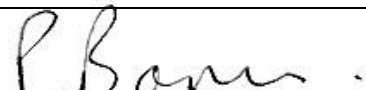


## Laboratory Accreditation Programmes

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

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**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)
Ms Giselle Jeannes	2.31 (selected), 2.58 (d)
Miss Crystal Jones	2.31 (selected), 2.58 (d)
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)

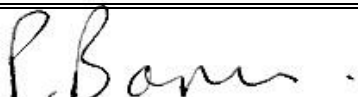
**Organics**

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 Giselle Jeannes	2.31 (selected), 2.36 (c)
Miss Crystal Jones	2.31 (selected), 2.36 (c)

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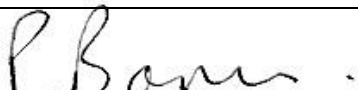


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## Laboratory Accreditation Programmes

Schedule to	
<b>CERTIFICATE OF ACCREDITATION</b>	
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)
Mr Andrew Whitmore	2.31 (n)(selected)
<b>Air Quality</b>	
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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**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)

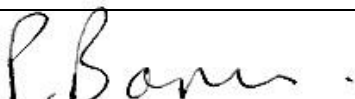
**(g) Soils**

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 (CaCl<sub>2</sub> 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:

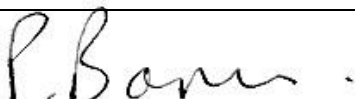
Aluminium	Boron	Calcium	Copper
Iron	Magnesium	Manganese	Phosphorus
Potassium	Sodium	Sulphur	Zinc

**(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:**

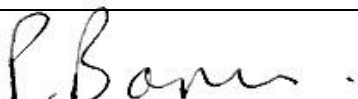
AOAC Official Methods of Analysis of AOAC International (19<sup>th</sup> Edition)

**Water and Environmental**

**2.41 Waters**

**(a) Potable waters**

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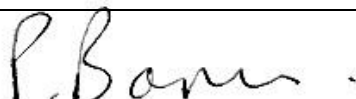
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- (b) Non-potable waters**
- (c) Sewage**
- (d) Effluents and trade wastes**
- (h) Boiler waters**

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

Acidity	2310 B
Alkalinity (as CaCO <sub>3</sub> )	2320 B (modified)
Ammonium (nitrogen)	4500-NH <sub>3</sub> F (modified, discrete analyser)
Ammonium (nitrogen)	4500-NH <sub>3</sub> H
Ammonium (nitrogen)	4500-NH <sub>3</sub> H (modified)
Ammonium (nitrogen)	In-house
Bicarbonate	4500-CO <sub>2</sub> 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 <sub>2</sub> 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 <sub>2</sub> D
Hardness	2340 B
Ion Balance	1030 E

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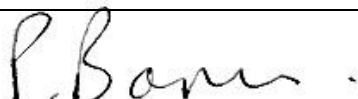
Accreditation Number 365

Langelier saturation index (LSI)	2330 B
Mercury	USEPA 245.7 (CVAF)
Nitrate	4110 B (modified)
Nitrate	USEPA 300.1 (modified)
Nitrate (nitrogen)	4500-NO <sub>3</sub> I (modified)
Nitrite	USEPA 300.1 (modified)
Nitrite (nitrogen)	4110 B (modified)
Nitrite (nitrogen)	4500-NO <sub>3</sub> 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 <sub>2</sub> F (modified)
Reactive silica	4500-SiO <sub>2</sub> F (modified, discrete analyser)
Ryznar index (RI)	In-house
Sulphate	4110 B (modified)
Sulphate	USEPA 300.1 (modified)
Sulphide	4500-S <sup>2</sup> I (modified, FIA)
Sulphide	4500-S <sub>2</sub> E (modified)
Sulphite	4500-SO <sub>3</sub> 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 <sub>org</sub> D (modified, discrete analyser)
Total Kjeldahl nitrogen	4500-N <sub>org</sub> D (modified)
Total nitrogen	4500-N C
Total nitrogen	4500-NO <sub>3</sub> 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 <sup>2</sup> 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 <sub>3</sub> H
Dissolved reactive phosphorus	4500-P G
Nitrate (nitrogen)	4500-NO <sub>3</sub> I (modified)
Nitrite (nitrogen)	4500-NO <sub>3</sub> I (modified)

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

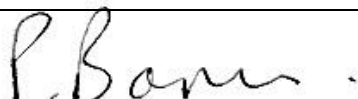
**2.58 Environmental Monitoring**

**(a) Waters**

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

Acidity	2310 B
Alkalinity (as CaCO <sub>3</sub> )	2320 B (modified)
Ammonium (nitrogen)	4500-NH <sub>3</sub> F (modified, discrete analyser)
Ammonium (nitrogen)	4500-NH <sub>3</sub> H
Ammonium (nitrogen)	4500-NH <sub>3</sub> H (modified)
Ammonium (nitrogen)	In-house
Bicarbonate	4500-CO <sub>2</sub> 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 <sub>2</sub> 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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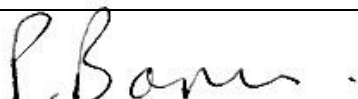
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Dissolved reactive phosphorus	4500-P G (modified)
Fluoride (potable water only)	4110 B (modified)
Fluoride (potable water only)	USEPA 300.1 (modified)
Fluoride	4500-F C
Free carbon dioxide	4500-CO <sub>2</sub> D
Hardness	2340 B
Ion Balance	1030 E
Langelier saturation index (LSI)	2330 B
Mercury	USEPA 245.7 (CVAF)
Nitrate	4110 B (modified)
Nitrate	USEPA 300.1 (modified)
Nitrate (nitrogen)	4500-NO <sub>3</sub> I (modified)
Nitrite	USEPA 300.1 (modified)
Nitrite (nitrogen)	4110 B (modified)
Nitrite (nitrogen)	4500-NO <sub>3</sub> 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 <sub>2</sub> F (modified)
Reactive silica	4500-SiO <sub>2</sub> F (modified, discrete analyser)
Ryznar index (RI)	In-house
Sulphate	4110 B (modified)
Sulphate	USEPA 300.1 (modified)
Sulphide	4500-S <sup>2</sup> I (modified, FIA)
Sulphide	4500-S <sub>2</sub> E (modified))
Sulphite	4500-SO <sub>3</sub> 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 <sub>org</sub> D (modified, discrete analyser)
Total Kjeldahl nitrogen	4500-N <sub>org</sub> D (modified)
Total nitrogen	4500-N C
Total nitrogen	4500-NO <sub>3</sub> 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 <sub>2</sub> 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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**(c) Soils and sludges**

Oil and Grease APHA 5520 E (modified)

**ICP**

**2.31 Foods**

**(f) Dairy products**

The following elements in accordance with ICP-OES methodology:

Calcium	Iron	Magnesium	Phosphorus
Potassium	Sodium	Sulphur	Zinc

The following elements in accordance with ICP-MS methodology:

Antimony	Aluminium	Arsenic	Boron
Bismuth	Cadmium	Cobalt	Chromium
Copper	Iodine	Lithium	Lead
Manganese	Mercury	Molybdenum	Nickel
Selenium	Silver	Tin	Zinc

**(g) Meat, poultry and derived products**

The following elements in accordance with ICP-MS methodology:

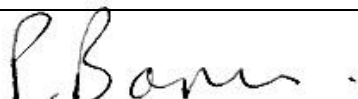
Arsenic	Cadmium	Lead	Mercury
Selenium			

**(h) Fish and fish products**

The following elements in accordance with ICP-MS methodology:

Antimony	Aluminium	Arsenic	Barium
Beryllium	Bismuth	Boron	Cadmium
Caesium	Chromium	Cobalt	Copper
Lanthanum	Lead	Lithium	Manganese
Mercury	Molybdenum	Nickel	Rubidium
Selenium	Silver	Strontium	Thallium

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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

**(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	

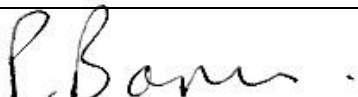
**2.41 Waters**

- (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**

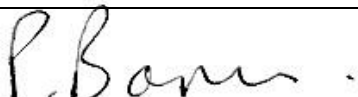
**(a) Waters**

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.

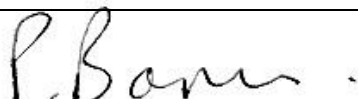
By ICP-MS:

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" (22<sup>nd</sup> 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

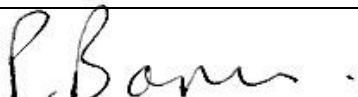
**GC-MS**

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 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  
 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**

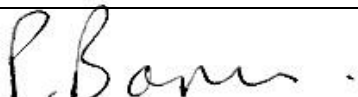
**(a) Waters**

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) In-house based on USEPA 8081  
 Pentachlorophenol (PCP)

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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

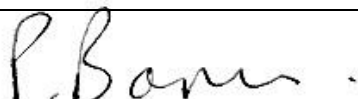
**LC-MS/MS**

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**

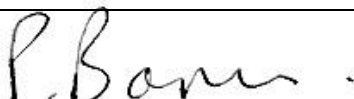
Acid Herbicides (including PCP)  
 Metsulfuron-methyl

**(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**

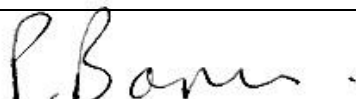
**2.31 Foods**

- (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

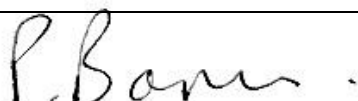
**HPLC / UPLC / UV-VIS**

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 (19<sup>th</sup> 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**

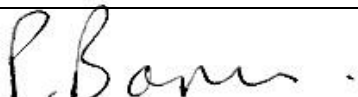
Ash	AOAC 942.05 (modified)
Crude fat	AOAC 960.39
Crude fat	AOAC 991.36 (modified)
Moisture	AOAC 945.15
Protein	AOAC 992.15

**(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

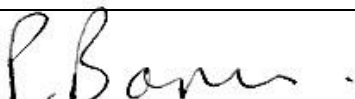
#### GC-MS

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 PM<sub>10</sub> high volume sampler with selective size inlet – gravimetric method

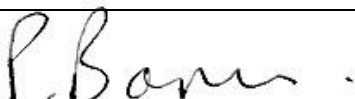
AS/NZS 3580.9.9:2006 (modified)  
Determination of suspended particulate PM<sub>10</sub> low volume sampler– gravimetric method

AS/NZS 3580.9.10:2006 (modified)  
Determination of suspended particulate PM<sub>2.5</sub> 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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