

Alison Cooper

Subject: FW: Proposed Roydon Quarry - Livestock Pen
Attachments: 1781870_Table 1 - Soil Quality.pdf; 670188-S_report.pdf; 670382-S_report.pdf

Hannah Goslin

Resource Management Consultant



PO Box 25-289
Christchurch
Phone 03 379 9749
Mobile 027 335 2300

hannah.goslin@incite.co.nz
www.incite.co.nz

This e-mail and any attachment(s) contains information that is both confidential and possibly legally privileged. No reader may make use of its content unless use is approved by Incite.



Please consider the environment before printing this e-mail

From: Bligh, Kevin <KBligh@golder.co.nz>
Sent: Friday, 16 August 2019 9:27 AM
To: Rowan.Freeman@ecan.govt.nz
Cc: England, Geoffrey <GEngland@golder.co.nz>; Hannah Goslin <hannah.goslin@incite.co.nz>; Andrew Henderson <Andrew.Henderson@beca.com>; Hart, Andrew <ahart@golder.co.nz>; Koviessen, Stephanie <SKoviessen@golder.co.nz>; CHITTOCK, Don <Don.Chittock@fultonhogan.com>
Subject: Proposed Roydon Quarry - Livestock Pen

Hi Rowan

To close off the historical livestock pen located at 220 Jones Road, eight shallow (0.05 – 0.15 m bgl) soil samples were collected from within the area thought to previously occupy the pens and run. The soil samples were submitted to Eurofins Laboratory and analysed for potential contaminants of interest; namely organochlorine pesticides (OCPs) and metals/metalloids.

Given the proposed use as a quarry (and consistent with the existing DSI), soil analytical results have been compared to published background concentrations for Canterbury and applicable standards for commercial/industrial land use (Table 1 attached). The full laboratory analytical results have also been attached.

In summary, the analysis has documented:

- The presence of the OCPs DDT and dieldrin in shallow soils. The detected concentrations are below the commercial/industrial land use applicable standards for commercial/industrial land use.
- Metal/metalloid concentrations above published background and below applicable standards for commercial/industrial land use.


In summary, the analytical results indicate that soils within the area of interest are suitable for commercial/industrial land use. Assuming these soils may be disturbed as part of quarrying activities, consent conditions and supporting documentation (e.g. management plan) should allow for re-use on site as part of creating

earth bunds (or similar) around the quarry. The draft consent conditions which will be provided as part of the full s92 response to ECan and SDC later today, incorporates conditions to this effect.



Please get in touch if it helps to discuss this further.

Kevin Bligh (BRS, MRP (Hons), MNZPI, IAP2)
Auckland Manager

 Golder Associates (NZ) Limited
Level 2, Nielsen Centre, 129 Hurstmere Road, Takapuna, Auckland 0622, New Zealand (PO Box 33-849, Takapuna, Auckland 0740)
GOLDER T: +64 9 486 8068 | C: +64 21 02506379 | golder.com
[LinkedIn](#) | [Facebook](#) | [Twitter](#)

Work Safe, Home Safe

This email transmission is confidential and may contain proprietary information for the exclusive use of the intended recipient. Any use, distribution or copying of this transmission, other than by the intended recipient, is strictly prohibited. If you are not the intended recipient, please notify the sender and delete all copies. Electronic media is susceptible to unauthorized modification, deterioration, and incompatibility. Accordingly, the electronic media version of any work product may not be relied upon. Any advice provided in or attached to this email is subject to limitations.

Golder and the G logo are trademarks of Golder Associates Corporation

Please consider the environment before printing this email.

From: Rowan Freeman <Rowan.Freeman@ecan.govt.nz>

Sent: Tuesday, 16 July 2019 4:23 PM

To: MASON, Marsha <Marsha.Mason@fultonhogan.com>; England, Geoffrey <GEngland@golder.co.nz>

Subject: RE: Tuesday site visit at Roydon

EXTERNAL EMAIL

Hi Marsha and Geoff,

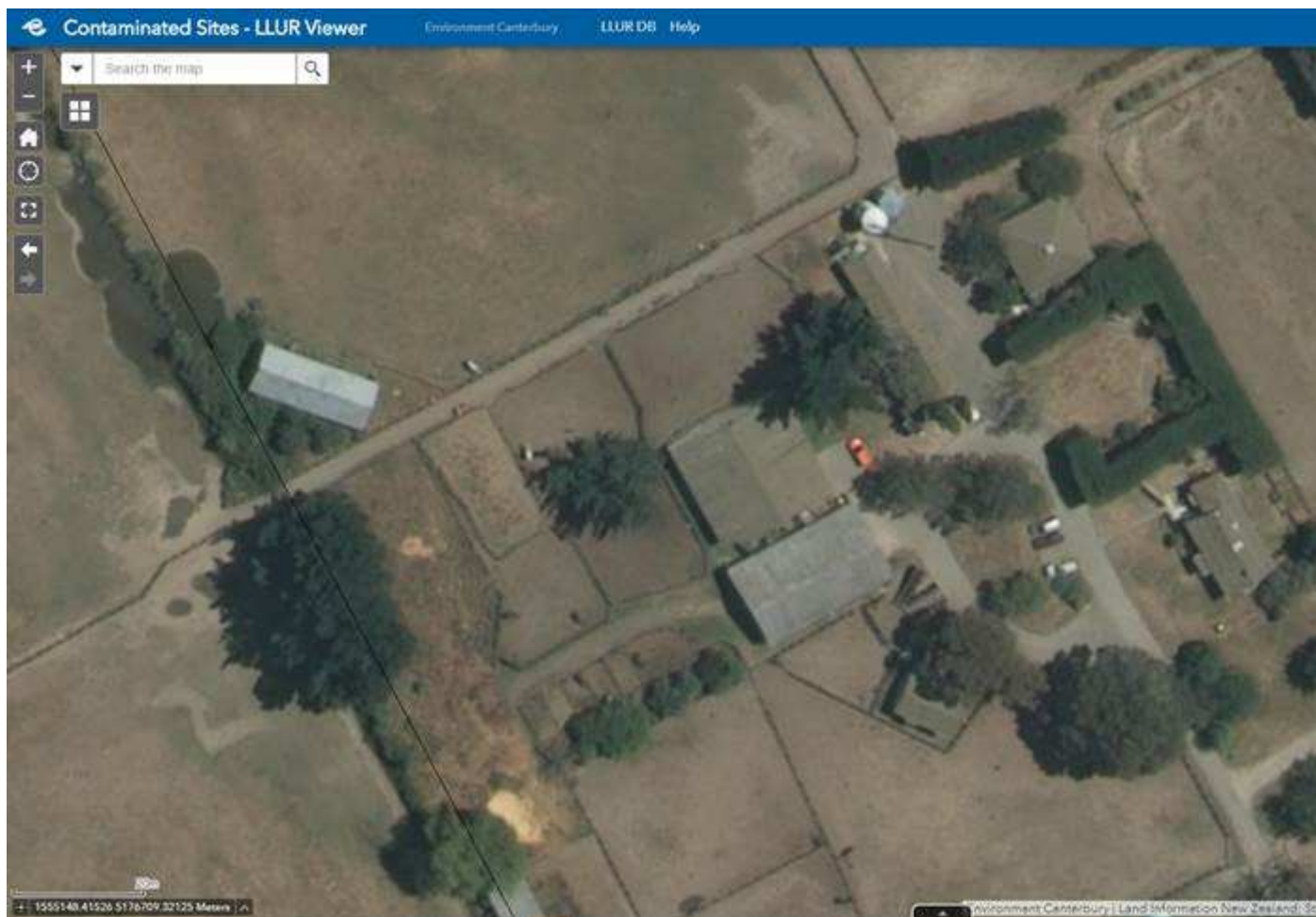
Thanks for showing me through the areas of interest at the site today. I've already begun updating my report and will let you know if I have any questions – although not likely at this stage.

With reference to 220 Jones Road, the aerial photograph I referred to is from the early 1960s and not the '40s. I've included that aerial image and our most current aerial image. The building to the left with long edge trending northwest to southeast is a good reference point. Note area at centre of photo that looks like livestock pens. This is the area we've included on our register as a potential HAIL for historical livestock dipping operations. This wasn't addressed in the original PSI/DSI.

If you have any questions, please let me know.

All the best,
Rowan.





From: CHITTOCK, Don <Don.Chittock@fultonhogan.com>
Sent: Thursday, 11 July 2019 9:55 AM
To: Rowan Freeman <Rowan.Freeman@ecan.govt.nz>
Cc: MASON, Marsha <Marsha.Mason@fultonhogan.com>; England, Geoffrey (GEngland@golder.co.nz) <GEngland@golder.co.nz>
Subject: Tuesday site visit at Roydon

Hi Rowan,

Just to confirm from our end the meeting on site next Tuesday will go ahead – I am unable to attend as I need to flyout to the UK to attend my father inlaws funeral later that week. Marsha and Geoff will be able to meet you onsite and show you around and answer questions.

Regards Don

Don Chittock | South Island Resources and Sustainability Manager | **Fulton Hogan Ltd** | 34 Miners Road, Templeton, Christchurch, 7676 | P O Box 16-064, Hornby, Christchurch, 8441, New Zealand | Ext 5235 | Phone +64 3365235 | Mobile +64 27 687 6247 | Web www.fultonhogan.com

Fulton Hogan is a dynamic, diversified contracting company active in New Zealand, Australia and the Pacific Basin. Constituent divisions represent a broad range of products and services in the roading, quarrying and civil construction sector,

and hold strong positions in their respective markets. <http://www.fultonhogan.com>

Get on the Road to Success. For career opportunities within Fulton Hogan navigate to <http://www.fultonhogancareers.com>

Fulton Hogan may collect, use and disclose personal information about you so we can perform our business activities and functions and provide quality customer services. You can view our Privacy Statement at <https://www.fultonhogan.com/privacy-policy/>

IMPORTANT NOTICE: This is an email from Fulton Hogan. We do not accept responsibility for any changes to this email or its attachments made after we have transmitted it. We do not accept responsibility for attachments made by others to this email.

CONFIDENTIALITY: The contents of this email (including any attachments) may be privileged and confidential. Any unauthorised use of the contents is expressly prohibited. If you have received this email in error, please advise us immediately and then delete this email together with all attachments.

VIRUSES: Fulton Hogan does not represent or warrant that files attached to this email are free from computer viruses or other defects. Any attached files are provided, and may only be used on the basis that the user accepts all responsibility for any loss, damage or consequence resulting directly or indirectly from use of the attached files. The liability of Fulton Hogan is limited in any event to the resupply of the attached files.

[\[Click here to report this email as spam.\]](#)
Fulton Hogan email is protected by Forcepoint.

Table 1: Soil Quality Assessment Results.

Sample Area:	Background Concentrations ¹	Applicable Standards	Historic Livestock Pens							
			S01	S02	S03	S04	S05	S06	S07	
Sample Name:										
Lab Number:			K19-Au12713	K19-Au12714	K19-Au12715	K19-Au12716	K19-Au12717	K19-Au12718	K19-Au12719	
Date Sampled:			8/8/2019	8/8/2019	8/8/2019	8/8/2019	8/8/2019	8/8/2019	8/8/2019	
Soil Type:		Commercial / Industrial	Clayey SILT	SILT	Clayey SILT	SILT	Clayey SILT	Clayey SILT	Clayey SILT	
Sample Depth (m bgl):			0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	
Metals										
Arsenic	12.58	70 ²	5.8	7.0	7.7	6.9	5	8.7	9.6	
Cadmium	0.19	1300 ²	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium III	22.7	>10,000 ²	14	16	17	15.0	13	18	18	
Copper	20.3	>10,000 ²	11	15	20	16	15	13	14	
Lead	40.96	3,300 ²	79	150	98	120	110	45	41	
Mercury	0.11	4,200 ²	< 0.1	0.1	0.1	0.1	0.1	< 0.1	-	
Nickel	20.7	6,000 ³	8.6	8.9	10	10	10	9.4	12	
Zinc	93.94	400,000 ³	110	260	150	140	130	120	94	
OCP										
DDT	<0.01	1,000 ²	0.01	0.02	< 0.01	0.01	< 0.01	< 0.01	< 0.01	
Dieldrin ⁴	<0.01	160 ²	0.04	0.03	2.6	0.05	0.41	0.13	0.03	

Notes:

¹ Environment Canterbury (2007) Background Concentrations of Selected Trace Elements in Canterbury Soils.

² MIE (2011) Methodology - Commercial/Industrial Outdoor Worker (Unpaved).

³ NEPC (1999) Health Investigation Levels (HIL) D - Commercial/Industrial.

⁴ The SCS is applicable to either dieldrin or aldrin separately, or to the sum of aldrin and dieldrin if both are involved.

Concentrations expressed in units of mg/kg dry weight (unless otherwise stated).

Grey value indicates concentration at or below laboratory limit of reporting (LOR).

Shading indicates exceedance of the greater of background or applicable standard.

Golder Associates (NZ) Ltd
Level 2, Nielsen Centre, 129 Hurstmere Road
Takapuna
AUCKLAND 0740



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: **Stephanie Koviessen**

Report **670188-S**
 Project name **ROYDON QUARRY**
 Project ID **1781870**
 Received Date **Aug 08, 2019**

Client Sample ID			S01	S02	S03	S04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			Z19-Au10846	Z19-Au10847	Z19-Au10848	Z19-Au10849
Date Sampled			Aug 08, 2019	Aug 08, 2019	Aug 08, 2019	Aug 08, 2019
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	5.8	7.0	7.7	6.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	16	17	15
Copper	5	mg/kg	11	15	20	16
Lead	5	mg/kg	79	150	98	120
Mercury	0.1	mg/kg	< 0.1	0.1	0.1	0.1
Nickel	5	mg/kg	8.6	8.9	10	10.0
Zinc	5	mg/kg	110	260	150	140
% Moisture	1	%	20	13	23	14

Client Sample ID			S05	S06	S07	S08
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			Z19-Au10850	Z19-Au10851	Z19-Au10852	Z19-Au10853
Date Sampled			Aug 08, 2019	Aug 08, 2019	Aug 08, 2019	Aug 08, 2019
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Arsenic	2	mg/kg	5.0	8.7	9.6	23
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	18	18	27
Copper	5	mg/kg	15	13	14	32
Lead	5	mg/kg	110	45	41	38
Mercury	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	10	9.4	12	10
Zinc	5	mg/kg	130	120	94	130
% Moisture	1	%	21	21	20	35

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.

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

Metals M8 (NZ MfE)

- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS

% Moisture

- Method: LTM-GEN-7080 Moisture

Testing Site

Melbourne

Melbourne

Extracted

Aug 14, 2019

Aug 08, 2019

Holding Time

6 Months

14 Days

Company Name: Golder Associates (NZ) Ltd
Address: Level 2, Nielsen Centre, 129 Hurstmere Road
 Takapuna
 AUCKLAND 0740

Project Name: ROYDON QUARRY
Project ID: 1781870

Order No.:
Report #: 670188
Phone: +64 9 486 8068
Fax: +64 9 486 8072

Received: Aug 8, 2019 2:00 PM
Due: Aug 13, 2019
Priority: 3 Day
Contact Name: Stephanie Koviessen

Eurofins Analytical Services Manager : Swati Shahaney

Sample Detail						Moisture Set	Organochlorine Pesticides (NZ MTE)	Metals M8 (NZ MTE)
Auckland Laboratory - IANZ# 1327								
Christchurch Laboratory - IANZ# 1290								
Eurofins Australia Laboratory						X	X	X
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	S01	Aug 08, 2019	10:20AM	Soil	Z19-Au10846	X	X	X
2	S02	Aug 08, 2019	10:30AM	Soil	Z19-Au10847	X	X	X
3	S03	Aug 08, 2019	10:40AM	Soil	Z19-Au10848	X	X	X
4	S04	Aug 08, 2019	10:50AM	Soil	Z19-Au10849	X	X	X
5	S05	Aug 08, 2019	10:45AM	Soil	Z19-Au10850	X	X	X
6	S06	Aug 08, 2019	11:10AM	Soil	Z19-Au10851	X	X	X
7	S07	Aug 08, 2019	11:00AM	Soil	Z19-Au10852	X	X	X
8	S08	Aug 08, 2019	11:05AM	Soil	Z19-Au10853	X	X	X
Test Counts						8	8	8

Internal Quality Control Review and Glossary
General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food 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.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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								
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								
Metals M8 (NZ MfE)								
Arsenic		%	91			70-130	Pass	
Cadmium		%	81			70-130	Pass	
Chromium		%	95			70-130	Pass	
Copper		%	98			70-130	Pass	
Lead		%	103			70-130	Pass	
Mercury		%	97			70-130	Pass	
Nickel		%	95			70-130	Pass	
Zinc		%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Metals M8 (NZ MfE)								
				Result 1				
Copper	Z19-Au13224	NCP	%	124		70-130	Pass	
Lead	Z19-Au13224	NCP	%	257		70-130	Fail	Q08
Spike - % Recovery								
Metals M8 (NZ MfE)								
				Result 1				
Arsenic	Z19-Au10847	CP	%	87		70-130	Pass	
Cadmium	Z19-Au10847	CP	%	86		70-130	Pass	
Chromium	Z19-Au10847	CP	%	85		70-130	Pass	
Mercury	Z19-Au10847	CP	%	96		70-130	Pass	
Nickel	Z19-Au10847	CP	%	86		70-130	Pass	
Zinc	Z19-Au10847	CP	%	390		70-130	Fail	Q08
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Duplicate								
Metals M8 (NZ MfE)								
				Result 1	Result 2	RPD		
Arsenic	Z19-Au10846	CP	mg/kg	5.8	6.1	6.0	30%	Pass
Cadmium	Z19-Au10846	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z19-Au10846	CP	mg/kg	14	15	5.0	30%	Pass
Copper	Z19-Au10846	CP	mg/kg	11	12	4.0	30%	Pass
Lead	Z19-Au10846	CP	mg/kg	79	80	2.0	30%	Pass
Mercury	Z19-Au10846	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	Z19-Au10846	CP	mg/kg	8.6	8.8	2.0	30%	Pass
Zinc	Z19-Au10846	CP	mg/kg	110	120	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	Z19-Au10846	CP	%	20	20	<1	30%	Pass

Duplicate								
Metals M8 (NZ MfE)				Result 1	Result 2	RPD		
Arsenic	Z19-Au10847	CP	mg/kg	7.0	7.0	<1	30%	Pass
Cadmium	Z19-Au10847	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	Z19-Au10847	CP	mg/kg	16	17	1.0	30%	Pass
Copper	Z19-Au10847	CP	mg/kg	15	15	<1	30%	Pass
Lead	Z19-Au10847	CP	mg/kg	150	150	1.0	30%	Pass
Mercury	Z19-Au10847	CP	mg/kg	0.1	0.1	2.0	30%	Pass
Nickel	Z19-Au10847	CP	mg/kg	8.9	8.9	<1	30%	Pass
Zinc	Z19-Au10847	CP	mg/kg	260	260	<1	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

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

Swati Shahaney	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)


**Glenn Jackson
General 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](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Golder Associates (NZ) Ltd
 Level 2, Nielsen Centre, 129 Hurstmere Road
 Takapuna
 AUCKLAND 0740



All tests reported herein
 have been performed in
 accordance with the
 laboratory's scope of
 accreditation, unless
 otherwise specified.

Accreditation No. 1327

Attention: Stephanie Koviessen

Report 670382-S
 Project name ROYDON QUARRY
 Project ID 1781870
 Received Date Aug 08, 2019

Client Sample ID			S01	S02	S03	S04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K19-Au12713	K19-Au12714	K19-Au12715	K19-Au12716
Date Sampled			Aug 08, 2019	Aug 08, 2019	Aug 08, 2019	Aug 08, 2019
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	0.03	0.03	0.03	0.02
4.4'-DDT	0.01	mg/kg	0.01	0.02	< 0.01	0.01
DDT + DDE + DDD (Total)*	0.01	mg/kg	0.04	0.05	0.03	0.03
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	0.04	0.03	2.6	0.05
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	%	79	82	75	78
Tetrachloro-m-xylene (surr.)	1	%	107	109	93	99
% Moisture	1	%	22	13	27	14

Client Sample ID			S05	S06	S07	S08
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K19-Au12717	K19-Au12718	K19-Au12719	K19-Au12720
Date Sampled			Aug 08, 2019	Aug 08, 2019	Aug 08, 2019	Aug 08, 2019
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
DDT + DDE + DDD (Total)*	0.01	mg/kg	0.02	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	0.41	0.13	0.03	0.02
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
Dibutylchloride (surr.)	1	%	75	94	77	74
Tetrachloro-m-xylene (surr.)	1	%	87	111	98	87
% Moisture	1	%	22	22	19	33

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.

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

Organochlorine Pesticides (NZ MfE)

- Method: LTM-ORG-2220 OCP & PCB in Soil and Water by GCMSMS

% Moisture

- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry

Testing Site

Auckland

Auckland

Extracted

Aug 09, 2019

Aug 09, 2019

Holding Time

14 Days

14 Days

Company Name:	Golder Associates (NZ) Ltd	Order No.:		Received:	Aug 8, 2019 2:00 PM
Address:	Level 2, Nielsen Centre, 129 Hurstmere Road Takapuna AUCKLAND 0740	Report #:	670382	Due:	Aug 13, 2019
Project Name:	ROYDON QUARRY	Phone:	+64 9 486 8068	Priority:	3 Day
Project ID:	1781870	Fax:	+64 9 486 8072	Contact Name:	Stephanie Koviessen

Eurofins Analytical Services Manager : Swati Shahaney

Sample Detail						Moisture Set	Organochlorine Pesticides (NZ MFE)
Auckland Laboratory - IANZ# 1327						X	X
Christchurch Laboratory - IANZ# 1290							
Eurofins Australia Laboratory							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	S01	Aug 08, 2019	10:20AM	Soil	K19-Au12713	X	X
2	S02	Aug 08, 2019	10:30AM	Soil	K19-Au12714	X	X
3	S03	Aug 08, 2019	10:40AM	Soil	K19-Au12715	X	X
4	S04	Aug 08, 2019	10:50AM	Soil	K19-Au12716	X	X
5	S05	Aug 08, 2019	10:45AM	Soil	K19-Au12717	X	X
6	S06	Aug 08, 2019	11:10AM	Soil	K19-Au12718	X	X
7	S07	Aug 08, 2019	11:00AM	Soil	K19-Au12719	X	X
8	S08	Aug 08, 2019	11:05AM	Soil	K19-Au12720	X	X
Test Counts						8	8

Internal Quality Control Review and Glossary
General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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	
LCS - % Recovery							
Organochlorine Pesticides (NZ MfE)							
2,4'-DDD	%	113			70-130	Pass	
2,4'-DDE	%	126			70-130	Pass	
2,4'-DDT	%	92			70-130	Pass	
4,4'-DDD	%	100			70-130	Pass	
4,4'-DDE	%	128			70-130	Pass	
4,4'-DDT	%	110			70-130	Pass	
a-BHC	%	117			70-130	Pass	
Aldrin	%	116			70-130	Pass	
b-BHC	%	126			70-130	Pass	
Chlordanes - Total	%	114			70-130	Pass	
cis-Chlordane	%	117			70-130	Pass	
d-BHC	%	126			70-130	Pass	
Endosulfan I	%	111			70-130	Pass	
Endosulfan II	%	113			70-130	Pass	
Endosulfan sulphate	%	120			70-130	Pass	
Endrin	%	86			70-130	Pass	
Endrin aldehyde	%	114			70-130	Pass	
Endrin ketone	%	117			70-130	Pass	
g-BHC (Lindane)	%	128			70-130	Pass	
Heptachlor	%	91			70-130	Pass	
Heptachlor epoxide	%	112			70-130	Pass	
Hexachlorobenzene	%	119			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor			%	109			70-130	Pass	
trans-Chlordane			%	111			70-130	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	K19-Au12714	CP	%	98			70-130	Pass	
2.4'-DDE	K19-Au12714	CP	%	102			70-130	Pass	
2.4'-DDT	K19-Au12714	CP	%	77			70-130	Pass	
4.4'-DDD	K19-Au12714	CP	%	91			70-130	Pass	
4.4'-DDE	K19-Au12714	CP	%	103			70-130	Pass	
4.4'-DDT	K19-Au12714	CP	%	92			70-130	Pass	
a-BHC	K19-Au12714	CP	%	106			70-130	Pass	
Aldrin	K19-Au12714	CP	%	101			70-130	Pass	
b-BHC	K19-Au12714	CP	%	98			70-130	Pass	
Chlordanes - Total	K19-Au12714	CP	%	93			70-130	Pass	
cis-Chlordane	K19-Au12714	CP	%	96			70-130	Pass	
d-BHC	K19-Au12714	CP	%	99			70-130	Pass	
Dieldrin	K19-Au12714	CP	%	107			70-130	Pass	
Endosulfan I	K19-Au12714	CP	%	92			70-130	Pass	
Endosulfan II	K19-Au12714	CP	%	91			70-130	Pass	
Endosulfan sulphate	K19-Au12714	CP	%	102			70-130	Pass	
Endrin	K19-Au12714	CP	%	83			70-130	Pass	
Endrin aldehyde	K19-Au12714	CP	%	87			70-130	Pass	
Endrin ketone	K19-Au12714	CP	%	105			70-130	Pass	
g-BHC (Lindane)	K19-Au12714	CP	%	107			70-130	Pass	
Heptachlor	K19-Au12714	CP	%	90			70-130	Pass	
Heptachlor epoxide	K19-Au12714	CP	%	95			70-130	Pass	
Hexachlorobenzene	K19-Au12714	CP	%	108			70-130	Pass	
Methoxychlor	K19-Au12714	CP	%	103			70-130	Pass	
trans-Chlordane	K19-Au12714	CP	%	89			70-130	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	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDE	K19-Au12713	CP	mg/kg	0.03	0.03	32	30%	Fail	Q15
4.4'-DDT	K19-Au12713	CP	mg/kg	0.01	0.01	<1	30%	Pass	
a-BHC	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-BHC	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-BHC	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	K19-Au12713	CP	mg/kg	0.04	0.04	15	30%	Pass	
Endosulfan I	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan sulphate	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin aldehyde	K19-Au12713	CP	mg/kg	0.01	< 0.01	<1	30%	Pass	
Endrin ketone	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
g-BHC (Lindane)	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	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			
Heptachlor	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
trans-Chlordane	K19-Au12713	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	K19-Au12713	CP	%	22	21	3.0	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

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Swati Shahaney	Analytical Services Manager
Michael Ritchie	Senior Analyst-Organic (NZN)


Michael Ritchie
Head of Semi Volatiles (Key Technical Personnel)

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.