	<0.001	<0.001	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	77	3	64	70	9	66	[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.

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.