eurofins

The World's Leading Laboratory Network

Trade Waste

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Cover Photo: Automatic sampler used for collecting Trade Waste

Introduction

Eurofins-ELS is one of New Zealand's leading experts in the areas of:

- Air quality monitoring
- Boiler water
- Environmental water
- Landfills
- Meat industry services
- Potable water for councils
- Sample Integrity
- Swimming pools
- Biological fluids
- Ceramicware and metal food containers
- Food and Dairy Products
- Legionella
- Metals
- Potable water for small communities
- Sewage and effluent
- Trade waste

The company has its origin as part of the Hutt City Council Laboratory and became a private enterprise in 1994. We grew through natural growth as well as the acquisition of local laboratories until in December 2012 we were acquired by Eurofins - the largest laboratory network in the world.

Eurofins Scientific is an international life sciences company which provides a unique range of analytical testing services to clients across multiple industries. The Group is the world leader in food and pharmaceutical products testing. It is also number one in the world in the field of environmental laboratory services, and one of the global market leaders in agroscience, genomics, pharmaceutical discovery and central laboratory services.

We are based in a purpose built facility of 1450 m^2 at 85 Port Road, Lower Hutt. Eurofins-ELS is comprised of four separate laboratory areas – Instrumental Chemistry, General Chemistry, Biological Fluids, and Microbiology. The latter is further split into three separate rooms with clean, cleaner and ultra clean capabilities. The ultra clean lab is used for pathogenic bacteria determinations.

In mid-2016 Eurofins-ELS opened satellite laboratories in Auckland and Christchurch. These laboratories offer full scope testing and sampling services.

Who should read this brochure?

This brochure has been prepared to assist everybody who owns or operates a business within a city boundary.

It describes council requirements for Trade Waste permits and explains the ways in which we can assist you with your compliance testing.

What is Trade Waste?

Trade Waste is wastewater from trade or industrial processes, which is discharged into the sewer. It does not include rainwater, surface water, or domestic type wastewater from toilets, showers, and kitchens etc.

However because Trade Waste is more concentrated and may contain harmful substances, the costs of treatment may be higher. These substances must be treated during the process before the final discharge to either a landfill or receiving water.

Why do councils monitor Trade Waste?

Sewage systems were a hot topic well over a hundred years ago with the introduction of the Public Health Act 1872. This act required that …

"… all houses within the limits of cities or towns having a population exceeding two thousand souls, whether built before or after such date, shall have attached to them sufficient earth-closets or water closets, and, if the later, with proper drains communicating with a main drain; and if in any of the said towns or cities a system of drainage and water supply shall not for the time being exist, the Local Board shall make adequate provision for supplying the occupiers of houses with earth for use in earth-closets, and removing the same from such earth-closets."

Since 1872 the waste discharged by companies and factories has been added to domestic waste. Because Trade Waste is more concentrated it is monitored for three very good reasons:

To protect the sewage network.
Larger cities in New Zealand can have networks of over 1,000km so the cost of installation and maintenance can be huge. Some types of Trade Waste can damage this network leading to expensive repairs. Often the damage is caused away from the discharge point, which can be difficult to detect.

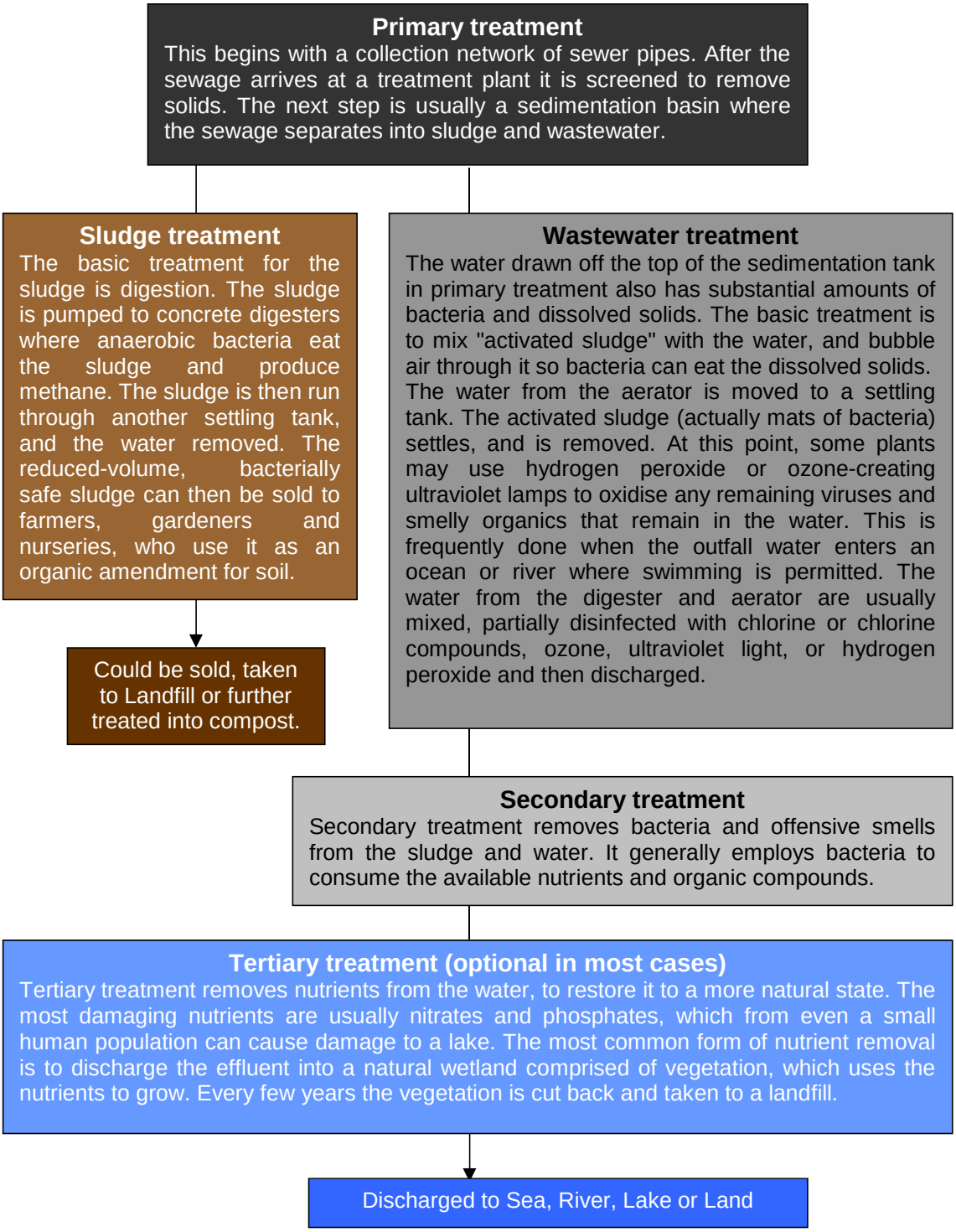
Some Trade Wastes can chemically react within the network leading to poisonous chemicals and gasses.

To protect the sewage treatment process
Sewage Treatment plants are very sensitive to the type of waste they treat and can be upset by large flows of unusual composition. In a normal network it is the Trade Waste component that has the greatest potential to cause damage to a treatment system.

To protect our environment
By maintaining the treatment plant in good working condition councils ensure the environment around the sewage outfall and at the landfill is protected.

How effluent treatment plants work

Sewage treatment processes are essentially the same all around the world. The system relies heavily on bacteria to process the solids and liquid portions of the waste. These bacteria can be affected by sudden changes in effluent quality. A typical treatment system is described below to assist you with understanding the process:



Questions companies ask their Trade Waste Officer

Q. How do I know if I need a Trade Waste consent?

A. Any premise carrying out trade or industry that have a sewer connection may be asked to perform regular Trade Waste monitoring.

Contact your City Council's Trade Waste consents section and discuss your situation. You may be asked to fill out a Trade Waste application form in order to provide all details. This information will be evaluated and a consent issued if necessary.

Q. How is an evaluation carried out?

A. Your council Trade Waste Officer will check your site plans, the volume of effluent flow, and the nature of the effluent. This will involve an on-site assessment and could involve chemical analysis of the waste.

Q. How much does it cost?

A. A set of standard fees are applied depending on which council administers them. There may be an initial capital cost if a pre-treatment system is needed for the waste. There will be ongoing costs for effluent analysis.

The costs of testing is a concern and councils endeavour to be reasonable in application. However it is sometimes useful to point out to companies that a little more money spent on testing can assist greatly in their understanding of their waste and ultimately make it possible for them to save money.

Q. What do these results mean?

A. Some clients have difficulty understanding of the meaning of their result because most councils list many tests with quite generic limits. Check your councils' Trade Waste by-law where the tests and their limits are shown.

Often, councils apply special limits to companies based on the component and load of their Trade Waste. In these circumstances the limits will be available on correspondence you have made with your council.

Some laboratories have the ability to show whether your results breach your limits. You should discuss this with your laboratory.

Q. How long should it take to get my results?

A. This is a very crucial area because if your results exceed the limits then you need to be made aware as soon as possible. Most laboratories can return your results within the week, however some specialist tests may take slightly longer. Your laboratory should tell you their normal expected turnaround times however you may be able to get faster times if you speak with them directly.

Q. What happens if I don't get my Trade Waste tested?

A. The lab tests are required to show their compliance with your TW consent and if the tests are not carried out then you will breach the terms of your consent. There is no express requirement for Council to accept their Trade Wastes so in a worst case scenario, the council could block your access to the sewer network.

Q. Do I have to use the council laboratory to do my testing?

A. Most councils set a minimum testing requirement for each company, and then leave the company to choose their testing laboratory. The council will require the laboratory to be independently registered by an accreditation system such as ISO17025. Make sure your laboratory has this accreditation before getting the test performed.

Advice councils give Trade Waste companies

Seek Advice

If you are unsure about what is in your Trade Waste then please seek advice from your council or laboratory. If you suspect that your discharge may be toxic or contain very concentrated components then let your council Trade Waste Officer know. The risks to the sewer pipes, treatment plant, and environment are too high to leave to chance. *If in doubt seek advice.*

Flush and Forget

New Zealanders have become a flush and forget society, but we also pride ourselves on our clean green image. Sadly, the two do not go hand-in-hand. We all must take responsibility for what we put down our drains because all eventually it all ends up in our environment.

This responsibility extends to all forms of waste and not just what we put down our drains. For example –

- Does your staff know what to do in an emergency?
- Do you know where your grease-trap waste gets taken? Next time the sump truck turns up, ask!

Typical tests performed on Trade Waste

Test Name	Information about the test
Biochemical Oxygen Demand	The amount of oxygen required by aerobic micro-organisms to decompose the organic matter in a sample. It is used as a measure of the degree of water pollution. Also called biological oxygen demand it is a measure of how difficult it will be for the treatment plant to process.
Chemical Oxygen Demand	The COD is used as a measure of the oxygen equivalent of the organic matter content that is susceptible to oxidation by a strong oxidant. This test is also a measure of how difficult it will be for the treatment plant to process.
Cyanide	Any of various forms of cyanide used by some industrial processes. This can form a toxic gas within the sewer network.
Detergent	A cleansing substance that acts similarly to soap but is made from chemical compounds rather than fats and lye. Can cause frothing in the plant and discharge point.
Floating Oil & Grease	This is the portion of grease that floats on water. It can cause problems in treatment plants because it floats on the surface and is not broken down.
Flow data reporting of readings taken directly from your meters	When we arrive to set-up the autosampler we take a reading of your water meter. A second reading taken at the time of sample collection shows the water usage during the sampling period. This can be used to calculate your total load on the treatment plant.
Fluoride	Used in many industrial processes, fluoride can be quite dangerous to health at high levels. It is not removed by the treatment process and ends up in the waterways.
Formaldehyde	This colourless gaseous compound is used for manufacturing melamine and phenolic resins, fertilisers, dyes, and embalming fluids and in aqueous solution as a preservative and disinfectant.
Hexavalent Chromium	Hexavalent Chromium occurs mainly in pigments containing dry chromate, spray paints, and coatings containing chromate. People operating chrome-plating baths or who weld or cut metals containing chromium, such as stainless steel can also be exposed. Stainless steel welding involves the greatest exposure to hexavalent chromium.
Mercury	Mercury is naturally occurring and exists in several forms. High mercury exposure results in permanent nervous system and kidney damage. Exposure is most likely to occur during mining, production, and transportation of mercury, as well as mining and refining of gold and silver ores. Mercury is commonly found in thermometers, manometers, barometers, gauges, valves, switches, batteries, and high-intensity lamps. It is also used in amalgams for dentistry, preservatives, heat transfer technology, pigments, catalysts, and lubricating oils.

Metals commonly found such as Arsenic, Cadmium, Chromium, Copper, Lead, Nickel and Zinc	These metals occur naturally in the environment as an element of the earth's crust. They are considered collectively by most Trade Waste officers as "Heavy Metals". These metals are the most commonly tested for in Trade Waste.
Metals less commonly found such as Silver, Tin, Cobalt, Molybdenum, Bismuth, Gold	Less common metals are usually analysed because they are part of a specific process operated by the company. For example cobalt is a major by-product of the saw-doctor industry. You will only be asked to test for these if they are likely to be present in your discharge.
Oil and Grease	This test recovers all oil and grease material that dissolves in hexane extraction fluid. We would usually perform this test on samples expected to contain non-petroleum based oils and greases.
pH	A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale uses a range of 0 to 14.
Phenol	A caustic, poisonous, white crystalline compound, used in resins, plastics, and pharmaceuticals and in dilute form as a disinfectant and antiseptic. Also called carbolic acid. It can adversely affect treatment plants.
Settleable Solids	Settleable solids is the term for the material settling out of suspension within a defined period. This portion of a Trade Waste sample usually falls out in the sewer network, eventually leading to pipe restriction.
Sulphate	Sulphate is used in many industrial processes and can be broken down to sulphide, leading to sulphuric acid production inside the sewer.
Sulphide	In an anaerobic environment, such as inside a sewer, sulphide forms hydrogen sulphide which is very toxic, and sulphuric acid which can dissolve concrete pipes.
Sulphite	Sulphite removes oxygen from inside the sewer, which can lead to acid production and corrosion of the pipes.
Suspended Solids	This is the portion of solids that remains on a filter paper. This is the most common solids test we perform and is a good indicator of overall solids in a sample.
Temperature	Temperature is monitored for two reasons. 1) Hot water can carry grease, which will later solidify. 2) Hot water can speed up chemical reactions.
Total Petroleum Hydrocarbons	Any of numerous organic compounds, such as benzene and methane, that contain only carbon and hydrogen. We would usually perform this test on samples expected to contain only petroleum-based oils and greases.
Total Solids	This portion of solids includes all matter apart from water. It can include oils that don't evaporate at 104°C.
Volatile Solids	This is the portion of solids that are organic and will be digested by the sewage treatment plant.

Questions Trade Waste companies ask us

Q. Who authorised the work?

A. This is often asked by company accounting staff if an expected purchase order is not used. If your company requires purchase orders then please ensure that we receive one so the accounting system works properly. If your company requires a purchase order please let us know and we will request one whenever we visit.

Q. Why is my company being tested?

A. We are often asked this by new business owners who are still coming to terms with all the many compliance issues they face. Please contact your local councils Trade Waste Officer for full details.

Q. Who is responsible for the quality and quantity of the Trade Waste?

A. The councils leave the complete operation of a company's Trade Waste to that company. It remains the company's responsibility to meet the limits set by council. Remember that the council does not need to accept any discharge into its sewer system.

Q. What experience do you have performing Trade Waste testing?

A. Our staff have been collecting Trade Waste samples for more than 20 years and therefore have an intimate knowledge of the requirements. Our experience starts with the sites we visit, their staff, and the systems they operate. The methodology we use for sampling and analyses is specifically designed for the purpose of meeting Trade Waste client needs.

Q. Why do you perform tests you do?

A. We are often asked who decides the tests we perform. The local council almost always decides the tests we perform and how often we perform them and this depends on several factors.

- The type of business you are and the volume of waste you produce
- The types of pre-treatment you have at your site
- How often you exceed the limits

If you are a small business, for example, that produces a small quantity of high strength waste, you may not necessarily have to test frequently if your loading is small. The loading can be calculated by the strength times the volume and is usually expressed as kilograms per cubic metre of Kg/m^3

Q. What do the tests mean?

A. We get regular requests from clients to explain what each test means. Please have a look at the table starting on page 8, which shows a description of the full set of tests we would perform during a year.

If there is any further information you may need, please contact us.

Q. Why do you use automatic sampling equipment?

A. We know that the hardest part of accurately measuring your waste is obtaining a sample that is representative of the wastewater itself. For example, grease and oil may float, solids may settle and the concentrations of these may vary from minute to minute.

Autosamplers allow us to gather many grab samples over a period of time so that your discharge is more accurately measured. The alternative is to collect a single grab sample, which in extreme cases may be taken when the waste is at its worst.

Q. What can I do to improve my effluent quality?

A. Reduce, Reuse, Recycle.

Removing solids is the easiest way to improve effluent. This can be achieved by educating your staff.

- Bakery wastes contain sugars, which have a high COD load. Scraping out dishes before washing up can remove this.
- Companies using cooking fat, butter or margarine should also put these into a solid waste bin.
- Butchers can do the same with meat and fat.
- Chemicals should be reused wherever possible.
- Strongly buffered pH can be neutralised.

It is important to note that macerators don’t improve effluent quality, they simply chop big bits of contaminants up into little bits. Some councils ban their use for this reason.

Some companies may also need to install and manage mini treatment plants on their own site. The costs associated with building such plants will always be less than paying excess Trade Waste charges to the council.

Many companies in New Zealand specialise in offering waste management advice to companies, including those who will collect and treat your waste at their own site. Look for a suitably qualified professional in the Yellow Pages.

How we can assist Trade Waste companies

Independence

The best reason for using us to collect, analyse and report Trade Waste samples is for our independence. Trade Waste analyses is an area where disputes can arise if either party is seen to show bias.

Our independence assures both parties received the highest quality advice and technical excellence.

The best analytical techniques

Trade Waste challenges every laboratory due to the many varied matrix effects, which must be adjusted for. Every Trade Waste is different and can contain complex interferences, which in the hands of inexperienced analysts can lead to inaccurate results.

We operate one of New Zealand’s most comprehensive range of analytical instrumentation, including ICP-OES and ICP-MS. We retain extensive knowledge and experience with the complex process of sampling and analysing Trade Waste.

Our staff receive the best training possible to ensure we continue to provide results that our clients can rely on.

Experience

Eurofins-ELS distant roots began as the "Hutt Valley Drainage Board laboratory" and we have therefore been analysing Trade Waste samples for decades. While times have changed, we still retain the in-house knowledge, experience, and technical ability to analyse this most complex sample matrix.

We know from our experience that the complex chemistry that takes place in factory waste can interfere with our instruments and methodology, so we have developed techniques to minimise these interferences.

The objective of our experience is to provide accurate and reliable analytical data that assures you and your council of your compliance to Trade Waste by-laws.

The most complete range of tests

Although Trade Waste consents define the limits of what can be discharged, each council must actively monitor the customers to ensure the wastewater system is not put at risk. Councils around New Zealand perform regular sampling and testing programs and we assist many of them. Our independence assures council clients that their samples are analysed in an unbiased manner.

We also tests for many companies directly, assisting them with a proactive approach to minimising their Trade Waste costs.

We perform many different types of Trade Waste analyses, dependent on the organisation that we are testing. Some companies will only ever be tested for a small suite of tests while others will require more. Remember that your local council sets these tests.

Comprehensive reports

Each of our customers can have their own council enforced guidelines that the trade waste must comply to. Our reports are able to incorporate theses limits so that they clearly identify whether the sample is complaint or not.

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
13/10500-01	New World Eutcher Discharge	WTW-F99R	01/05/2013 06:50	01/05/2013	ABC-123

Notes: Cloudy, Grey, Floating Solids

	Test	Result	Units	Comments	Signatory
0001	pH	9.8		Complies	Vinia Buntoro KTP
0002	Suspended Solids - Total	160	g/m³	Complies	Marylou Cabral KTP
0003	Oil and Grease	72	g/m³	Complies	Marylou Cabral KTP
0085	BOD5 - Total	312	g/m³	Outside Controlled TW Limit of 600	Gordon McArthur KTP

Comments:

Sampled by ELS using approved containers and techniques.

All samples analysed as we receive them. Delivery was within the correct time and temperature conditions

Because our staff utilise queries as part of their everyday workflow management, they are able to write data interrogation queries to provide incredible amounts of information.

Queries can be written to answer all sorts of questions:

- *Which of my sample sites had the highest Suspended Solids result last year? And on what date was it?*
- *What are all the Total Chromium results for my discharge?*
- *How many of my samples exceeded the Maximum Value?*

All query results can be exported into any spreadsheet and emailed to you.

Cost Effectiveness

Of importance to everybody is the need to remain cost effective. By using the best analytical equipment available we are able to streamline our systems to ensure our clients a value for money service.

Prompt turnaround times of results

We have been consistently reporting results for many of our clients within 5 working days, but some of the trickier tests can take up to 10 working days to complete.

Because trade waste is the most demanding sample matrix we test for, we often take special care to ensure the result we report is the most accurate possible.

Our report emailing service can reduce the time it takes to see your data, so please contact us about this.

A complete service

Our complete service includes an invoice displaying the full information required for data and invoice tracking. Our invoices often end up in other sections of your business and it is important to retain full tracing ability.

Sampling techniques

"The result of any test can be no better than the sample on which it is performed".

The objective of sampling is to collect a portion of material small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the material being sampled.

Sampling is an often underestimated but very crucial step in the process of determining sample integrity. Many things can go wrong before the sample reaches a laboratory so we offer assistance to minimise risk associated with:

- Inappropriate sample types and locations
- Incorrect sampling technique
- Sample contamination
- Incorrect labelling
- Sample homogeneity
- Delivery timeframes

We have its own team of samplers so we know what is needed to ensure accurate and safe sampling under all types of conditions.

Sampling – an excerpt from the Eurofins-ELS sample assurance brochure

Trade Wastes can contain particularly toxic and dangerous compounds so it is important that Health and Safety procedures are followed at all times.

We have identified the sampling technique as the major contributor to inaccuracy in expected results, so we have developed several sampling techniques that minimises the risk associated with this part of the process.

- Three grab samples of the discharge shall be taken at intervals of not less than 1 minute or more than 5 minutes. These are combined using equal volumes of all three samples to obtain an instantaneous sample.
- A four-hour average sample is prepared by taking not less than 12 grab samples over a continuous four-hour period. The intervals between the samples must not be less than 5 minutes nor more than 30 minutes. The samples shall be mixed using equal volumes of all samples to obtain the four hour average sample.
- A twenty-four hour flow proportionate sample is obtained from no less than 18 grab samples over a continuous twenty-four hour period.

We recommend a combination of manual and autosampler techniques to collect representative samples in order to meet client and council specifications. Our specialist operators are able to achieve such tasks as pre-programming the autosamplers to collect samples on a particular day on a time or flow basis.

Contact Details

Please feel free to contact us by any one of the methods shown below.

Main Lines

Wellington	Main Telephone	(04) 576-5016
Christchurch	Main Telephone	(03) 343-5227
Auckland	Main Telephone	(09) 579-2669

Direct Lines

	Accounts	(04) 568-1205
Rob Deacon	General Manager	(04) 568-1203
Sunita Raju	Microbiology Lab Manager	(04) 568-1206
Tracy Morrison	Chemistry Lab Manager	(04) 568-1200
Sharon van Soest	Chemistry Lab Manager	(04) 568-1200
Deb Bottrill	Sample Logistics Manager	(04) 576-5016
Dan Westlake	Christchurch Lab Manager	021-242-2742
Ralph Veneracion	Auckland Lab Manager	021-242-2711

Email can be directed to staff using "first name last name"@eurofins.com

Courier

Wellington: 85 Port Road, Seaview, Lower Hutt, New Zealand 5010

Auckland: 35 O'Rorke Road, Penrose, Auckland 1061

Christchurch: 43 Detroit Drive, Rolleston 7675

Mail

P.O. Box 36-105, Wellington Mail Centre, Petone, New Zealand 5045.

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WEB

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IANZ Accreditation Numbers:
Biological 639, Drinking Water 787,
Chemistry 414, RLP 1140