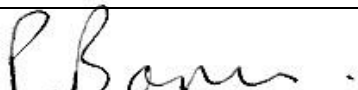


Laboratory Accreditation Programmes

Schedule to CERTIFICATE OF ACCREDITATION	
Hill Laboratories	Client No. 590
Private Bag 3205, Waikato Mail Centre, Hamilton, 3240 28 Duke St, Frankton, Hamilton, 3204	
Telephone 0508 445-5522	www.hill-laboratories.com
Authorised Representative Ms Gillian Lees Quality Management Contractor	
Programme Chemical Testing Laboratory	
Accreditation Number 365	Initial Accreditation Date 15 April 1988
Conformance Standard NZS ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories	
Testing Services Summary	
Plants and Soils 2.36 Agricultural Products and Agricultural Materials	
Water and Environmental 2.41 Waters 2.58 Environmental Monitoring	
ICP 2.31 Foods 2.41 Waters 2.58 Environmental Monitoring	
Organics 2.41 Waters 2.58 Environmental Monitoring 2.70 Instrumental Techniques	
Food and Bioanalytical 2.31 Foods 2.32 Drugs and Pharmaceuticals 2.36 Agricultural Products and Agricultural Materials 2.70 Instrumental Techniques	
Air Quality 2.58 Environmental Monitoring	

Authorised: General Manager		Issue 126 Date: 04/10/18	Page 1 of 23
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Schedule to
CERTIFICATE OF ACCREDITATION

Key Technical Personnel

Plants and Soils

Ms Fiona Calvert	2.36
Mrs Shelley Edhouse	2.36
Mr Stephen Haylett-Petty	2.36
Ms Wendy Homewood	2.36
Ms Chrystal Kelly	2.36
Miss Karen Lim	2.36
Mr Andrew Whitmore	2.36

Water and Environmental

Mrs Helena Bertram	2.41, 2.58
Mr Graham Corban	2.41, 2.58
Mr Martin Cowell	2.41, 2.58
Mr Jon Harris	2.41, 2.58
Miss Kim Harrison	2.41, 2.58
Miss Ara Heron	2.41, 2.58
Mrs Carole Rodgers-Caroll	2.41, 2.58
Dr Jane Sherrard	2.41, 2.58

ICP

Mrs Helena Bertram	2.41, 2.58 (selected)
Mr Mark Bryant	2.31, 2.58 (d)
Mr Graham Corban	2.41, 2.58 (selected)
Mr Martin Cowell	2.41, 2.58 (selected)
Mr Jon Harris	2.41, 2.58 (selected)
Miss Kim Harrison	2.41; 2.58 (selected)
Miss Ara Heron	2.41, 2.58 (selected)
Mrs Carole Rodgers-Caroll	2.41, 2.58 (selected)
Dr Jane Sherrard	2.41, 2.58 (selected)
Mrs Thiru Malar Sritharan	2.31 (selected), 2.58 (d)

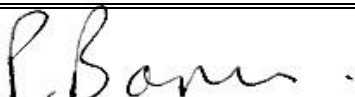
Organics

Mrs Helena Bertram	2.41; 2.58; selected
Mr Alastair Boyd	2.41, 2.58; selected, 2.70 (a1)(a2)(b)(d2)
Mr Graham Corban	2.41, 2.58
Mr Martin Cowell	2.41, 2.58
Miss Kim Harrison	2.41, 2.58; selected
Miss Ara Heron	2.41, 2.58
Mrs Carole Rodgers-Caroll	2.41, 2.58; selected

Food and Bioanalytical

Mr Mark Bryant	2.31 (selected), 2.32 (e), 2.36 (c)
Mr Shaun Clay	2.31 (selected), 2.36 (i), 2.70 (a1)(a2)(b)(d2)
Mr Stephen Haylett-Petty	2.31 (n)(selected)
Dr Jonathan Hill	2.31 (n)(selected)
Ms Helen McGowan	2.31 (selected), 2.36 (i)
Dr Bruce Morris	2.31 (selected), 2.36 (i), 2.70 (a1)(a2)(a3)
Mr Richard Schriener	2.31 (selected), 2.70 (b)(d2)
Mrs Thiru Malar Sritharan	2.31(selected), 2.32 (e), 2.36 (c)

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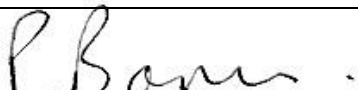


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Laboratory Accreditation Programmes

Schedule to	
CERTIFICATE OF ACCREDITATION	
Mr Andrew Whitmore	2.31 (n)(selected)
Air Quality	
Mr Graham Corban	2.58
Dr Ian Graves	2.58
Miss Ara Heron	2.58
Mr Jon Harris	2.58 (selected)

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CERTIFICATE OF ACCREDITATION

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Accreditation Number 365

Plants and Soils
2.36 Agricultural Products and Agricultural Materials

In accordance with in-house test methods except where otherwise indicated.

(c) Stockfoods and licks

Crude fibre AOAC 962.09 (modified)

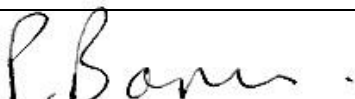
(g) Soils

Anion storage capacity	
Base saturation percent of calcium	By calculation
Base saturation percent of magnesium	By calculation
Base saturation percent of potassium	By calculation
Base saturation percent of sodium	By calculation
Cation exchange capacity	By calculation
Lime requirement	By calculation
Organic matter	Dumas combustion / calculation
pH of soils and soil extracts	
Phosphorus (Olsen extractable)	
Phosphorus (Resin extractable)	
Potentially available nitrogen (anaerobic mineralisable nitrogen)	
Soluble salts	
Sulphate-sulphur	Ion chromatography
Total carbon	Dumas combustion
Total nitrogen	Dumas combustion
Volume weight	

The following elements in soil in accordance with ICP-OES methodology (including extraction):

Aluminium (CaCl₂ extractable)
 Boron (hot water extractable)
 Exchangeable Calcium (ammonium acetate extractable)
 Exchangeable Magnesium (ammonium acetate extractable)
 Exchangeable Potassium (ammonium acetate extractable)
 Exchangeable Sodium (ammonium acetate extractable)
 Extractable Cobalt (EDTA extractable)
 Extractable Copper (EDTA extractable)
 Extractable Iron (EDTA extractable)
 Extractable Manganese (EDTA extractable)
 Extractable Organic Sulphur
 Extractable Zinc (EDTA extractable)

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Reserve Potassium (TBK)
Total Phosphorus (Aqua Regia digestion)
Total Sulphur (Aqua Regia digestion)

The following elements in soil in accordance with ICP-MS methodology (including extraction):

Total Selenium (Aqua Regia digestion)

(h) Plants

Acid detergent fibre (Direct)	Ankom fibre instrument
Acid detergent fibre (Sequential)	AFIA method 1.9A (a) (modified)
Acid detergent lignin	Ankom method 9 (modified)
Ash	AOAC 942.05
Chloride	
Crude fat	AOCS AM 5-04
Crude protein	Dumas combustion / calculation
Digestibility Pepsin Cellulase (DOMD)	AFIA7R (modified)
Metabolisable Energy (ME) calculated from DOMD	AFIA7R (modified)
Neutral detergent fibre	AFIA Method 1.8A(a) (modified)
Nitrate - nitrogen	
Residual Moisture	NFTA 2.1.4 (3hrs @ 105°C)
Soluble sugars	Colorimetric method
Total nitrogen	Dumas combustion
Total starch (Megazyme)	AOAC 996.11 (modified)

The following elements in plants in accordance with ICP-MS methodology:

Cobalt (microwave digestion)
Iodine (TMAH extraction)
Molybdenum (microwave digestion)
Selenium (microwave digestion)

The following elements in plants in accordance with ICP-OES methodology by microwave digestion:

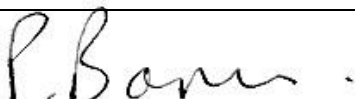
Aluminium	Boron	Calcium	Copper
Iron	Magnesium	Manganese	Phosphorus
Potassium	Sodium	Sulphur	Zinc

(i) Other agricultural products and related materials

Nutrient solutions:

Ammonium - nitrogen

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Chloride
 Conductivity
 Nitrate - nitrogen
 pH

The following elements in accordance with ICP-MS methodology:

Molybdenum

The following elements in accordance with ICP-OES methodology:

Boron	Calcium	Copper	Iron
Magnesium	Manganese	Phosphorus	Potassium
Sodium	Sulphur	Zinc	

Growing media (potting mix, composts):

Ammonium - nitrogen
 Conductivity
 Nitrate - nitrogen
 pH

Media DTPA extraction for the following metals by ICP-OES:

Boron	Copper	Iron	Manganese
Zinc			

Media water extraction for the following metals by ICP-OES:

Calcium	Magnesium	Phosphorus	Potassium
Sodium	Sulphur		

References:

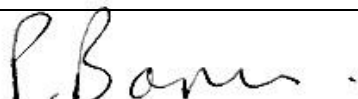
AOAC Official Methods of Analysis of AOAC International (19th Edition)

Water and Environmental

2.41 Waters

(a) Potable waters

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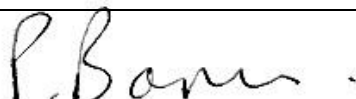
Accreditation Number 365

- (b) Non-potable waters**
- (c) Sewage**
- (d) Effluents and trade wastes**
- (h) Boiler waters**

The following tests are in accordance with APHA "Standard Methods for the Examination of Water and Wastewater" (22nd Edition) except where otherwise indicated.

Acidity	2310 B
Alkalinity (as CaCO ₃)	2320 B (modified)
Ammonium (nitrogen)	4500-NH ₃ F (modified, discrete analyser)
Ammonium (nitrogen)	4500-NH ₃ H
Ammonium (nitrogen)	4500-NH ₃ H (modified)
Ammonium (nitrogen)	In-house
Bicarbonate	4500-CO ₂ D
Biochemical oxygen demand	5210 B (modified)
Biochemical oxygen demand	In-house
Bromate	USEPA 300.1 Part B (modified)
Bromide	4110 B (modified)
Bromide	USEPA 300.1 (modified)
Bromide	USEPA 300.1 Part B (modified)
Carbonate	4500-CO ₂ D
Chemical oxygen demand	5220 D
Chloramines	4500-Cl G
Chlorate	USEPA 300.1 Part B (modified)
Chloride	4110 B (modified)
Chloride	4500-Cl E (modified, discrete analyser)
Chloride	USEPA 300.1 (modified)
Chlorine	4500-Cl G
Chlorite	USEPA 300.1 Part B (modified)
Chlorophyll A	10200 H (modified)
Chromium (VI)	3500-Cr B (modified, discrete analyser)
Colour	2120 B (modified)
Conductivity	2510 B
Cyanide (total)	4500-CN C (modified)
Cyanide (total)	ISO 14403: 2012 (e)
Cyanide	4500-CN E (modified, discrete analyser)
Cyanide (weak acid dissociable)	4500-CN I (modified)
Cyanide (weak acid dissociable)	4500-CN O (modified)
Dissolved reactive phosphorus	4500-P E (modified, discrete analyser)
Dissolved reactive phosphorus	4500-P G
Dissolved reactive phosphorus	4500-P G (modified)
Fluoride (potable water only)	4110 B (modified)
Fluoride (potable water only)	USEPA 300.1 (modified)
Fluoride	4500-F C
Free carbon dioxide	4500-CO ₂ D
Hardness	2340 B
Ion Balance	1030 E

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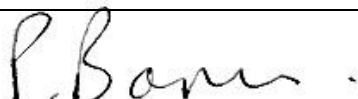
Accreditation Number 365

Langelier saturation index (LSI)	2330 B
Mercury	USEPA 245.7 (CVAF)
Nitrate	4110 B (modified)
Nitrate	USEPA 300.1 (modified)
Nitrate (nitrogen)	4500-NO ₃ I (modified)
Nitrite	USEPA 300.1 (modified)
Nitrite (nitrogen)	4110 B (modified)
Nitrite (nitrogen)	4500-NO ₃ I (modified)
Oil and Grease	5520 D (modified)
pH	4500-H B
Phenols	5530 B (modified)
Phenols	5530 D (Auto analyser)
Phosphate	4110 B (modified)
Phosphate	USEPA 300.1 (modified)
Reactive silica	4500-SiO ₂ F (modified)
Reactive silica	4500-SiO ₂ F (modified, discrete analyser)
Ryznar index (RI)	In-house
Sulphate	4110 B (modified)
Sulphate	USEPA 300.1 (modified)
Sulphide	4500-S ² I (modified, FIA)
Sulphide	4500-S ₂ E (modified)
Sulphite	4500-SO ₃ B
Suspended solids	2540 D (modified)
Tannins and lignins	5550 B
Total and nonpurgeable organic carbon	5310 C (modified)
Total dissolved solids	2540 C (modified)
Total Kjeldahl nitrogen	4500-N _{org} D (modified, discrete analyser)
Total Kjeldahl nitrogen	4500-N _{org} D (modified)
Total nitrogen	4500-N C
Total nitrogen	4500-NO ₃ I (modified)
Total phosphorus	4500-P B / E (modified, discrete analyser)
Total phosphorus	4500-P H (modified)
Total solids	2540 B (modified)
Turbidity	2130 B
Turbidity	ISO 7027:1999 (modified)
Ultraviolet absorption	5910 B
Unionised hydrogen sulphide (calculation)	4500-S ² H (modified)
Urea (nitrogen)	In-house
Volatile fatty acids	In-house by IC
Volatile suspended solids	2540 E (modified)
Volatile total solids	2540 E (modified)

(g) Marine waters

Ammonium (nitrogen)	4500-NH ₃ H
Dissolved reactive phosphorus	4500-P G
Nitrate (nitrogen)	4500-NO ₃ I (modified)
Nitrite (nitrogen)	4500-NO ₃ I (modified)

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Reactive silica	4500-SiO ₂ F (modified, discrete analyser)
Total nitrogen	4500-N C
Total nitrogen	4500-NO ₃ I (modified)

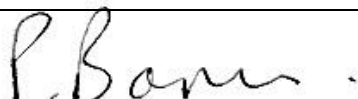
2.58 Environmental Monitoring

(a) Waters

The following tests are in accordance with APHA "Standard Methods for the Examination of Water and Wastewater" (22nd Edition) except where otherwise indicated.

Acidity	2310 B
Alkalinity (as CaCO ₃)	2320 B (modified)
Ammonium (nitrogen)	4500-NH ₃ F (modified, discrete analyser)
Ammonium (nitrogen)	4500-NH ₃ H
Ammonium (nitrogen)	4500-NH ₃ H (modified)
Ammonium (nitrogen)	In-house
Bicarbonate	4500-CO ₂ D
Biochemical oxygen demand	5210 B (modified)
Biochemical oxygen demand	In-house
Bromate	USEPA 300.1 Part B (modified)
Bromide	4110 B (modified)
Bromide	USEPA 300.1 (modified)
Bromide	USEPA 300.1 Part B (modified)
Carbonate	4500-CO ₂ D
Chemical oxygen demand	5220 D
Chloramines	4500-Cl G
Chlorate	USEPA 300.1 Part B (modified)
Chloride	4110 B (modified)
Chloride	4500-Cl E (modified, discrete analyser)
Chloride	USEPA 300.1 (modified)
Chlorine	4500-Cl G
Chlorite	USEPA 300.1 Part B (modified)
Chlorophyll A	10200 H (modified)
Chromium (VI)	3500-Cr B (modified, discrete analyser)
Colour	2120 B (modified)
Conductivity	2510 B
Cyanide (total)	4500-CN C (modified)
Cyanide (total)	ISO 14403: 2012 (e)
Cyanide	4500-CN E (modified, discrete analyser)
Cyanide (weak acid dissociable)	4500-CN I (modified)
Cyanide (weak acid dissociable)	4500-CN O (modified)
Dissolved reactive phosphorus	4500-P E (modified, discrete analyser)
Dissolved reactive phosphorus	4500-P G

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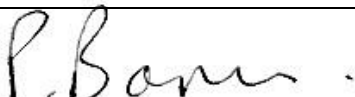
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Chemical Testing Laboratory
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Dissolved reactive phosphorus	4500-P G (modified)
Fluoride (potable water only)	4110 B (modified)
Fluoride (potable water only)	USEPA 300.1 (modified)
Fluoride	4500-F C
Free carbon dioxide	4500-CO ₂ D
Hardness	2340 B
Ion Balance	1030 E
Langelier saturation index (LSI)	2330 B
Mercury	USEPA 245.7 (CVAF)
Nitrate	4110 B (modified)
Nitrate	USEPA 300.1 (modified)
Nitrate (nitrogen)	4500-NO ₃ I (modified)
Nitrite	USEPA 300.1 (modified)
Nitrite (nitrogen)	4110 B (modified)
Nitrite (nitrogen)	4500-NO ₃ I (modified)
Oil and Grease	5520 D (modified)
pH	4500-H B
Phenols	5530 B (modified)
Phenols	5530 D (Auto analyser)
Phosphate	4110 B (modified)
Phosphate	USEPA 300.1 (modified)
Reactive silica	4500-SiO ₂ F (modified)
Reactive silica	4500-SiO ₂ F (modified, discrete analyser)
Ryznar index (RI)	In-house
Sulphate	4110 B (modified)
Sulphate	USEPA 300.1 (modified)
Sulphide	4500-S ² I (modified, FIA)
Sulphide	4500-S ₂ E (modified)
Sulphite	4500-SO ₃ B
Suspended solids	2540 D (modified)
Tannins and lignins	5550 B
Total and nonpurgeable organic carbon	5310 C (modified)
Total dissolved solids	2540 C (modified)
Total Kjeldahl nitrogen	4500-N _{org} D (modified, discrete analyser)
Total Kjeldahl nitrogen	4500-N _{org} D (modified)
Total nitrogen	4500-N C
Total nitrogen	4500-NO ₃ I (modified)
Total phosphorus	4500-P B / E (modified, discrete analyser)
Total phosphorus	4500-P H (modified)
Total solids	2540 B (modified)
Turbidity	2130 B
Turbidity	ISO 7027:1999 (modified)
Ultraviolet absorption	5910 B
Unionised hydrogen sulphide (calculation)	4500-S ₂ H (modified)
Urea (nitrogen)	In-house
Volatile Fatty Acids	In-house by IC
Volatile suspended solids	2540 E (modified)
Volatile total solids	2540 E (modified)

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Tin Uranium Vanadium Zinc

(j) Alcoholic beverages (wine)

The following elements by ICP-MS in accordance with in-house procedures based on APHA 3030F and 3125:

Antimony	Arsenic	Boron	Bismuth
Cadmium	Chromium	Copper	Lead
Mercury	Manganese	Nickel	Silver
Tin	Zinc		

The following elements by ICP-OES in accordance with in-house procedures based on APHA 3030F and 3120:

Calcium	Iron	Potassium	Sodium
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(o) Other specified foods (honey, propolis and related products)

The following elements in accordance with ICP-MS methodology:

Aluminium	Antimony	Arsenic	Cadmium
Chromium	Copper	Iodine	Lead
Mercury	Selenium	Zinc	

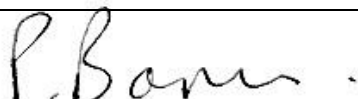
2.41 Waters

- (a) Potable waters**
- (b) Non-potable waters**
- (c) Sewage**
- (d) Effluents and trade wastes**
- (h) Boiler waters**

The following in accordance with APHA and USEPA digestion procedures and analysis by the techniques indicated.

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt

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Copper	Iodine	Iron	Lanthanum
Lead	Lithium	Magnesium	Manganese
Mercury	Molybdenum	Nickel	Phosphorus
Potassium	Rubidium	Selenium	Silicon
Silver	Sodium	Strontium	Sulphur
Thallium	Thorium	Tin	Uranium
Vanadium	Zinc		

The following analyte in accordance with ICP-OES methods:

Sulphur

(g) Marine waters

The following analytes in accordance with ICP-MS methods:

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iron	Lanthanum	Lead
Lithium	Magnesium	Manganese	Mercury
Molybdenum	Nickel	Phosphorus	Potassium
Rubidium	Selenium	Silver	Strontium
Thallium	Tin	Uranium	Vanadium
Zinc			

2.58 Environmental Monitoring

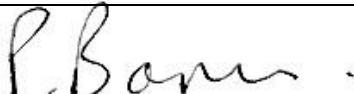
(a) Waters

The following in accordance with APHA and USEPA digestion procedures and analysis by the techniques indicated.

Detection limits for potable and non-potable water depend in the technique used e.g. ICP-MS or ICP-OES and are available from the laboratory on request.

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iodine	Iron	Lanthanum
Lead	Lithium	Magnesium	Manganese
Mercury	Molybdenum	Nickel	Phosphorus
Potassium	Rubidium	Selenium	Silicon

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Sulphur	Silver	Sodium	Strontium
Thallium	Thorium	Tin	Uranium
Vanadium	Zinc		

(c) Soils and sludges

Acid extractable using EPA 200.2 digestion procedures and TCLP/SPLP extractable metals by ICP-MS:

Detection limits depend on the matrix tested e.g. soils or marine sediments and are available from the laboratory on request.

Aluminium	Antimony	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Calcium	Chromium	Cobalt
Copper	Iron	Lanthanum	Lead
Lithium	Magnesium	Manganese	Mercury
Molybdenum	Nickel	Phosphorus	Potassium
Rubidium	Selenium	Silver	Sodium
Strontium	Thallium	Tin	Uranium
Vanadium	Zinc		

Gastric Extraction Method in Soils and Sediments by ICP-MS SBRC (Solubility / Bioavailability Research Consortium) In-Vitro Method for the determination of Arsenic and Lead Bioaccessibility / APHA 3125 B

(d) Other materials (fish and shellfish)

By acid digestion followed by analysis by the following techniques:

Detection limits depend on the technique used e.g. ICP-MS or ICP-OES and are available from the laboratory on request.

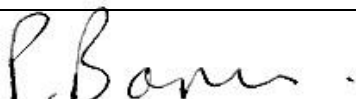
By ICP-MS:

Aluminium	Arsenic	Cadmium	Chromium
Cobalt	Copper	Lead	Manganese
Mercury	Nickel	Zinc	

By ICP-OES:

Calcium	Iron	Magnesium	Potassium
Sodium			

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References:

APHA APHA "Standard Methods for the Examination of Water and Wastewater" (22nd Edition)
 USEPA United States Environmental Protection Agency

Organics

2.41 Waters

- (a) Potable waters
- (b) Non-potable waters
- (c) Sewage
- (d) Effluents and trade wastes
- (h) Boiler waters

The following tests are in accordance with validated in-house methods and based upon standard methods where indicated. A full listing of compounds and detection limits are available from the laboratory upon request.

GC-ECD

Organochlorine pesticides (OCP) In-house based on USEPA 8081

Pentachlorophenol (PCP)

GC-FID

Gases in ground water
 Total petroleum hydrocarbons (TPH) In-house based on USEPA 8015

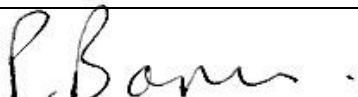
GC-MS

Epichlorohydrin (potable only)
 Halogenated acetic acids (HAA) (potable only) In-house based on USEPA 552
 Halogenated volatile disinfection by-products (HVDB) (potable only) In-house based on USEPA 551
 Amine acid chelating agents (EDTA & NTA) (potable only)
 Tributyltin compounds (MBT, DBT, TBT, TPhT)

Volatile organic compounds (VOC) incl. compound classes: In-house based on USEPA 8260, ..5030, 5021

- BTEX
- Haloaromatics
- Halogenated aliphatics
- Ketones

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- Monocyclic aromatic hydrocarbons
- Trihalomethanes

Semi-volatile organic compounds (SVOC) incl. compound classes: In-house based on USEPA 8270

- Acid herbicides (AHB)
- Multiresidue pesticides
- Organochlorine pesticides (OCP)
- Polychlorinated biphenyls (PCB)
- Polycyclic aromatic hydrocarbons (PAH)

GC-MS/MS

Organochlorine Pesticides
 Polycyclic Aromatic Hydrocarbons (PAH)

In-house based on USEPA 8081, 8270
 In-house based on USEPA 8270

LC-MS/MS

Acid Herbicides (including PCP)
 Acrylamide
 AlkylQuats
 Bromate (potable only)
 Formaldehyde
 Microcystins and Nodularins (potable and non-potable)
 Metsulfuron-methyl

Potable water only

Aldicarb (including Sulfoxide & Sulphone)
 Isoproturon
 Oryzalin
 Oxamyl
 Primisulfuron Methyl
 Thiabendazole

2.58 Environmental Monitoring

(a) Waters

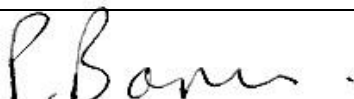
The following tests are in accordance with validated in-house methods and based upon standard methods where indicated. A full listing of compounds and detection limits are available from the laboratory upon request.

GC-ECD

Organochlorine pesticides (OCP)
 Pentachlorophenol (PCP)

In-house based on USEPA 8081

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GC-FID

Gases in ground water
 Total petroleum hydrocarbons (TPH) In-house based on USEPA 8015

GC-MS

Tributyltin compounds (MBT, DBT, TBT, TPhT)
 Volatile organic compounds (VOC) including: In-house based on USEPA 8260, 5030, 5021

- BTEX
- Haloaromatics
- Halogenated aliphatics
- Ketones
- Monocyclic aromatic hydrocarbons
- Trihalomethanes

Semi-volatile organic compounds (SVOC) incl. compound classes: In-house based on USEPA 8270

- Acid herbicides (AHB)
- Multiresidue pesticides
- Organochlorine pesticides (OCP)
- Polychlorinated biphenyls (PCB)
- Polycyclic aromatic hydrocarbons (PAH)

GC-MS/MS

Organochlorine Pesticides In-house based on USEPA 8081, 8270
 Polycyclic Aromatic Hydrocarbons (PAH) In-house based on USEPA 8270

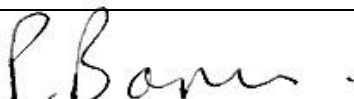
LC-MS/MS

Acid Herbicides (including PCP)
 Acrylamide
 AlkylQuats
 Formaldehyde
 Microcystins and Nodularins
 Metsulfuron-methyl

(c) Soils and sludges

The following tests are in accordance with validated in-house methods and based upon standard methods where indicated. A full listing of compounds and detection limits are available from the laboratory upon request.

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Extraction and analysis of TCLP/SPLP extractions

GC-ECD

Organochlorine pesticides (OCP) In-house based on USEPA 8081

GC-FID

Total petroleum hydrocarbons (TPH) In-house based on USEPA 8015

GC-MS

Organonitrogen and Organophosphorus (ON/OP) Pesticides
 Tributyltin compounds (MBT, DBT, TBT, TPhT)
 Volatile organic compounds (VOC) including compound classes: In-house based on USEPA 8260, 5035, 5021

- BTEX
- Haloaromatics
- Halogenated aliphatics
- Ketones
- Monocyclic aromatic hydrocarbons
- Trihalomethanes

Semi-volatile organic compounds (SVOC) including compound classes: In-house based on USEPA 8270

- Acid herbicides (AHB)
- Multiresidue pesticides
- Organochlorine pesticides (OCP)
- Polychlorinated biphenyls (PCB)
- Polycyclic aromatic hydrocarbons (PAH)

GC-MS/MS

Organochlorine Pesticides In-house based on USEPA 8081, 8270
 Polycyclic Aromatic Hydrocarbons (PAH) In-house based on USEPA 8270

LC-MS/MS

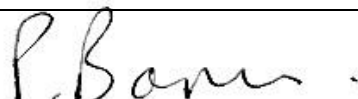
Acid Herbicides (including PCP)
 Metsulfuron-methyl

(d) Other materials (Fish and shellfish)

GC-MS

Tributyltin compounds (MBT, DBT, TBT, TPhT)

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(d) Other materials (Environmental wipes)

LC-MS/MS

Methamphetamine Drug Suite by LC-MS/MS

NIOSH 9111 (modified)

2.70 Instrumental Techniques

- (a1) Gas chromatography (2.41, 2.58)**
- (a2) Gas chromatography, (including Mass Selective Detection (MSD)) (2.41, 2.58)**
- (b) High performance liquid chromatography (including UPLC) (2.41)**
- (d2) Liquid chromatography – mass spectrometry mass spectrometry (2.41, 2.58)**

All techniques pertain to classes of test shown in parenthesis detailed above.

Explanatory Note:

This 2.70 class of test allows specifically approved senior analysts to develop, validate and use a new test method by the specified instrumental technique for a non-routine analysis in the classes of tests specified. The report over the analyst's personal signature may be endorsed with the IANZ logo. Should the method become routine, an IANZ technical assessment is required before the method can appear on the laboratory's scope of routine accredited tests.

Food and Bioanalytical

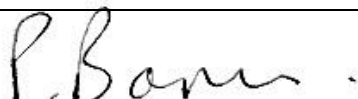
2.31 Foods

- (a) Cereals and cereal products**
- (b) Edible oils, fats and their products**
- (c) Nuts, fruits and vegetables and derived products**
- (d) Sauces, herbs, spice and condiments**
- (f) Dairy products**
- (g) Meat, poultry and derived products**
- (h) Fish and fish products**
- (i) Eggs and egg products**
- (k) Non-alcoholic beverages**
- (o) Other prepared foods**

The following tests in selected matrices in accordance with validated in-house methods except where otherwise indicated:

Ash	AOAC 942.05 (modified)
Moisture	AOAC 945.15 (modified)
Nitrogen (protein)	AOAC 992.15

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(n) Residues in foodstuffs and crops

In accordance with validated in-house methods in selected matrices by the techniques specified.

GC-MS

Dithiocarbamate
 p-Dichlorobenzene (pDCB) (honey, propolis, bee's wax)(SPME)

GC-MS/MS

Multi-residue screening by Citrate buffered QUECHERS (fruit, vegetables, crops, wine and derived products)

LC-MS/MS

Acidic Herbicides (milk, fruit, vegetables, crops and derived products)
 Mycotoxins (grain and grain products, feed)

- Aflatoxins (plus peanuts and derived products, and spices)
- Fumonisin
- Ochratoxin A
- Trichothecenes

Multi-residue screening by Citrate buffered QUECHERS (fruit, vegetables, crops and derived products)
 Streptomycin, Dihydrostreptomycin and Kasugamycin (Kiwifruit)
 Tutin (honey: water extraction)
 Tutin (honey: acetonitrile extraction)

LC-HRAM-MS

Glucosinolates and SMCO (brassicac)

(o) Other prepared foods

Gluten (ELISA) AOAC 2012.01

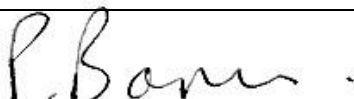
HPLC / UPLC / UV-VIS

Dihydroxyacetone (DHA) in honey
 5-hydroxymethylfurfural (HMF) in honey
 Methylglyoxal (MGO) in honey
 Unique Manuka Factor® (UMF) / Non-Peroxide Activity as % Phenol Equivalence by calculation from methylglyoxal concentration

Isotopic Ration Mass Spectroscopy (IRMS)

C-4 Sugars in honey AOAC 998.12

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C-4 Sugars in honey - Screen AOAC 998.12 (modified)

LC-MS/MS

Analysis of the following analytes in New Zealand Manuka Honey by LC-MS/MS in accordance with in-house procedures:

Four Chemical Characterisation (NZ Manuka Honey)

- 2-Methoxyacetophenone (2-MAP)
- 2-Methoxybenzoic acid (2-MBA)
- 3-Phenyllactic acid (3-PA)
- 4-Hydroxyphenyllactic acid (4-HPA)

Leptosperin (NZ Manuka Honey)

References:

AOAC Official Methods of Analysis of AOAC International (19th Edition)

2.32 Drugs and Pharmaceuticals

(e) Hormones and their preparations

Progesterone in powder	HPLC (in-house)
Progesterone in silicone implants	HPLC (in-house)

2.36 Agricultural Products and Agricultural Materials

(c) Stockfoods

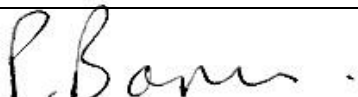
Ash	AOAC 942.05 (modified)
Crude fat	AOAC 960.39
Crude fat	AOAC 991.36 (modified)
Moisture	AOAC 945.15
Protein	AOAC 992.15

(i) Other agricultural products - Agricultural chemicals

Amino alcohols	LC-MS/MS (in-house)
Quaternary Ammonium Compounds (QAC)	LC-MS/MS (in-house)
• Benzalkonium chloride	
• Didecyldimethylammonium chloride	

2.70 Instrumental Techniques

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- (a1) **Gas chromatography (2.31)**
- (a2) **Gas chromatography, (including Mass Selective Detection (MSD)) (2.31)**
- (a3) **Gas chromatography, (including Mass Selective Mass Selective)**
- (b) **High performance liquid chromatography (including UPLC) (2.31)**
- (d2) **Liquid chromatography – mass spectrometry mass spectrometry (2.31)**

All techniques pertain to classes of test shown in parenthesis detailed above.

Explanatory Note:

This 2.70 class of test allows specifically approved senior analysts to develop, validate and use a new test method by the specified instrumental technique for a non-routine analysis in the classes of test specified. The report over the analyst's personal signature may be endorsed with the IANZ logo. Should the method become routine, an IANZ technical assessment is required before the method can appear on the laboratory's scope of routine accredited tests.

Air Quality

2.58 Environmental Monitoring

(b) Air

A full listing of the compounds and their detection limits are available from the laboratory on request. The laboratory is accredited for analysis only for the methods below.

GC-FID/FID

NIOSH 1403 (charcoal tubes only) (modified)
Alcohols IV

NIOSH 1501 (charcoal tubes and badges) (modified)
Monocyclic Aromatic Hydrocarbons

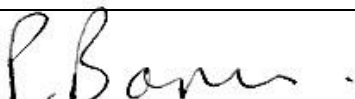
GC-MS

US EPA TO-15
Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)

HPLC

US EPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance

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Liquid Chromatography (HPLC) [Active Sampling Methodology]

US EPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
 Determination of Acetaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]

US EPA TO-11A (modified) (DNPH impregnated silica tubes and badges)
 Determination of Carbonyl compounds in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]

NIOSH 2016 (modified) (DNPH impregnated silica tubes and badges)
 Formaldehyde

NIOSH 2532 (modified) (DNPH impregnated silica tubes and badges)
 Glutaraldehyde

Gravimetric

AS 3640:2009
 Gravimetric determination of inhalable dust in workplace atmospheres

AS 2985:2009
 Gravimetric determination of respirable dust in workplace atmospheres

AS/NZS 3580.9.3:2003
 Determination of suspended particulate matter total - Suspended particulate matter (TSP) High volume sampler – gravimetric method

AS/NZS 3580.9.6:2003
 Determination of suspended particulate PM₁₀ high volume sampler with selective size inlet – gravimetric method

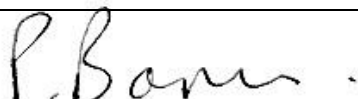
AS/NZS 3580.9.9:2006 (modified)
 Determination of suspended particulate PM₁₀ low volume sampler– gravimetric method

AS/NZS 3580.9.10:2006 (modified)
 Determination of suspended particulate PM_{2.5} low volume sampler – gravimetric method

References:

- AS/NZS Australian and New Zealand Standard
- NIOSH National Institute for Occupational Safety and Health
- USEPA United States Environmental Protection Agency

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