



Our ref: 2270971A

By email
david.glavas@anu.edu.au

22 May 2017

Confidential

David Glavas
Associate Director Maintenance
Australian National University
Anthony Low Building (#124)
Garran Road
Acton ACT

Dear David

Summary of Lead Containing Materials Assessment and On-going Management - Building 75E & 75F

WSP Australia Pty Limited (WSP) was engaged by Facilities and Services Division of the Australian National University (ANU) to conduct a lead in soil/sand assessment of the outside play area within the grounds of the Child Day-care Centre adjacent to Buildings 75E & F.

The day care centre is an old weatherboard structure, in which a number of areas has weathered and has deteriorated paint. This paint was tested, and it was confirmed that the paint contains lead (>1% lead content).

The purpose of the assessment was to provide a targeted sampling regime over a number of areas, identifying any potential "hot spots" that which require remediation.

The objective of the assessment was:

- Determine if the lead-based paint has contaminated the surrounding area where children frequent and play while using the facility
- Determine whether any contamination is creating an increased risk factor for people occupying and using the facility
- And if so, to what extent is the level of contamination

An experienced consultant attended site on 14th May 2017, and collected a total of 73 soil samples at various depths. Samples were sent to Envirolab Group in Sydney for independent analysis by a NATA approved laboratory.

Results were compared to National Environmental Protection Measure (as amended 2013), Health Investigation Levels (HIL's) (*Schedule B(1) - Guideline on Investigation Levels for Soil and Groundwater*) of 300mg/kg for lead.

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Significant Lead Analysis Monitoring Results:

Sample Number	Sample Date	Location	Lead, inorganic dusts & fumes (as Pb) (Soil mg/kg)
PB-226844	13/5/2017	Eastern exterior wall of Building 75F	540mg/kg - above HIL's
PB-226842	13/5/2017	Eastern exterior wall of Building 75F	380mg/kg - above HIL's
PB-226876	13/5/2017	Northern area of playground	2,200mg/kg - above HIL's
PB-226873	13/5/2017	North eastern area of playground	1,100mg/kg - above HIL's
PB-234843	13/5/2017	Eastern exterior wall of Building 75F	210mg/kg - below HIL's
PB-234093	13/5/2017	Western exterior wall of Building 75E	250mg/kg - below HIL's
PB-234092	13/5/2017	Western exterior wall of Building 75E	140mg/kg - below HIL's
PB-234091	13/5/2017	Western exterior wall of Building 75E	230mg/kg - below HIL's
PB-234066	13/5/2017	Western exterior wall of Building 75E	110mg/kg - below HIL's

The soil/sand sampling results indicated the following:

- 4 samples (PB-226844, PB-226842, PB-226876 and PB-226873) were above the adopted guideline level of 300mg/kg.
- 5 samples (PB-234066, PB-234093, PB-234092, PB-234091 and PB-234843) were all below the adopted guidelines but elevated in concentration (100mg/kg – 300mg/kg).

Based on the soil sampling results, the following is concluded:

- Lead paint flaking and peeling from the northern exterior wall has combined with sand at the edge of the playground.

It is noted that the exposure pathway for lead in soil is through ingestion.

In conclusion, WSP consider that the four high results from the soil sampling is cause to act immediately proposing remediation and further investigation of the child-care site. A remediation Action Plan (RAP) will provide a comprehensive methodology to assist ANU management on resolving these issues.

Based on the results and conclusions detailed within this letter report, the following is recommended:

- Isolate the playground area.
- Create a Remediation Action Plan (RAP) for the remediation.
- The exclusion area should be adequate to prevent access by the children.
- Prepare a Scope of Works for the removal activities for the sand/soil.
- Appropriately remediate the contaminated soil.



Kind regards

[Redacted signature]

[Redacted signature]

Hazmat Consultant



APPENDIX A SAMPLING METHODOLOGY



SITE LOCATION:

Building 75E & F Lennox Crossing, Acton ACT 2600

SCOPE:

WSP Australia was requested by ANU to conduct a hazmat survey of the playground of Building 75E / F

SAMPLE METHODS:

Representative samples of paint and dust samples were collected in accordance with AS4361.2-1998, Guide to Lead Paint Management, Part 2: Residential and Commercial Buildings and analysed at Envirolab Services NATA Accredited Laboratory.

Soil samples were collected in accordance with National Environmental Protection Measure (as amended 2013).

TEST METHODS:

Envirolab Services Pty Ltd method Metals-004 Digestions of Paint chips/scrapings/liquids for metals determination by ICP-AES/MS and or CV-AAS

Envirolab Services Pty Ltd method Metals-020 of determination of various metals in soil by ICP-AES

EXPOSURE

STANDARDS:

AS4361.2-1998, Guide to Lead Paint Management, Part 2: Residential and Commercial Buildings lead containing paint system level of 1.0 per cent (w/w) of the dried film.

National Environmental Protection Measure (as amended 2013), Health Investigation Levels (HIL's) (Schedule B(1) – Guideline on Investigation Levels for Soil and Groundwater) of 300mg/kg for lead.

APPENDIX B

NATA LABORATORY RESULTS



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envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

167283

Client:

WSP Australia Pty Limited

Level 2,
54 Marcus Clarke St
Canberra
ACT 2600

Attention: Garry Miller, Warran Lal

Sample log in details:

Your Reference:

ANU - Lennox Crossing

No. of samples:

23 soils

Date samples received / completed instructions received

17/05/17 / 17/05/17

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: / Issue Date:

18/05/17 / 18/05/17

Date of Preliminary Report:

Not Issued

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Tests not covered by NATA are denoted with *.

Results Approved By:


David Springer
General Manager

Envirolab Reference: 167283
Revision No: R 00



Page 1 of 7

Client Reference: ANU - Lennox Crossing

Acid Extractable metals in soil						
Our Reference:	UNITS	167283-1	167283-2	167283-3	167283-4	167283-5
Your Reference	-----	PB-226844	PB-226845	PB-226847	PB-226852	PB-226864
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	540	11	7	10	<1

Acid Extractable metals in soil						
Our Reference:	UNITS	167283-6	167283-7	167283-8	167283-9	167283-10
Your Reference	-----	PB-226872	PB-226880	PB-226881	PB-226882	PB-226883
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	32	3	9	6	5

Acid Extractable metals in soil						
Our Reference:	UNITS	167283-11	167283-12	167283-13	167283-14	167283-15
Your Reference	-----	PB-226884	PB-226885	PB-226886	PB-226887	PB-226891
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	5	6	5	10	7

Acid Extractable metals in soil						
Our Reference:	UNITS	167283-16	167283-17	167283-18	167283-19	167283-20
Your Reference	-----	PB-226892	PB-226898	PB-226900	PB-234054	PB-234055
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	6	3	4	1	1

Acid Extractable metals in soil				
Our Reference:	UNITS	167283-21	167283-22	167283-23
Your Reference	-----	PB-234059	PB-234093	PB-234060
	-			
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	85	250	25

Client Reference: ANU - Lennox Crossing

Moisture						
Our Reference:	UNITS	167283-1	167283-2	167283-3	167283-4	167283-5
Your Reference	-----	PB-226844	PB-226845	PB-226847	PB-226852	PB-226864
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	18/05/2017	18/05/2017	18/05/2017	18/05/2017	18/05/2017
Moisture	%	4.4	1.1	1.3	3.4	0.3

Moisture						
Our Reference:	UNITS	167283-6	167283-7	167283-8	167283-9	167283-10
Your Reference	-----	PB-226872	PB-226880	PB-226881	PB-226882	PB-226883
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	18/05/2017	18/05/2017	18/05/2017	18/05/2017	18/05/2017
Moisture	%	<0.1	0.2	0.2	0.2	0.1

Moisture						
Our Reference:	UNITS	167283-11	167283-12	167283-13	167283-14	167283-15
Your Reference	-----	PB-226884	PB-226885	PB-226886	PB-226887	PB-226891
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	18/05/2017	18/05/2017	18/05/2017	18/05/2017	18/05/2017
Moisture	%	0.2	0.1	0.5	<0.1	0.3

Moisture						
Our Reference:	UNITS	167283-16	167283-17	167283-18	167283-19	167283-20
Your Reference	-----	PB-226892	PB-226898	PB-226900	PB-234054	PB-234055
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	18/05/2017	18/05/2017	18/05/2017	18/05/2017	18/05/2017
Moisture	%	0.3	<0.1	1.4	0.6	0.3

Moisture				
Our Reference:	UNITS	167283-21	167283-22	167283-23
Your Reference	-----	PB-234059	PB-234093	PB-234060
	-			
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	18/05/2017	18/05/2017	18/05/2017
Moisture	%	5.6	7.7	2.9

Client Reference: ANU - Lennox Crossing

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.

Client Reference: ANU - Lennox Crossing

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base Duplicate %RPD		
Date prepared	-			17/05/2017	167283-1	17/05/2017 17/05/2017	LCS-15	17/05/2017
Date analysed	-			17/05/2017	167283-1	17/05/2017 17/05/2017	LCS-15	17/05/2017
Lead	mg/kg	1	Metals-020	<1	167283-1	540 530 RPD: 2	LCS-15	92%
QUALITY CONTROL Acid Extractable metals in soil	UNITS		Dup. Sm#		Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery	
Date prepared	-		167283-11		17/05/2017 17/05/2017	167283-2	17/05/2017	
Date analysed	-		167283-11		17/05/2017 17/05/2017	167283-2	17/05/2017	
Lead	mg/kg		167283-11		5 4 RPD: 22	167283-2	101%	
QUALITY CONTROL Acid Extractable metals in soil	UNITS		Dup. Sm#		Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery	
Date prepared	-		167283-21		17/05/2017 17/05/2017	167283-23	17/05/2017	
Date analysed	-		167283-21		17/05/2017 17/05/2017	167283-23	17/05/2017	
Lead	mg/kg		167283-21		85 52 RPD: 48	167283-23	84%	

Report Comments:

The results are reported on the sample as received i.e. no moisture correction has been applied for sample #6 and 17 due to insufficient sample provided.

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.



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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

167141

Client:

WSP Australia Pty Limited

Level 2,
54 Marcus Clarke St
Canberra
ACT 2600

Attention: Garry Miller, Warran Lal

Sample log in details:

Your Reference:

2171079F / ANU

No. of samples:

73 Soils

Date samples received / completed instructions received

16/05/2017 / 16/05/2017

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.

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Date of Preliminary Report:

Not Issued

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Tests not covered by NATA are denoted with *.

Results Approved By:


David Springer
General Manager

Envirolab Reference: 167141
Revision No: R 00



Acid Extractable metals in soil						
Our Reference:	UNITS	167141-1	167141-2	167141-3	167141-4	167141-5
Your Reference	-----	PB-234071	PB-226888	PB-226890	PB-226889	PB-234061
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	19	9	4	4	43

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-6	167141-7	167141-8	167141-9	167141-10
Your Reference	-----	PB-226893	PB-226896	PB-226895	PB-234067	PB-226899
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	4	4	4	45	4

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-11	167141-12	167141-13	167141-14	167141-15
Your Reference	-----	PB-234064	PB-234074	PB-234073	PB-234072	PB-234065
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	72	1	1	1	28

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-16	167141-17	167141-18	167141-19	167141-20
Your Reference	-----	PB-234063	PB-234066	PB-234095	PB-234094	PB-234091
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	26	110	33	89	230

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-21	167141-22	167141-23	167141-24	167141-25
Your Reference	-----	PB-234092	PB-234090	PB-234057	PB-234058	PB-234062
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	140	54	20	14	45

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-26	167141-27	167141-28	167141-29	167141-30
Your Reference	-----	PB-226843	PB-226850	PB-226897	PB-226839	PB-226842
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	210	12	10	30	380

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-31	167141-32	167141-33	167141-34	167141-35
Your Reference	-----	PB-226848	PB-226860	PB-226861	PB-226873	PB-226862
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	9	<1	<1	1,100	<1

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-36	167141-37	167141-38	167141-39	167141-40
Your Reference	-----	PB-226876	PB-226877	PB-226879	PB-226878	PB-226853
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	2,200	10	14	13	20

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-41	167141-42	167141-43	167141-44	167141-45
Your Reference	-----	PB-226846	PB-226857	PB-234053	PB-234056	PB-234050
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	11	<1	1	<1	2

Acid Extractable metals in soil						
Our Reference:	UNITS	167141-46	167141-47	167141-48	167141-49	167141-50
Your Reference	-----	PB-234051	PB-234052	PB-226865	PB-226858	PB-226859
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	2	4	<1	<1	<1

Acid Extractable metals in soil	UNITS	167141-51	167141-52	167141-53	167141-54	167141-55
Our Reference:	-----	PB-226867	PB-226871	PB-226870	PB-226856	PB-226869
Your Reference	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	<1	<1	<1	<1	<1

Acid Extractable metals in soil	UNITS	167141-56	167141-57	167141-58	167141-59	167141-60
Our Reference:	-----	PB-226868	PB-226863	PB-226855	PB-226866	PB-226894
Your Reference	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	<1	<1	<1	<1	6

Acid Extractable metals in soil	UNITS	167141-61	167141-62	167141-63	167141-64	167141-65
Our Reference:	-----	PB-226854	PB-226840	PB-226841	PB-226849	PB-226874
Your Reference	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	<1	22	23	11	15

Acid Extractable metals in soil	UNITS	167141-66	167141-67	167141-68	167141-69	167141-70
Our Reference:	-----	PB-226875	PB-226851	PB-222205	PB-222201	PB-222202
Your Reference	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	16	14	1	1	1

Acid Extractable metals in soil	UNITS	167141-71	167141-72	167141-73	167141-74
Our Reference:	-----	PB-222206	PB-222203	PB-222204	PB-234071 -
Your Reference	-				[TRIPLICATE]
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Lead	mg/kg	1	1	1	6

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Moisture						
Our Reference:	UNITS	167141-1	167141-2	167141-3	167141-4	167141-5
Your Reference	-----	PB-234071	PB-226888	PB-226890	PB-226889	PB-234061
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	2.9	0.2	0.9	0.4	18

Moisture						
Our Reference:	UNITS	167141-6	167141-7	167141-8	167141-9	167141-10
Your Reference	-----	PB-226893	PB-226896	PB-226895	PB-234067	PB-226899
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	1.2	11	2.0	6.5	1.8

Moisture						
Our Reference:	UNITS	167141-11	167141-12	167141-13	167141-14	167141-15
Your Reference	-----	PB-234064	PB-234074	PB-234073	PB-234072	PB-234065
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	22	<0.1	0.1	0.7	6.1

Moisture						
Our Reference:	UNITS	167141-16	167141-17	167141-18	167141-19	167141-20
Your Reference	-----	PB-234063	PB-234066	PB-234095	PB-234094	PB-234091
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	25	14	3.4	9.1	21

Moisture						
Our Reference:	UNITS	167141-21	167141-22	167141-23	167141-24	167141-25
Your Reference	-----	PB-234092	PB-234090	PB-234057	PB-234058	PB-234062
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	13	29	5.0	3.0	13

Moisture						
Our Reference:	UNITS	167141-26	167141-27	167141-28	167141-29	167141-30
Your Reference	-----	PB-226843	PB-226850	PB-226897	PB-226839	PB-226842
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	5.7	0.9	19	4.8	3.4

Moisture						
Our Reference:	UNITS	167141-31	167141-32	167141-33	167141-34	167141-35
Your Reference	-----	PB-226848	PB-226860	PB-226861	PB-226873	PB-226862
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	2.3	0.1	1.5	[NT]	0.6

Moisture						
Our Reference:	UNITS	167141-36	167141-37	167141-38	167141-39	167141-40
Your Reference	-----	PB-226876	PB-226877	PB-226879	PB-226878	PB-226853
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	11	2.8	1.4	1.6	3.0

Moisture						
Our Reference:	UNITS	167141-41	167141-42	167141-43	167141-44	167141-45
Your Reference	-----	PB-226846	PB-226857	PB-234053	PB-234056	PB-234050
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	4.6	1.7	0.5	0.3	0.5

Moisture						
Our Reference:	UNITS	167141-46	167141-47	167141-48	167141-49	167141-50
Your Reference	-----	PB-234051	PB-234052	PB-226865	PB-226858	PB-226859
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	1.1	0.7	2.7	0.3	2.0

Moisture						
Our Reference:	UNITS	167141-51	167141-52	167141-53	167141-54	167141-55
Your Reference	-----	PB-226867	PB-226871	PB-226870	PB-226856	PB-226869
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	2.2	3.2	0.2	0.5	3.7

Moisture						
Our Reference:	UNITS	167141-56	167141-57	167141-58	167141-59	167141-60
Your Reference	-----	PB-226868	PB-226863	PB-226855	PB-226866	PB-226894
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	0.5	3.3	2.8	0.5	0.8

Moisture						
Our Reference:	UNITS	167141-61	167141-62	167141-63	167141-64	167141-65
Your Reference	-----	PB-226854	PB-226840	PB-226841	PB-226849	PB-226874
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	0.7	8.2	2.7	2.0	[NT]

Moisture						
Our Reference:	UNITS	167141-66	167141-67	167141-68	167141-69	167141-70
Your Reference	-----	PB-226875	PB-226851	PB-222205	PB-222201	PB-222202
	-					
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017	17/05/2017	17/05/2017
Moisture	%	[NT]	7.5	1	1.4	1.9

Moisture				
Our Reference:	UNITS	167141-71	167141-72	167141-73
Your Reference	-----	PB-222206	PB-222203	PB-222204
	-			
Date Sampled	-----	13/05/2017	13/05/2017	13/05/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	17/05/2017	17/05/2017	17/05/2017
Date analysed	-	17/05/2017	17/05/2017	17/05/2017
Moisture	%	1.5	1.3	1.8

MethodID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base Duplicate %RPD		
Date prepared	-			17/05/2017	167141-1	17/05/2017 17/05/2017	LCS-10	17/05/2017
Date analysed	-			17/05/2017	167141-1	17/05/2017 17/05/2017	LCS-10	17/05/2017
Lead	mg/kg	1	Metals-020	<1	167141-1	19 230 RPD: 169	LCS-10	103%
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-11	17/05/2017 17/05/2017		LCS-11	17/05/2017	
Date analysed	-		167141-11	17/05/2017 17/05/2017		LCS-11	17/05/2017	
Lead	mg/kg		167141-11	72 78 RPD: 8		LCS-11	102%	
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-21	17/05/2017 17/05/2017		LCS-12	17/05/2017	
Date analysed	-		167141-21	17/05/2017 17/05/2017		LCS-12	17/05/2017	
Lead	mg/kg		167141-21	140 180 RPD: 25		LCS-12	105%	
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-31	17/05/2017 17/05/2017		167141-2	17/05/2017	
Date analysed	-		167141-31	17/05/2017 17/05/2017		167141-2	17/05/2017	
Lead	mg/kg		167141-31	9 8 RPD: 12		167141-2	103%	
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-41	17/05/2017 17/05/2017		167141-22	17/05/2017	
Date analysed	-		167141-41	17/05/2017 17/05/2017		167141-22	17/05/2017	
Lead	mg/kg		167141-41	11 9 RPD: 20		167141-22	74%	
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-64	17/05/2017 17/05/2017		167141-42	17/05/2017	
Date analysed	-		167141-64	17/05/2017 17/05/2017		167141-42	17/05/2017	
Lead	mg/kg		167141-64	11 9 RPD: 20		167141-42	104%	
QUALITY CONTROL	UNITS		Dup. Sm#		Duplicate	Spike Sm#	Spike % Recovery	
Acid Extractable metals in soil					Base + Duplicate + %RPD			
Date prepared	-		167141-68	17/05/2017 17/05/2017		167141-69	17/05/2017	
Date analysed	-		167141-68	17/05/2017 17/05/2017		167141-69	17/05/2017	
Lead	mg/kg		167141-68	1 1 RPD: 0		167141-69	103%	

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QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	167141-71	17/05/2017 17/05/2017
Date analysed	-	167141-71	17/05/2017 17/05/2017
Lead	mg/kg	167141-71	1 1 RPD: 0

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 167141-1 for Pb. Therefore a triplicate result has been issued as laboratory sample number 167141-74.

Sample/s 34, 65 and 66 reported on an "as received" basis,
i.e. moisture content not included in the calculation. Due to insufficient sample.

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

