



Approximate site boundary

Landfill



Temporary dwelling

Storage shed

Storage shed

Pasture

Temporary dwelling

Water race

Pasture

Dwelling

Farm infrastructure

Approximate Scale
300 m

Approximate site boundary



Approximate Scale
450 m

Certificate of Analysis

E3 Scientific Limited
11 Arrow Lane,
Arrowtown
NZ 9302



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: Carrie Pritchard

Report 583134-S
 Project name HAWEA SUBDIVISION PSI
 Project ID 18012
 Received Date Feb 05, 2018

Client Sample ID			COMP 1 (HF1 HF2 HF3)	COMP 2 (HF4 HF5 HF6)	COMP 3 (HF7 HF8 HF9)	COMP 4 (HF10 HF11 HF12)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe03747	Z18-Fe03748	Z18-Fe03749	Z18-Fe03750
Date Sampled			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchloroendate (surr.)	1	%	131	104	110	126
Tetrachloro-m-xylene (surr.)	1	%	104	87	96	112
% Moisture	1	%	28	21	16	24

Client Sample ID			COMP 5 (HF13 HF14 HF15)	COMP 6 (HF16 HF17 HF18)	COMP 7 (HF19 HF20 HF21)	COMP 8 (HF22 HF23)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe03751	Z18-Fe03752	Z18-Fe03753	Z18-Fe03754
Date Sampled			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	112	110	112	116
Tetrachloro-m-xylene (surr.)	1	%	87	89	107	93
% Moisture	1	%	20	21	22	20

Client Sample ID			COMP 9 (HF25 HF26 HF27)	COMP 10 (HF28 HF29 HF30)	HF24	DUP1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe03755	Z18-Fe03756	Z18-Fe03757	Z18-Fe03758
Date Sampled			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01

Client Sample ID			COMP 9 (HF25 HF26 HF27)	COMP 10 (HF28 HF29 HF30)	HF24	DUP1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe03755	Z18-Fe03756	Z18-Fe03757	Z18-Fe03758
Date Sampled			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	114	117	120	113
Tetrachloro-m-xylene (surr.)	1	%	96	88	92	90
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	-	-	4.3	4.1
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	10	9.1
Copper	5	mg/kg	-	-	5.4	5.2
Lead	5	mg/kg	-	-	18	17
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	7.3	6.6
Zinc	5	mg/kg	-	-	41	38
% Moisture	1	%	21	23	22	21

Client Sample ID			HF1	HF4	HF7	HF10
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe03759	Z18-Fe03760	Z18-Fe03761	Z18-Fe03762
Date Sampled			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	5.9	4.7	4.3	7.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	11	8.2	14
Copper	5	mg/kg	8.4	< 5	< 5	7.7
Lead	5	mg/kg	21	20	16	27
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.8	7.6	6.2	8.6
Zinc	5	mg/kg	55	49	37	57
% Moisture	1	%	25	21	19	23

Client Sample ID			HF13 Soil	HF16 Soil	HF19 Soil	HF22 Soil
Sample Matrix			Z18-Fe03763	Z18-Fe03764	Z18-Fe03765	Z18-Fe03766
Eurofins mgt Sample No.			Feb 02, 2018	Feb 02, 2018	Feb 02, 2018	Feb 02, 2018
Date Sampled						
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	5.3	4.9	7.1	4.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	10	13	10.0
Copper	5	mg/kg	6.4	6.0	7.7	< 5
Lead	5	mg/kg	21	20	26	19
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.7	7.9	8.5	6.8
Zinc	5	mg/kg	47	44	56	42
% Moisture	1	%	22	16	22	16

Client Sample ID			HF25 Soil	HF28 Soil
Sample Matrix			Z18-Fe03767	Z18-Fe03768
Eurofins mgt Sample No.			Feb 02, 2018	Feb 02, 2018
Date Sampled				
Test/Reference	LOR	Unit		
Metals M8 (NZ MfE)				
Arsenic	2	mg/kg	4.4	5.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	9.9	11
Copper	5	mg/kg	6.2	5.4
Lead	5	mg/kg	18	21
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	7.8	7.5
Zinc	5	mg/kg	42	47
% Moisture	1	%	20	24

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides (NZ MfE) - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	Feb 09, 2018	14 Day
Metals M8 (NZ MfE) - Method: USEPA 6010/6020 Heavy Metals	Melbourne	Feb 09, 2018	6 Months
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 05, 2018	14 Day

Company Name: E3 Scientific Limited	Order No.:	Received: Feb 5, 2018 8:00 AM
Address: 11 Arrow Lane, Arrowtown NZ 9302	Report #: 583134	Due: Feb 12, 2018
	Phone: 03 4098664	Priority: 5 Day
	Fax:	Contact Name: Carrie Pritchard
Project Name: HAWEA SUBDIVISION PSI		
Project ID: 18012		

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	COMP 1 (HF1 HF2 HF3)	Feb 02, 2018		Soil	Z18-Fe03747		X	X	
2	COMP 2 (HF4 HF5 HF6)	Feb 02, 2018		Soil	Z18-Fe03748		X	X	
3	COMP 3 (HF7 HF8 HF9)	Feb 02, 2018		Soil	Z18-Fe03749		X	X	
4	COMP 4 (HF10 HF11 HF12)	Feb 02, 2018		Soil	Z18-Fe03750		X	X	
5	COMP 5 (HF13 HF14 HF15)	Feb 02, 2018		Soil	Z18-Fe03751		X	X	

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Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
6	COMP 6 (HF16 HF17 HF18)	Feb 02, 2018		Soil	Z18-Fe03752		X	X	
7	COMP 7 (HF19 HF20 HF21)	Feb 02, 2018		Soil	Z18-Fe03753		X	X	
8	COMP 8 (HF22 HF23)	Feb 02, 2018		Soil	Z18-Fe03754		X	X	
9	COMP 9 (HF25 HF26 HF27)	Feb 02, 2018		Soil	Z18-Fe03755		X	X	
10	COMP 10 (HF28 HF29 HF30)	Feb 02, 2018		Soil	Z18-Fe03756		X	X	
11	HF24	Feb 02, 2018		Soil	Z18-Fe03757		X	X	X

Company Name: E3 Scientific Limited Address: 11 Arrow Lane, Arrowtown NZ 9302 Project Name: HAWEA SUBDIVISION PSI Project ID: 18012	Order No.: Report #: 583134 Phone: 03 4098664 Fax:	Received: Feb 5, 2018 8:00 AM Due: Feb 12, 2018 Priority: 5 Day Contact Name: Carrie Pritchard
Eurofins mgt Analytical Services Manager : Onur Mehmet		

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
12	DUP1	Feb 02, 2018		Soil	Z18-Fe03758		X	X	X
13	HF1	Feb 02, 2018		Soil	Z18-Fe03759		X		X
14	HF4	Feb 02, 2018		Soil	Z18-Fe03760		X		X
15	HF7	Feb 02, 2018		Soil	Z18-Fe03761		X		X
16	HF10	Feb 02, 2018		Soil	Z18-Fe03762		X		X
17	HF13	Feb 02, 2018		Soil	Z18-Fe03763		X		X
18	HF16	Feb 02, 2018		Soil	Z18-Fe03764		X		X
19	HF19	Feb 02, 2018		Soil	Z18-Fe03765		X		X
20	HF22	Feb 02, 2018		Soil	Z18-Fe03766		X		X
21	HF25	Feb 02, 2018		Soil	Z18-Fe03767		X		X
22	HF28	Feb 02, 2018		Soil	Z18-Fe03768		X		X
23	HF2	Feb 02, 2018		Soil	Z18-Fe03769	X			

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Project Name: HAWEA SUBDIVISION PSI		
Project ID: 18012		

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
24	HF3	Feb 02, 2018		Soil	Z18-Fe03770	X			
25	HF5	Feb 02, 2018		Soil	Z18-Fe03771	X			
26	HF6	Feb 02, 2018		Soil	Z18-Fe03772	X			
27	HF8	Feb 02, 2018		Soil	Z18-Fe03773	X			
28	HF9	Feb 02, 2018		Soil	Z18-Fe03774	X			
29	HF11	Feb 02, 2018		Soil	Z18-Fe03775	X			
30	HF12	Feb 02, 2018		Soil	Z18-Fe03776	X			
31	HF14	Feb 02, 2018		Soil	Z18-Fe03777	X			
32	HF15	Feb 02, 2018		Soil	Z18-Fe03778	X			
33	HF17	Feb 02, 2018		Soil	Z18-Fe03779	X			
34	HF18	Feb 02, 2018		Soil	Z18-Fe03780	X			
35	HF20	Feb 02, 2018		Soil	Z18-Fe03781	X			

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Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
36	HF21	Feb 02, 2018		Soil	Z18-Fe03782	X			
37	HF23	Feb 02, 2018		Soil	Z18-Fe03783	X			
38	HF26	Feb 02, 2018		Soil	Z18-Fe03784	X			
39	HF27	Feb 02, 2018		Soil	Z18-Fe03785	X			
40	HF29	Feb 02, 2018		Soil	Z18-Fe03786	X			
41	HF30	Feb 02, 2018		Soil	Z18-Fe03787	X			
Test Counts						19	22	12	12

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	mg/kg	< 0.01			0.01	Pass	
2.4'-DDE	mg/kg	< 0.01			0.01	Pass	
2.4'-DDT	mg/kg	< 0.01			0.01	Pass	
4.4'-DDD	mg/kg	< 0.01			0.01	Pass	
4.4'-DDE	mg/kg	< 0.01			0.01	Pass	
4.4'-DDT	mg/kg	< 0.01			0.01	Pass	
a-BHC	mg/kg	< 0.01			0.01	Pass	
Aldrin	mg/kg	< 0.01			0.01	Pass	
b-BHC	mg/kg	< 0.01			0.01	Pass	
Chlordanes - Total	mg/kg	< 0.01			0.01	Pass	
cis-Chlordane	mg/kg	< 0.01			0.01	Pass	
d-BHC	mg/kg	< 0.01			0.01	Pass	
Dieldrin	mg/kg	< 0.01			0.01	Pass	
Endosulfan I	mg/kg	< 0.01			0.01	Pass	
Endosulfan II	mg/kg	< 0.01			0.01	Pass	
Endosulfan sulphate	mg/kg	< 0.01			0.01	Pass	
Endrin	mg/kg	< 0.01			0.01	Pass	
Endrin aldehyde	mg/kg	< 0.01			0.01	Pass	
Endrin ketone	mg/kg	< 0.01			0.01	Pass	
g-BHC (Lindane)	mg/kg	< 0.01			0.01	Pass	
Heptachlor	mg/kg	< 0.01			0.01	Pass	
Heptachlor epoxide	mg/kg	< 0.01			0.01	Pass	
Hexachlorobenzene	mg/kg	< 0.01			0.01	Pass	
Methoxychlor	mg/kg	< 0.01			0.01	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
trans-Chlordane	mg/kg	< 0.01			0.01	Pass	
Method Blank							
Metals M8 (NZ MfE)							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	%	114			70-130	Pass	
2.4'-DDE	%	110			70-130	Pass	
2.4'-DDT	%	117			70-130	Pass	
4.4'-DDD	%	104			70-130	Pass	
4.4'-DDE	%	118			70-130	Pass	
4.4'-DDT	%	130			70-130	Pass	
a-BHC	%	95			70-130	Pass	
Aldrin	%	113			70-130	Pass	
b-BHC	%	89			70-130	Pass	
cis-Chlordane	%	104			70-130	Pass	
d-BHC	%	93			70-130	Pass	
Dieldrin	%	113			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Endosulfan I	%	111	70-130	Pass			
Endosulfan II	%	103	70-130	Pass			
Endosulfan sulphate	%	115	70-130	Pass			
Endrin	%	117	70-130	Pass			
Endrin aldehyde	%	111	70-130	Pass			
Endrin ketone	%	114	70-130	Pass			
g-BHC (Lindane)	%	95	70-130	Pass			
Heptachlor	%	108	70-130	Pass			
Heptachlor epoxide	%	110	70-130	Pass			
Hexachlorobenzene	%	92	70-130	Pass			
Methoxychlor	%	123	70-130	Pass			
trans-Chlordane	%	111	70-130	Pass			
LCS - % Recovery							
Metals M8 (NZ MfE)							
Arsenic	%	107	80-120	Pass			
Cadmium	%	106	80-120	Pass			
Chromium	%	119	80-120	Pass			
Copper	%	108	80-120	Pass			
Lead	%	106	80-120	Pass			
Mercury	%	104	75-125	Pass			
Nickel	%	106	80-120	Pass			
Zinc	%	105	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Organochlorine Pesticides (NZ MfE)							
				Result 1			
2,4'-DDD	Z18-Fe03748	CP	%	106	70-130	Pass	
2,4'-DDE	Z18-Fe03748	CP	%	104	70-130	Pass	
2,4'-DDT	Z18-Fe03748	CP	%	114	70-130	Pass	
4,4'-DDD	Z18-Fe03748	CP	%	114	70-130	Pass	
4,4'-DDE	Z18-Fe03748	CP	%	114	70-130	Pass	
4,4'-DDT	Z18-Fe03748	CP	%	106	70-130	Pass	
a-BHC	Z18-Fe03748	CP	%	90	70-130	Pass	
Aldrin	Z18-Fe03748	CP	%	110	70-130	Pass	
b-BHC	Z18-Fe03748	CP	%	82	70-130	Pass	
cis-Chlordane	Z18-Fe03748	CP	%	103	70-130	Pass	
d-BHC	Z18-Fe03748	CP	%	87	70-130	Pass	
Dieldrin	Z18-Fe03748	CP	%	105	70-130	Pass	
Endosulfan I	Z18-Fe03748	CP	%	107	70-130	Pass	
Endosulfan II	Z18-Fe03748	CP	%	101	70-130	Pass	
Endosulfan sulphate	Z18-Fe03748	CP	%	100	70-130	Pass	
Endrin	Z18-Fe03748	CP	%	113	70-130	Pass	
Endrin aldehyde	Z18-Fe03748	CP	%	94	70-130	Pass	
Endrin ketone	Z18-Fe03748	CP	%	99	70-130	Pass	
g-BHC (Lindane)	Z18-Fe03748	CP	%	89	70-130	Pass	
Heptachlor	Z18-Fe03748	CP	%	108	70-130	Pass	
Heptachlor epoxide	Z18-Fe03748	CP	%	103	70-130	Pass	
Hexachlorobenzene	Z18-Fe03748	CP	%	93	70-130	Pass	
Methoxychlor	Z18-Fe03748	CP	%	97	70-130	Pass	
trans-Chlordane	Z18-Fe03748	CP	%	105	70-130	Pass	
Spike - % Recovery							
Metals M8 (NZ MfE)							
				Result 1			
Arsenic	Z18-Fe03758	CP	%	118	75-125	Pass	
Cadmium	Z18-Fe03758	CP	%	109	75-125	Pass	
Chromium	Z18-Fe03758	CP	%	123	75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	Z18-Fe03758	CP	%	111			75-125	Pass	
Lead	Z18-Fe03758	CP	%	112			75-125	Pass	
Mercury	Z18-Fe03758	CP	%	101			70-130	Pass	
Nickel	Z18-Fe03758	CP	%	108			75-125	Pass	
Zinc	Z18-Fe03758	CP	%	116			75-125	Pass	
Spike - % Recovery									
Metals M8 (NZ MfE)				Result 1					
Arsenic	Z18-Fe03768	CP	%	107			75-125	Pass	
Cadmium	Z18-Fe03768	CP	%	117			75-125	Pass	
Chromium	Z18-Fe03768	CP	%	125			75-125	Pass	
Copper	Z18-Fe03768	CP	%	116			75-125	Pass	
Lead	Z18-Fe03768	CP	%	115			75-125	Pass	
Mercury	Z18-Fe03768	CP	%	111			70-130	Pass	
Nickel	Z18-Fe03768	CP	%	114			75-125	Pass	
Zinc	Z18-Fe03768	CP	%	113			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides (NZ MfE)				Result 1	Result 2	RPD			
2,4'-DDD	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2,4'-DDE	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2,4'-DDT	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4,4'-DDD	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4,4'-DDE	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4,4'-DDT	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
a-BHC	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-BHC	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-BHC	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan sulphate	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin aldehyde	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin ketone	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
g-BHC (Lindane)	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Toxaphene	Z18-Fe03747	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
trans-Chlordane	Z18-Fe03747	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	Z18-Fe03755	CP	%	21	21	1.0	30%	Pass	
Duplicate									
Metals M8 (NZ MfE)				Result 1	Result 2	RPD			
Arsenic	Z18-Fe03757	CP	mg/kg	4.3	3.9	10	30%	Pass	
Cadmium	Z18-Fe03757	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	Z18-Fe03757	CP	mg/kg	10	9.3	11	30%	Pass	
Copper	Z18-Fe03757	CP	mg/kg	5.4	< 5	11	30%	Pass	
Lead	Z18-Fe03757	CP	mg/kg	18	16	11	30%	Pass	

Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Nickel	Z18-Fe03757	CP	mg/kg	7.3	6.5	11	30%	Pass
Zinc	Z18-Fe03757	CP	mg/kg	41	37	11	30%	Pass
Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Arsenic	Z18-Fe03758	CP	mg/kg	4.1	4.2	1.0	30%	Pass
Cadmium	Z18-Fe03758	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z18-Fe03758	CP	mg/kg	9.1	9.2	1.0	30%	Pass
Copper	Z18-Fe03758	CP	mg/kg	5.2	5.3	1.0	30%	Pass
Lead	Z18-Fe03758	CP	mg/kg	17	17	1.0	30%	Pass
Mercury	Z18-Fe03758	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	Z18-Fe03758	CP	mg/kg	6.6	6.7	1.0	30%	Pass
Zinc	Z18-Fe03758	CP	mg/kg	38	39	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	Z18-Fe03765	CP	%	22	22	1.0	30%	Pass
Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Arsenic	Z18-Fe03767	CP	mg/kg	4.4	4.4	2.0	30%	Pass
Cadmium	Z18-Fe03767	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z18-Fe03767	CP	mg/kg	9.9	10	4.0	30%	Pass
Copper	Z18-Fe03767	CP	mg/kg	6.2	5.2	17	30%	Pass
Lead	Z18-Fe03767	CP	mg/kg	18	18	1.0	30%	Pass
Nickel	Z18-Fe03767	CP	mg/kg	7.8	8.0	3.0	30%	Pass
Zinc	Z18-Fe03767	CP	mg/kg	42	44	5.0	30%	Pass
Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Arsenic	Z18-Fe03768	CP	mg/kg	5.9	5.8	2.0	30%	Pass
Cadmium	Z18-Fe03768	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z18-Fe03768	CP	mg/kg	11	11	1.0	30%	Pass
Copper	Z18-Fe03768	CP	mg/kg	5.4	5.5	2.0	30%	Pass
Lead	Z18-Fe03768	CP	mg/kg	21	21	1.0	30%	Pass
Mercury	Z18-Fe03768	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	Z18-Fe03768	CP	mg/kg	7.5	7.6	1.0	30%	Pass
Zinc	Z18-Fe03768	CP	mg/kg	47	48	1.0	30%	Pass

Comments

Sample Integrity

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

Comments

Authorised By

Onur Mehmet	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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RE: Hawea - Client Details

Glenn Davis <glenn.davis@e3scientific.co.nz>

Thu 15/02/2018 10:36 p.m.

To: Tim <tim_mastytown@hotmail.com>;

Cc: Carrie Pritchard <carrie.pritchard@e3scientific.co.nz>;

 4 attachments (1 MB)

Site Layout Plan.jpg; Soil Sampling Location Plan.jpg; 583134-S_report.pdf; 583570-S_report.pdf;

Hi Tim,

We have received the laboratory analysis for the soil samples we collected from the Hawea site. The sampling locations and lab reports are attached. A plan showing the layout of the site is also attached for your reference. As discussed with you, we halved the number of sampling locations and collected a total of 60 soil samples across the site. At each location we analysed heavy metals in the soils with the X-Ray Fluorescence analyser and recorded the soil types.

In summary the laboratory results show that persistent pesticides are all below the laboratory detection limit indicating any dieldrin or DDT used on the farm was at the most very infrequent and at low application rates. The results also confirm the findings of the X-Ray Fluorescence survey of the soils that the heavy metal concentrations are all very consistent and represent background levels.

The only area of potential concern for residential activity is the farm dump (landfill) located in the northeast corner of the property. This is the only area on the site that may need some additional characterisation. It is a pretty small area though that could be either designed around or removed to a landfill.

I can confirm that my report would recommend no further investigation is required and residential development across the majority of the site should be considered a Permitted Activity under the NESCS. The landfill would be an exception that would require some management.

Happy to discuss.

Regards,

Glenn Davis

Managing Director

Certificate of Analysis

E3 Scientific Limited
11 Arrow Lane,
Arrowtown
NZ 9302



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: Carrie Pritchard

Report 583570-S
 Project name HAWEA SUBDIVISION PSI
 Project ID 18012
 Received Date Feb 07, 2018

Client Sample ID			COMP 1 (HF31 HF32 HF33)	COMP 2 (HF34 HF35 HF36)	COMP 3 (HF37 HF38 HF39)	COMP 4 (HF40 HF41 HF42)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06913	Z18-Fe06914	Z18-Fe06915	Z18-Fe06916
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchloroendate (surr.)	1	%	130	133	124	130
Tetrachloro-m-xylene (surr.)	1	%	146	111	99	98
% Moisture	1	%	19	18	21	18

Client Sample ID			COMP 5 (HF43 HF44 HF45)	COMP 6 (HF46 HF47 HF48)	COMP 7 (HF49 HF50 HF51)	COMP 8 (HF52 HF53)
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06917	Z18-Fe06918	Z18-Fe06919	Z18-Fe06920
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	128	130	116	131
Tetrachloro-m-xylene (surr.)	1	%	100	146	89	107
% Moisture	1	%	16	16	13	16

Client Sample ID			COMP 9 (HF54 HF55 HF56)	COMP 10 (HF57 HF58 HF59)	HF60	DUP2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06921	Z18-Fe06922	Z18-Fe06923	Z18-Fe06924
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
a-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
b-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01

Client Sample ID			COMP 9 (HF54 HF55 HF56)	COMP 10 (HF57 HF58 HF59)	HF60	DUP2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06921	Z18-Fe06922	Z18-Fe06923	Z18-Fe06924
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
d-BHC	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
g-BHC (Lindane)	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Dibutylchloroendate (surr.)	1	%	147	121	124	88
Tetrachloro-m-xylene (surr.)	1	%	126	98	123	108
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	-	-	< 2	4.5
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	< 5	11
Copper	5	mg/kg	-	-	< 5	6.0
Lead	5	mg/kg	-	-	8.5	20
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	< 5	6.4
Zinc	5	mg/kg	-	-	20	45
% Moisture	1	%	16	16	16	16

Client Sample ID			HF34	HF37	HF40	HF43
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06925	Z18-Fe06926	Z18-Fe06927	Z18-Fe06928
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	4.7	5.3	5.4	4.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.4	10	11	8.7
Copper	5	mg/kg	6.0	5.5	6.6	5.1
Lead	5	mg/kg	16	19	20	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.2	6.3	7.1	6.7
Zinc	5	mg/kg	37	42	46	38
% Moisture	1	%	19	21	20	17

Client Sample ID			HF47	HF51	HF54	HF56
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			Z18-Fe06929	Z18-Fe06930	Z18-Fe06931	Z18-Fe06932
Date Sampled			Feb 05, 2018	Feb 05, 2018	Feb 05, 2018	Feb 05, 2018
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	6.4	3.9	3.2	5.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	7.8	6.3	11
Copper	5	mg/kg	7.4	5.6	< 5	7.1
Lead	5	mg/kg	23	16	12	20
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.8	5.9	< 5	7.6
Zinc	5	mg/kg	52	36	29	51
% Moisture	1	%	23	14	15	18

Client Sample ID			HF58
Sample Matrix			Soil
Eurofins mgt Sample No.			Z18-Fe06933
Date Sampled			Feb 05, 2018
Test/Reference	LOR	Unit	
Metals M8 (NZ MfE)			
Arsenic	2	mg/kg	3.8
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	7.4
Copper	5	mg/kg	< 5
Lead	5	mg/kg	14
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	5.7
Zinc	5	mg/kg	34
% Moisture	1	%	14

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides (NZ MfE) - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	Feb 13, 2018	14 Day
Metals M8 (NZ MfE) - Method: USEPA 6010/6020 Heavy Metals	Melbourne	Feb 14, 2018	6 Months
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 07, 2018	14 Day

Company Name: E3 Scientific Limited Address: 11 Arrow Lane, Arrowtown NZ 9302 Project Name: HAWEA SUBDIVISION PSI Project ID: 18012	Order No.: Report #: 583570 Phone: 03 4098664 Fax:	Received: Feb 7, 2018 8:00 AM Due: Feb 14, 2018 Priority: 5 Day Contact Name: Carrie Pritchard
Eurofins mgt Analytical Services Manager : Onur Mehmet		

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	COMP 1 (HF31 HF32 HF33)	Feb 05, 2018		Soil	Z18-Fe06913		X	X	
2	COMP 2 (HF34 HF35 HF36)	Feb 05, 2018		Soil	Z18-Fe06914		X	X	
3	COMP 3 (HF37 HF38 HF39)	Feb 05, 2018		Soil	Z18-Fe06915		X	X	
4	COMP 4 (HF40 HF41 HF42)	Feb 05, 2018		Soil	Z18-Fe06916		X	X	

Company Name: E3 Scientific Limited	Order No.:	Received: Feb 7, 2018 8:00 AM
Address: 11 Arrow Lane, Arrowtown NZ 9302	Report #: 583570	Due: Feb 14, 2018
	Phone: 03 4098664	Priority: 5 Day
	Fax:	Contact Name: Carrie Pritchard
Project Name: HAWEA SUBDIVISION PSI		
Project ID: 18012		

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
5	COMP 5 (HF43 HF44 HF45)	Feb 05, 2018		Soil	Z18-Fe06917		X	X	
6	COMP 6 (HF46 HF47 HF48)	Feb 05, 2018		Soil	Z18-Fe06918		X	X	
7	COMP 7 (HF49 HF50 HF51)	Feb 05, 2018		Soil	Z18-Fe06919		X	X	
8	COMP 8 (HF52 HF53)	Feb 05, 2018		Soil	Z18-Fe06920		X	X	
9	COMP 9 (HF54 HF55 HF56)	Feb 05, 2018		Soil	Z18-Fe06921		X	X	
10	COMP 10	Feb 05, 2018		Soil	Z18-Fe06922		X	X	

Company Name: E3 Scientific Limited	Order No.:	Received: Feb 7, 2018 8:00 AM
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	Fax:	Contact Name: Carrie Pritchard
Project Name: HAWEA SUBDIVISION PSI		
Project ID: 18012		

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
	(HF57 HF58 HF59)								
11	HF60	Feb 05, 2018	Soil	Z18-Fe06923		X	X	X	
12	DUP2	Feb 05, 2018	Soil	Z18-Fe06924		X	X	X	
13	HF34	Feb 05, 2018	Soil	Z18-Fe06925		X		X	
14	HF37	Feb 05, 2018	Soil	Z18-Fe06926		X		X	
15	HF40	Feb 05, 2018	Soil	Z18-Fe06927		X		X	
16	HF43	Feb 05, 2018	Soil	Z18-Fe06928		X		X	
17	HF47	Feb 05, 2018	Soil	Z18-Fe06929		X		X	
18	HF51	Feb 05, 2018	Soil	Z18-Fe06930		X		X	
19	HF54	Feb 05, 2018	Soil	Z18-Fe06931		X		X	
20	HF56	Feb 05, 2018	Soil	Z18-Fe06932		X		X	

Company Name: E3 Scientific Limited	Order No.:	Received: Feb 7, 2018 8:00 AM
Address: 11 Arrow Lane, Arrowtown NZ 9302	Report #: 583570	Due: Feb 14, 2018
Project Name: HAWEA SUBDIVISION PSI	Phone: 03 4098664	Priority: 5 Day
Project ID: 18012	Fax:	Contact Name: Carrie Pritchard

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
21	HF58	Feb 05, 2018		Soil	Z18-Fe06933		X		X
22	HF31	Feb 05, 2018		Soil	Z18-Fe06934	X			
23	HF32	Feb 05, 2018		Soil	Z18-Fe06935	X			
24	HF33	Feb 05, 2018		Soil	Z18-Fe06936	X			
25	HF35	Feb 05, 2018		Soil	Z18-Fe06937	X			
26	HF36	Feb 05, 2018		Soil	Z18-Fe06938	X			
27	HF38	Feb 05, 2018		Soil	Z18-Fe06939	X			
28	HF39	Feb 05, 2018		Soil	Z18-Fe06940	X			
29	HF41	Feb 05, 2018		Soil	Z18-Fe06941	X			
30	HF42	Feb 05, 2018		Soil	Z18-Fe06942	X			
31	HF44	Feb 05, 2018		Soil	Z18-Fe06943	X			
32	HF45	Feb 05, 2018		Soil	Z18-Fe06944	X			

Company Name: E3 Scientific Limited	Order No.:	Received: Feb 7, 2018 8:00 AM
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	Fax:	Contact Name: Carrie Pritchard
Project Name: HAWEA SUBDIVISION PSI		
Project ID: 18012		

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						HOLD	Moisture Set	Organochlorine Pesticides (NZ MHE)	Metals M8 (NZ MHE)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
33	HF46	Feb 05, 2018		Soil	Z18-Fe06945	X			
34	HF48	Feb 05, 2018		Soil	Z18-Fe06946	X			
35	HF49	Feb 05, 2018		Soil	Z18-Fe06947	X			
36	HF50	Feb 05, 2018		Soil	Z18-Fe06948	X			
37	HF52	Feb 05, 2018		Soil	Z18-Fe06949	X			
38	HF53	Feb 05, 2018		Soil	Z18-Fe06950	X			
39	HF55	Feb 05, 2018		Soil	Z18-Fe06951	X			
40	HF57	Feb 05, 2018		Soil	Z18-Fe06952	X			
41	HF59	Feb 05, 2018		Soil	Z18-Fe06953	X			
Test Counts						20	21	12	11

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	mg/kg	< 0.01			0.01	Pass	
2.4'-DDE	mg/kg	< 0.01			0.01	Pass	
2.4'-DDT	mg/kg	< 0.01			0.01	Pass	
4.4'-DDD	mg/kg	< 0.01			0.01	Pass	
4.4'-DDE	mg/kg	< 0.01			0.01	Pass	
4.4'-DDT	mg/kg	< 0.01			0.01	Pass	
a-BHC	mg/kg	< 0.01			0.01	Pass	
Aldrin	mg/kg	< 0.01			0.01	Pass	
b-BHC	mg/kg	< 0.01			0.01	Pass	
Chlordanes - Total	mg/kg	< 0.01			0.01	Pass	
cis-Chlordane	mg/kg	< 0.01			0.01	Pass	
d-BHC	mg/kg	< 0.01			0.01	Pass	
Dieldrin	mg/kg	< 0.01			0.01	Pass	
Endosulfan I	mg/kg	< 0.01			0.01	Pass	
Endosulfan II	mg/kg	< 0.01			0.01	Pass	
Endosulfan sulphate	mg/kg	< 0.01			0.01	Pass	
Endrin	mg/kg	< 0.01			0.01	Pass	
Endrin aldehyde	mg/kg	< 0.01			0.01	Pass	
Endrin ketone	mg/kg	< 0.01			0.01	Pass	
g-BHC (Lindane)	mg/kg	< 0.01			0.01	Pass	
Heptachlor	mg/kg	< 0.01			0.01	Pass	
Heptachlor epoxide	mg/kg	< 0.01			0.01	Pass	
Hexachlorobenzene	mg/kg	< 0.01			0.01	Pass	
Methoxychlor	mg/kg	< 0.01			0.01	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
trans-Chlordane	mg/kg	< 0.01			0.01	Pass	
Method Blank							
Metals M8 (NZ MfE)							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	%	130			70-130	Pass	
2.4'-DDE	%	110			70-130	Pass	
2.4'-DDT	%	78			70-130	Pass	
4.4'-DDD	%	88			70-130	Pass	
4.4'-DDE	%	110			70-130	Pass	
4.4'-DDT	%	85			70-130	Pass	
a-BHC	%	85			70-130	Pass	
Aldrin	%	102			70-130	Pass	
b-BHC	%	81			70-130	Pass	
cis-Chlordane	%	98			70-130	Pass	
d-BHC	%	84			70-130	Pass	
Dieldrin	%	106			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Endosulfan I	%	108			70-130	Pass		
Endosulfan II	%	99			70-130	Pass		
Endosulfan sulphate	%	96			70-130	Pass		
Endrin	%	100			70-130	Pass		
Endrin aldehyde	%	98			70-130	Pass		
Endrin ketone	%	100			70-130	Pass		
g-BHC (Lindane)	%	85			70-130	Pass		
Heptachlor	%	88			70-130	Pass		
Heptachlor epoxide	%	102			70-130	Pass		
Hexachlorobenzene	%	82			70-130	Pass		
Methoxychlor	%	88			70-130	Pass		
trans-Chlordane	%	103			70-130	Pass		
LCS - % Recovery								
Metals M8 (NZ MfE)								
Arsenic	%	111			80-120	Pass		
Cadmium	%	114			80-120	Pass		
Chromium	%	104			80-120	Pass		
Copper	%	118			80-120	Pass		
Lead	%	113			80-120	Pass		
Mercury	%	102			75-125	Pass		
Nickel	%	107			80-120	Pass		
Zinc	%	110			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Organochlorine Pesticides (NZ MfE)								
				Result 1				
2.4'-DDD	Z18-Fe06913	CP	%	110		70-130	Pass	
2.4'-DDE	Z18-Fe06913	CP	%	126		70-130	Pass	
2.4'-DDT	Z18-Fe06913	CP	%	110		70-130	Pass	
4.4'-DDD	Z18-Fe06913	CP	%	111		70-130	Pass	
4.4'-DDE	Z18-Fe06913	CP	%	113		70-130	Pass	
4.4'-DDT	Z18-Fe06913	CP	%	109		70-130	Pass	
a-BHC	Z18-Fe06913	CP	%	99		70-130	Pass	
Aldrin	Z18-Fe06913	CP	%	123		70-130	Pass	
b-BHC	Z18-Fe06913	CP	%	96		70-130	Pass	
cis-Chlordane	Z18-Fe06913	CP	%	124		70-130	Pass	
d-BHC	Z18-Fe06913	CP	%	103		70-130	Pass	
Dieldrin	Z18-Fe06913	CP	%	129		70-130	Pass	
Endosulfan I	Z18-Fe06913	CP	%	112		70-130	Pass	
Endosulfan II	Z18-Fe06913	CP	%	126		70-130	Pass	
Endosulfan sulphate	Z18-Fe06913	CP	%	112		70-130	Pass	
Endrin	Z18-Fe06913	CP	%	130		70-130	Pass	
Endrin aldehyde	Z18-Fe06913	CP	%	123		70-130	Pass	
Endrin ketone	Z18-Fe06913	CP	%	120		70-130	Pass	
g-BHC (Lindane)	Z18-Fe06913	CP	%	99		70-130	Pass	
Heptachlor	Z18-Fe06913	CP	%	114		70-130	Pass	
Heptachlor epoxide	Z18-Fe06913	CP	%	120		70-130	Pass	
Hexachlorobenzene	Z18-Fe06913	CP	%	99		70-130	Pass	
Methoxychlor	Z18-Fe06913	CP	%	107		70-130	Pass	
trans-Chlordane	Z18-Fe06913	CP	%	123		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides (NZ MfE)								
				Result 1				
2.4'-DDD	Z18-Fe06923	CP	%	104		70-130	Pass	
2.4'-DDE	Z18-Fe06923	CP	%	108		70-130	Pass	
2.4'-DDT	Z18-Fe06923	CP	%	99		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4.4'-DDD	Z18-Fe06923	CP	%	90			70-130	Pass	
4.4'-DDE	Z18-Fe06923	CP	%	115			70-130	Pass	
4.4'-DDT	Z18-Fe06923	CP	%	103			70-130	Pass	
a-BHC	Z18-Fe06923	CP	%	84			70-130	Pass	
Aldrin	Z18-Fe06923	CP	%	104			70-130	Pass	
b-BHC	Z18-Fe06923	CP	%	82			70-130	Pass	
cis-Chlordane	Z18-Fe06923	CP	%	104			70-130	Pass	
d-BHC	Z18-Fe06923	CP	%	88			70-130	Pass	
Dieldrin	Z18-Fe06923	CP	%	111			70-130	Pass	
Endosulfan I	Z18-Fe06923	CP	%	121			70-130	Pass	
Endosulfan II	Z18-Fe06923	CP	%	110			70-130	Pass	
Endosulfan sulphate	Z18-Fe06923	CP	%	84			70-130	Pass	
Endrin	Z18-Fe06923	CP	%	111			70-130	Pass	
Endrin aldehyde	Z18-Fe06923	CP	%	99			70-130	Pass	
Endrin ketone	Z18-Fe06923	CP	%	100			70-130	Pass	
g-BHC (Lindane)	Z18-Fe06923	CP	%	81			70-130	Pass	
Heptachlor	Z18-Fe06923	CP	%	100			70-130	Pass	
Heptachlor epoxide	Z18-Fe06923	CP	%	102			70-130	Pass	
Hexachlorobenzene	Z18-Fe06923	CP	%	84			70-130	Pass	
Methoxychlor	Z18-Fe06923	CP	%	99			70-130	Pass	
trans-Chlordane	Z18-Fe06923	CP	%	104			70-130	Pass	
Spike - % Recovery									
Metals M8 (NZ MfE)				Result 1					
Mercury	Z18-Fe08585	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Metals M8 (NZ MfE)				Result 1					
Arsenic	Z18-Fe06924	CP	%	85			75-125	Pass	
Cadmium	Z18-Fe06924	CP	%	91			75-125	Pass	
Chromium	Z18-Fe06924	CP	%	92			75-125	Pass	
Copper	Z18-Fe06924	CP	%	94			75-125	Pass	
Lead	Z18-Fe06924	CP	%	98			75-125	Pass	
Nickel	Z18-Fe06924	CP	%	86			75-125	Pass	
Zinc	Z18-Fe06924	CP	%	72			75-125	Fail	Q08
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	Z18-Fe06915	CP	%	21	21	1.0	30%	Pass	
Duplicate									
Organochlorine Pesticides (NZ MfE)				Result 1	Result 2	RPD			
2.4'-DDD	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDE	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDT	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
a-BHC	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-BHC	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-BHC	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	

Duplicate								
Organochlorine Pesticides (NZ MfE)				Result 1	Result 2	RPD		
Endosulfan sulphate	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endrin	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endrin aldehyde	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Endrin ketone	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
γ-BHC (Lindane)	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Heptachlor	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Heptachlor epoxide	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Hexachlorobenzene	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Methoxychlor	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Toxaphene	Z18-Fe06922	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-Chlordane	Z18-Fe06922	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Mercury	Z18-Fe08584	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Arsenic	Z18-Fe06924	CP	mg/kg	4.5	4.8	6.0	30%	Pass
Cadmium	Z18-Fe06924	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z18-Fe06924	CP	mg/kg	11	11	1.0	30%	Pass
Copper	Z18-Fe06924	CP	mg/kg	6.0	6.2	2.0	30%	Pass
Lead	Z18-Fe06924	CP	mg/kg	20	20	1.0	30%	Pass
Nickel	Z18-Fe06924	CP	mg/kg	6.4	6.6	2.0	30%	Pass
Zinc	Z18-Fe06924	CP	mg/kg	45	46	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	Z18-Fe06925	CP	%	19	20	1.0	30%	Pass

Comments
Sample Integrity

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

Comments
Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

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Joseph Edouard	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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