BEFORE THE TARANAKI REGIONAL COUNCIL

IN THE MATTER	of an application by Remediation (NZ) Limited for resource consents under Part 5 of the Resource Management Act 1991
AND	
IN THE MATTER	applications to obtain replacement consents for Consent Numbers 5838-2.2 and 5839-2 as summarised below: Consent 5838-2.2 – to discharge of a) waste material to land for composting; and b) treated stormwater and leachate, from composting operations; onto and into land in circumstances where contaminants may enter water in Haehanga Stream catchment and directly into an unnamed tributary of the Haehanga Stream at Grid Reference (NZTM) 1731656E-5686190N, 1733127E-5684809N, 1732277E-568510N, 1732658E-5684545N and 1732056E-5684927N Consent 5839-2 – to discharge emissions into the air, namely odour and dust, from composting operations between (NZTM) 1731704E-5685796N, 1733127E-5684809N, 1732277E-5685101N, 1732451E-5684624N and 1732056E-5684927N

SUPPLEMENTARY STATEMENT OF EVIDENCE OF DAVID PAUL GIBSON DATED 19 MARCH 2021

Environmental Consultancy:

Landpro Limited
57 Vivian Street
New Plymouth 9342
Attention: Kathryn Hooper
Tel: 027 759 2044
Email: kathryn@landpro.co.nz

Counsel acting:

John Maassen
BARRISTER

john@johnmaassen.com
johnmaassen.com
04 914 1050
04 473 3179

1 The purpose of this supplementary statement is to provide the Panel with further evidence concerning Remediation (NZ) Limited's ("RNZs") investigation of a new strategy for bioremediation of the product on Pad 3 comprising drilling waste.

2 In February 2021, RNZ contacted Mr Dan McNair, who is the technical advisor for Greenleaf Environmental Services (LLC). That company is based in Colorado and it has experience in neutralising hydrocarbon in composting operations. Greenleaf Environmental Services LLC uses a method of treatment involving enzymes followed by bioaugmentation. Greenleaf Environmental Services LLC currently treats in excess of 90,000m^3/yr of product containing Total Petroleum Hydrocarbons (TPHs) with starting concentrations of more than 50,000ppm. Environmental Services LLC achieve final concentrations of <500ppm. They obtain those levels of reduction in periods of less than 60 days.

3 RNZ took a sample of 4,000m^3 of product from Pad 3 and treated this with an enzyme and then bioremediated the sample. The trial was over a three week period in February of 2021.

4 Attachment 1 shows the Hills Laboratory test results for Pad 3 product prior to remediation as at 10 July 2020.

5 The results from the trial are in Attachment 2 and show that TPH levels have dropped significantly through that three week period. This trial result provides RNZ with confidence that the product in Pad 3 can be bioremediated to a standard appropriate for application to the site as part of its wider site remediation programme.

6 RNZ will actively bioremediate the product on Pad 3 over the next three years using bioremediation.

David Gibson
General Manager for Remediation (NZ) Limited

Attachment 1

Hill Laboratories
TRIED, TESTED **AND TRUSTED**

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

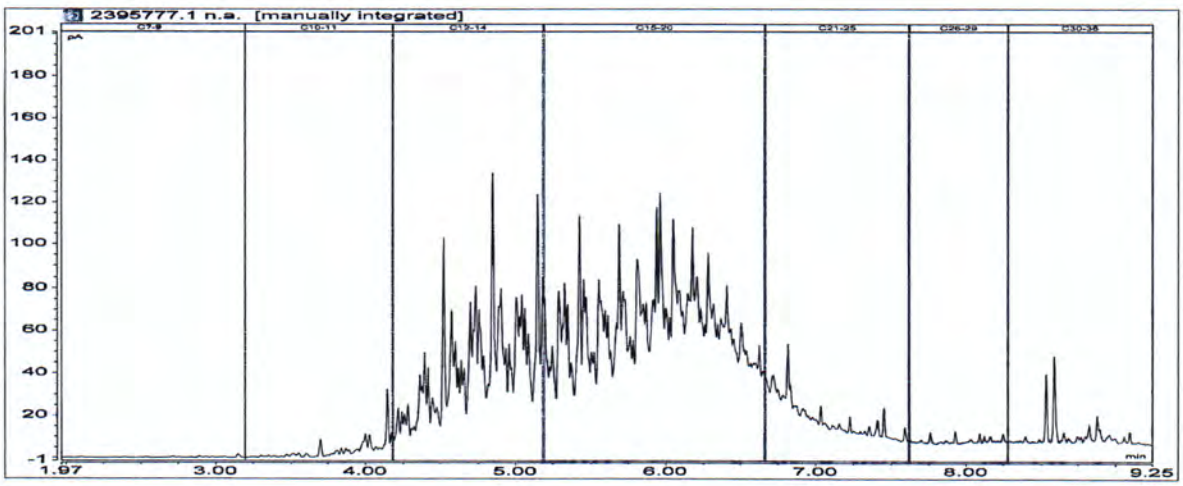
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2395777	SPv1
Contact:	D Gibson	**Date Received:**	03-Jul-2020	
	C/- Revital Fertilisers	**Date Reported:**	10-Jul-2020	
	PO Box 8045	**Quote No:**	95130	
	New Plymouth 4342	**Order No:**	31629	
		Client Reference:	Compost	
		Submitted By:	D Gibson	

Sample Type: Mature Compost

Sample Name:		Pad 3 Compost 02-Jul-2020 1:00 pm				
Lab Number:		2395777.1				
Individual Tests						
Dry Matter	g/100g as rcvd	56	-	-	-	-
Total Recoverable Barium	mg/kg dry wt	3,000	-	-	-	-
BTEX in Solids by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.09	-	-	-	-
Toluene	mg/kg dry wt	< 0.09	-	-	-	-
Ethylbenzene	mg/kg dry wt	0.16	-	-	-	-
m&p-Xylene	mg/kg dry wt	1.21	-	-	-	-
o-Xylene	mg/kg dry wt	0.36	-	-	-	-
Total Petroleum Hydrocarbons in Solids						
C7 - C9	mg/kg dry wt	21	-	-	-	-
C10 - C14	mg/kg dry wt	4,700	-	-	-	-
C15 - C36	mg/kg dry wt	11,100	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	15,800	-	-	-	-

2395777.1
Pad 3 Compost 02-Jul-2020 1:00 pm
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%.	-	1
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1
Total Recoverable Barium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	1
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Dates of testing are available on request. Please contact the laboratory for more information.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Attachment 2

Hill Laboratories
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R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand
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T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

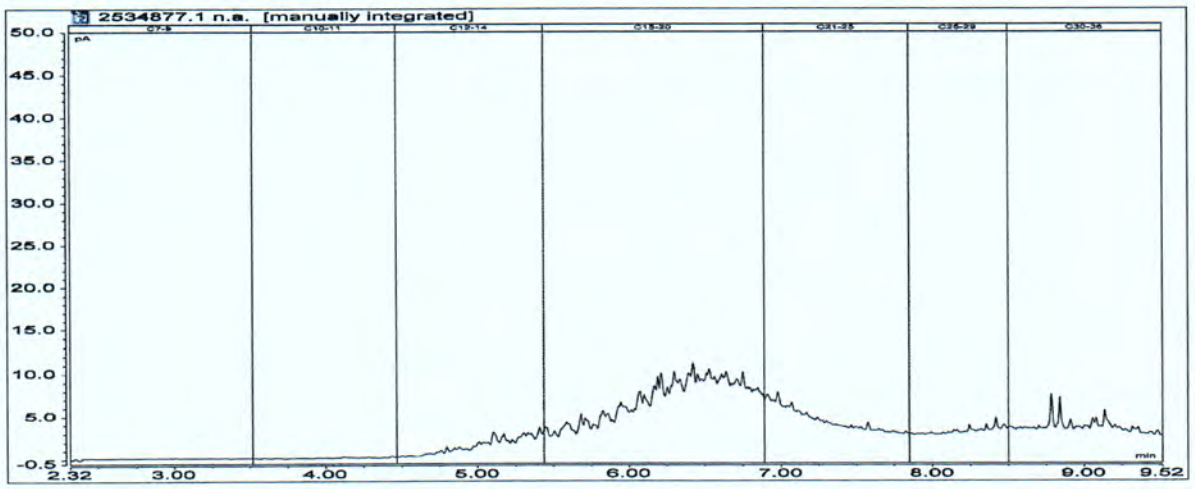
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2534877 SSP-1v1
Contact:	Scott Gordon	**Date Received:**	22-Feb-2021
	C/- Revital Fertilisers	**Date Reported:**	26-Feb-2021
	PO Box 986	**Quote No:**	
	Cambridge 3450	**Order No:**	38809
		Client Reference:	Uruti Compost
		Submitted By:	Scott Gordon

Sample Type: Mature Compost

	Sample Name:	Uruti Compost Trial 0 16-Feb-2021
	Lab Number:	2534877.1
Individual Tests		
Dry Matter	g/100g as rcvd	66
Total Petroleum Hydrocarbons in Solids		
C7 - C9	mg/kg dry wt	< 9
C10 - C14	mg/kg dry wt	170
C15 - C36	mg/kg dry wt	2,200
Total hydrocarbons (C7 - C36)	mg/kg dry wt	2,400

2534877.1
Uruti Compost Trial 0 16-Feb-2021
Client Chromatogram for TPH by FID



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Sample Type: Mature Compost

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			

Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1

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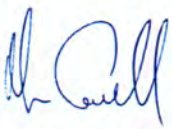

Martin Cowell - BSc
Client Services Manager - Environmental

Revital® Fertilisers

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E mail@hill-labs.co.nz
W www.hill-laboratories.com

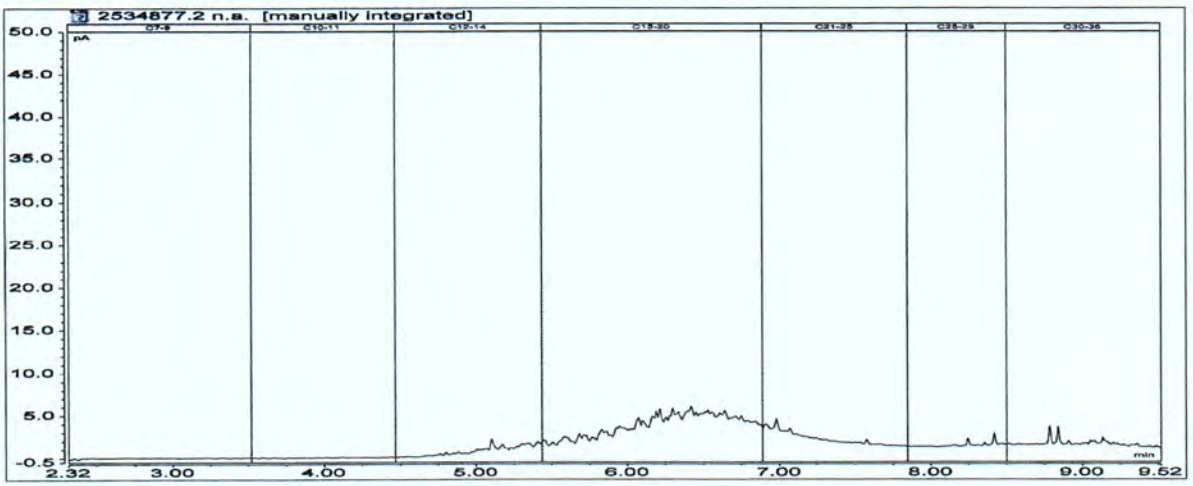
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2534877	SSP-2v1
Contact:	Scott Gordon	**Date Received:**	22-Feb-2021	
	C/- Revital Fertilisers	**Date Reported:**	26-Feb-2021	
	PO Box 986	**Quote No:**		
	Cambridge 3450	**Order No:**	38809	
		Client Reference:	Uruti Compost	
		Submitted By:	Scott Gordon	

Sample Type: Mature Compost

	Sample Name:	Uruti Compost Trial 1 16-Feb-2021
	Lab Number:	2534877.2
Individual Tests		
Dry Matter	g/100g as rcvd	49
Total Petroleum Hydrocarbons in Solids		
C7 - C9	mg/kg dry wt	< 12
C10 - C14	mg/kg dry wt	125
C15 - C36	mg/kg dry wt	1,570
Total hydrocarbons (C7 - C36)	mg/kg dry wt	1,700

2534877.2
Uruti Compost Trial 1 16-Feb-2021
Client Chromatogram for TPH by FID



Summary of Methods

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Sample Type: Mature Compost

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			

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Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	2
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	2
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2

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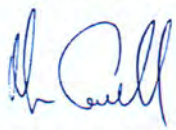

Martin Cowell - BSc
Client Services Manager - Environmental

Revital® Fertilisers

Hill Laboratories
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Hamilton 3240 New Zealand

T **0508 HILL LAB** (44 555 22)
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E mail@hill-labs.co.nz
W www.hill-laboratories.com

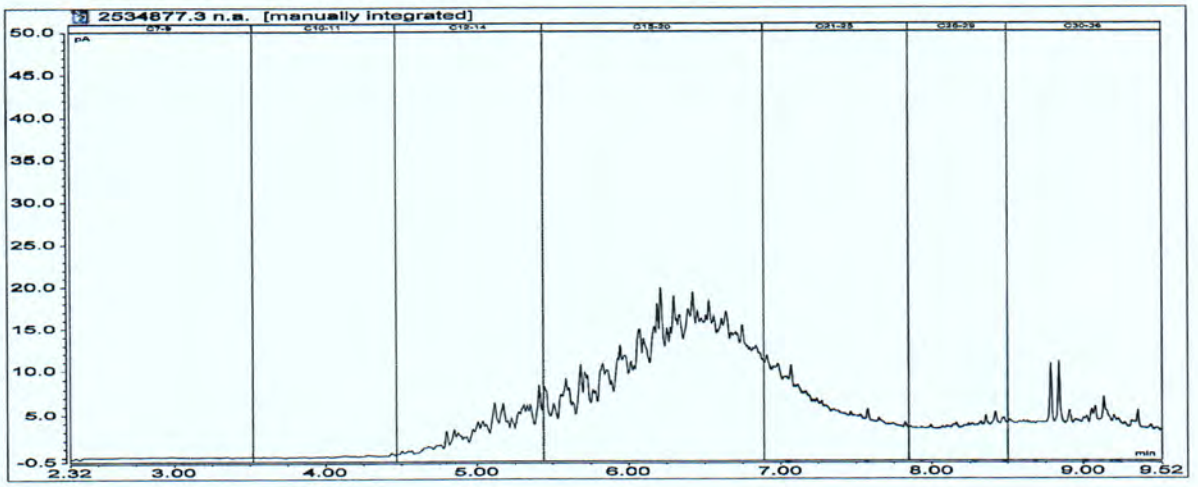
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2534877	SSP-3v1
Contact:	Scott Gordon	**Date Received:**	22-Feb-2021	
	C/- Revital Fertilisers	**Date Reported:**	26-Feb-2021	
	PO Box 986	**Quote No:**		
	Cambridge 3450	**Order No:**	38809	
		Client Reference:	Uruti Compost	
		Submitted By:	Scott Gordon	

Sample Type: Mature Compost

	Sample Name:	Uruti Compost Trial 2 16-Feb-2021
	Lab Number:	2534877.3
Individual Tests		
Dry Matter	g/100g as rcvd	68
Total Petroleum Hydrocarbons in Solids		
C7 - C9	mg/kg dry wt	< 9
C10 - C14	mg/kg dry wt	360
C15 - C36	mg/kg dry wt	3,400
Total hydrocarbons (C7 - C36)	mg/kg dry wt	3,700

2534877.3
Uruti Compost Trial 2 16-Feb-2021
Client Chromatogram for TPH by FID



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Sample Type: Mature Compost

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			

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Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	3
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	3
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	3
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	3
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	3
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	3

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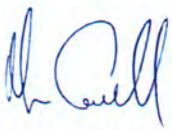

Martin Cowell - BSc
Client Services Manager - Environmental

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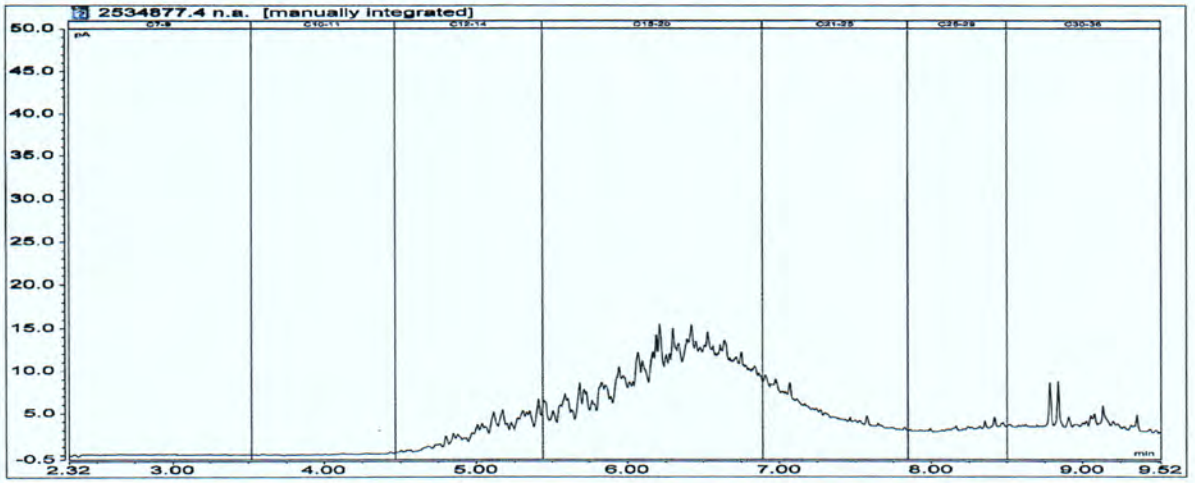
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2534877	SSP-4v1
Contact:	Scott Gordon	**Date Received:**	22-Feb-2021	
	C/- Revital Fertilisers	**Date Reported:**	26-Feb-2021	
	PO Box 986	**Quote No:**		
	Cambridge 3450	**Order No:**	38809	
		Client Reference:	Uruti Compost	
		Submitted By:	Scott Gordon	

Sample Type: Mature Compost

	Sample Name:	Uruti Compost Trial 3 16-Feb-2021
	Lab Number:	2534877.4
Individual Tests		
Dry Matter	g/100g as rcvd	65
Total Petroleum Hydrocarbons in Solids		
C7 - C9	mg/kg dry wt	< 9
C10 - C14	mg/kg dry wt	320
C15 - C36	mg/kg dry wt	2,900
Total hydrocarbons (C7 - C36)	mg/kg dry wt	3,300

2534877.4
Uruti Compost Trial 3 16-Feb-2021
Client Chromatogram for TPH by FID



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Sample Type: Mature Compost

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			

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Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	4
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	4
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	4

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Martin Cowell - BSc
Client Services Manager - Environmental

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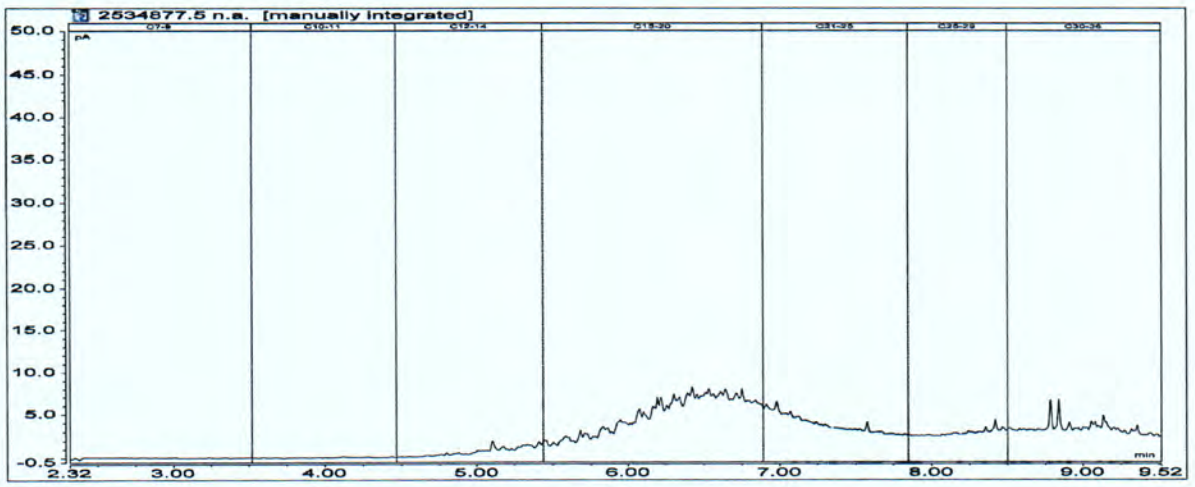
Certificate of Analysis

Client:	Revital Fertilisers	**Lab No:**	2534877	SSP-5v1
Contact:	Scott Gordon	**Date Received:**	22-Feb-2021	
	C/- Revital Fertilisers	**Date Reported:**	26-Feb-2021	
	PO Box 986	**Quote No:**		
	Cambridge 3450	**Order No:**	38809	
		Client Reference:	Uruti Compost	
		Submitted By:	Scott Gordon	

Sample Type: Mature Compost

	Sample Name:	Uruti Compost Trial 4 16-Feb-2021
	Lab Number:	2534877.5
Individual Tests		
Dry Matter	g/100g as rcvd	69
Total Petroleum Hydrocarbons in Solids		
C7 - C9	mg/kg dry wt	< 9
C10 - C14	mg/kg dry wt	75
C15 - C36	mg/kg dry wt	1,740
Total hydrocarbons (C7 - C36)	mg/kg dry wt	1,810

2534877.5
Uruti Compost Trial 4 16-Feb-2021
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Mature Compost

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			

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This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Mature Compost			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	5
Total Petroleum Hydrocarbons in Solids			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	5
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	5
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	5
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	5

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Feb-2021 and 24-Feb-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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