

GUIDELINE TO THE DUNEDIN CITY COUNCIL TRADE WASTE BYLAW 2008

TABLE OF CONTENTS

WHAT IS THE PURPOSE OF THIS GUIDELINE?	3
THE OBJECTIVES OF A TRADE WASTE BYLAW	4
WHAT IS TRADE WASTE?	4
IMPLEMENTATION OF A TRADE WASTE BYLAW	5
WHO SHOULD APPLY FOR A TRADE WASTE CONSENT	7
SPECIFIC GUIDELINES TO THE BYLAW	9
G 1 Review of the Bylaw	9
G 1.7 Definitions.....	9
G 3.1 Classification of Trade Waste discharges	10
G 3.2 Application for a trade waste consent	11
G 3.3 Information and analysis.....	11
G 4.1 Pre-treatment.....	15
G 4.2 Flow balancing	18
G 5.1 Flow metering.....	18
G 5.3 Sampling and analysis.....	19
G 5.4 Monitoring.....	20
G 5.4.3 Tankered waste.....	23
G 5.4.4 Disinfected/super chlorinated water.....	24
G 6.3 Charges and payments.....	24
G 6.4 Authorised officers.....	26
G 6.5 Transfer or termination of rights and responsibilities.....	27
G 6.7 Offences	28
 G SCHEDULE 1A	 29
 Table G 4: 1A.1-General Chemical Characteristics.....	 38
Table G 5: 1A.2- Heavy metals	40
Table G 6: 1A.3- Organic Compounds and pesticides.....	41
 G SCHEDULE 1C	 43

WHAT IS THE PURPOSE OF THIS GUIDELINE?

This Guideline does not form part of the Trade Waste Bylaw, but should be read in conjunction with the Trade Waste Bylaw and the other adopted Bylaws of Council.

The Local Government Act (the Act or LGA) enables Territorial Authorities (TAs) to make a Trade Waste Bylaw and to ensure that existing Trade Waste Bylaws are reviewed in accordance with the Act. The New Zealand Waste Strategy requires TAs to adopt a Trade Waste Bylaw or review their existing Trade Waste Bylaw, in accordance with NZS 9201.23.

This Guideline has been developed to assist in the management of Trade Waste discharges, to explain the responsibilities and requirements under the Trade Waste Bylaws and to assist in the understanding of them.

Business perspective

The Trade Waste Bylaw and attached Guideline is an important document for Dunedin businesses and the Council. Characteristics for Trade Waste are established with limits based on scientific principles to enable Trade Waste to be discharged into the Council Sewerage System in a safe and sustainable manner, with the associated costs shared fairly among those discharging the waste.

For existing and new businesses the limits and Council's requirements will dictate the level, if any, of cleaner technology, waste minimisation and (pre)treatment required before discharge to their network.

For new businesses, the process of obtaining a Conditional Trade Waste Consent is laid out, with documented expectations for the business and the Council, and the charging formulae separately provide a good basis for new industry to predict the likely costs involved in discharging their Trade Waste.

Use of consistent Trade Waste Bylaws among TAs should ensure waste disposal costs are comparable across different TAs, allowing for variations between different Sewerage Systems.

Council perspective

This Guideline is a means of assisting the Council to comprehensively and efficiently undertake the steps necessary to implement a Trade Waste Bylaw or review an existing one and ensure consistency with the LGA 2002. It provides a reference for carrying out its role, including:

- (a) Administration of the Trade Waste Bylaw;
- (b) Consents and user charges to enable cost recovery;
- (c) Quality and quantity monitoring; and
- (d) Health and safety.

This Guideline also provides or refers to the reasoning behind the clauses within the DCC Trade Waste Bylaw 2008.

THE OBJECTIVES OF A TRADE WASTE BYLAW

The Trade Waste Bylaw is the legislative tool for fair and effective management of Trade Waste entering the Council's Sewerage System. Trade Waste discharges are managed to:

- (a) Protect the health and safety of all people working in the Sewerage System;
- (b) Protect receiving waters from toxic substances originating from Trade Waste discharges;
- (c) Protect the Sewerage System and sewage treatment plants from damage due to harmful substances from Trade Waste sources;
- (d) Protect the Stormwater system from damage due to harmful substances from Trade Waste sources;
- (e) Assist the Council to meet relevant environment and other regulations;
- (f) Assist the Council's Sewage processing operations to produce effluent and Biosolids of an acceptable quality;
- (g) Encourage waste minimisation and cleaner production in the commercial and industrial sectors;
- (h) Encourage water conservation;
- (i) Allow fair recovery of reasonable costs;
- (j) Allow for the allocation of a sewage system's capacity including determination of further system optimisation and development.

WHAT IS TRADE WASTE?

The definition for Trade Waste, as given in section 1.7 of the Trade Waste Bylaw, is any discharge into the Sewerage System other than Domestic Sewage, including any liquid or gas, with or without matter in suspension or solution, that is or may be discharged from a Trade Premises to the Council's Sewerage System in the course of any trade or industrial process or operation, or in the course of any activity or operation of a like nature; and may include Condensing or Cooling Waters, Stormwater and Domestic Sewage which cannot be practically separated

Any person or business that discharges wastes other than those of the same character as Domestic Sewage into the Sewerage System, will need to comply with the Trade Waste Bylaw and may require a Consent. If someone is unsure if they need a Consent under the Trade Waste Bylaw they will need to contact the Council.

The Trade Waste Bylaw considers three types of Trade Waste:

- (a) Permitted - the acceptance of such Trade Waste is 'automatic'. The source is generally from such businesses as small restaurants, retail butcheries, and schools.
- (b) Conditional - a consent with specific conditions to discharge is required. This type of Trade Waste is generally from such businesses as larger meat processing plant, fellmongeries, landfills, food and fish processing plant.
- (c) Prohibited - a liquid waste that the Council will not accept into the Sewerage System. However if this waste is pre-treated in an appropriate manner the resultant discharge may become a conditional consent.

Trade Waste discharges place an additional load on the Sewerage System and can also affect wastewater treatment processes and/or affect the reuse of Biosolids and treated

effluent or the Council's environmental discharges (i.e. to air, water, land). These effects shall be controlled.

Each business or person should pay Trade Waste charges in accordance with the type of discharge as set by the Council. Permitted Dischargers should pay by rates and/or an annual fee. Conditional Dischargers pay through rates and Trade Waste charges. Prohibited waste is not accepted at all unless appropriate Pre-treatment is carried out to an extent that the discharge can become a conditional discharge.

Schedule 1C contains a list of prohibited Characteristics.

The Council is not obliged to accept any Trade Waste discharge particularly if this discharge affects or has the propensity to affect the Sewerage System operation or resultant discharges to the environment or products e.g. Biosolids resulting from the Sewerage treatment process.

IMPLEMENTATION OF A TRADE WASTE BYLAW

The procedures for implementing a new or amended Trade Waste Bylaw have changed with the arrival of the LGA, and are summarised below.

Consultation process

Sections 86 and 148 of the Act set out two consultation processes, each of which need to be complied with. Section 148(7) enables both processes to be undertaken simultaneously. The special consultative procedure (s.86) can therefore be used and modified to incorporate the requirements of s. 148 within a single process.

The relevant parts of the Act are Parts 6 and 8.

Part 6 of the Act, Planning, decision-making and accountability makes many specific requirements for consultation with the community and with the involvement of Maori in decision making processes, particularly in s.81 and s.82. It is advised that the proposed Trade Waste Bylaws be specifically drawn to the attention of the local tangata whenua for their comment. There may be local cultural concerns about the disposal of certain materials to the Sewerage System particularly if the effluent or sludge from the treatment plant is to be reused.

Part 8, s.145 to s.148, defines the powers of TAs to make Bylaws. Included in s.146 is the power to make a Trade Wastes Bylaw. Section 148 then defines special requirements for Trade Waste Bylaws and includes an additional consultative procedure.

Part 8, s. 55 to s.160, covers the procedure for making Bylaws and review of Bylaws in general. In s.156(1) it states that except for minor changes as covered in s.156(2), then the 'special consultative procedure' as defined in Part 6 s.83 shall be followed.

Commentary

One method of running the two procedures separately but simultaneously is detailed in Table G1.

Table G1 – Summary of simultaneous implementation process

Section 148 of the LGA	Section 83 of the LGA
<p>At least 2 months before making the bylaw, public notice must be given of the intention to make the bylaw, setting out:</p> <ul style="list-style-type: none"> - The Trade Wastes to which the bylaw relates; - Where copies of the draft bylaw can be inspected/obtained and charged; - That Council is prepared to receive representation made over the next 2 months (at least); - Send a copy of the public notice to occupiers who have requested to be put on the trade wastes register. 	<p>Prepare a statement of proposal, including:</p> <ul style="list-style-type: none"> - The draft bylaw - Reasons for the Proposal - s.155 report <p>Prepare a summary of information, including:</p> <ul style="list-style-type: none"> - Major matters in the proposal; - Where proposal may be inspected/obtained; - The period within which submissions can be made.
<p>Shall send bylaw to Minister of Health for comment.</p>	<p>Put statement of proposal on agenda for Council meeting.</p>
<p>Shall consult with anyone that the Minister of Health specifies.</p>	<p>Make statement of proposal available for public inspection.</p>
	<p>Distribute the summary of information as widely as possible:</p> <p>Give public notice of the proposal and state:</p> <ul style="list-style-type: none"> - The consultation undertaken; - How interested Persons may obtain a summary of information and inspect full proposal; - The period of submissions shall be at least for 1 month.
<p>Council shall consider any representation received in accord with this section.</p>	<p>Anyone who makes a submission shall be sent a written notice:</p> <ul style="list-style-type: none"> - acknowledging receipt of submission; - Advising opportunity to be heard and explaining how that Person may exercise that opportunity <p>The Council shall ensure a Person is given a reasonable opportunity to be heard (if requested).</p> <p>Hold a public Council meeting if necessary. Make a decision as to whether to make the bylaw.</p>

The proposed key dates for consultation are as follows:

<i>April 2008</i>	First public notice under s.148
<i>June 2008</i>	Close of public submissions
<i>June 2008</i>	Hearings
<i>July 2008</i>	Final Trade Waste Bylaw Adopted by Council
<i>July 2008</i>	Public notification for Adoption
<i>July 2008</i>	DCC Trade Waste Bylaw 2008 operational

WHO SHOULD APPLY FOR A TRADE WASTE CONSENT

Any person who is discharging other than domestic sewage may be required to apply for a Trade Waste consent.

Table G2 provides examples of Premises and processes that are likely to discharge Permitted or Conditional Trade Waste although this is not an exhaustive list.

Table G2: Examples of Premises/processes producing Trade Waste

Table G2 provides examples of Premises and processes that are likely to discharge Permitted or Conditional Trade Waste, however this is not an exhaustive list and is for information purposes only. Any discharge other than Domestic Sewage may require a Conditional Trade Waste Consent.

PERMITTED	CONDITIONAL	
Beautician	Abattoir	Manufacturers of fertilizer
Building Construction - slab formation	Approved storm water discharged to Sewer	Manufacturers of paper and paper products
Cafes (no cooking)	Beverage manufacturers (including wineries)	Marae
Carpet cleaning mobile units	Bakeries	Mechanical workshops/service stations
Ceramics and pottery (Hobby Club)	Cafes	Medical laboratories Metal finishers
Community hall (no hot food cooked)	Churches (with catering facilities)	Mortuaries
Day care centre (with no hot food cooked and served on site)	Clothing manufactures	Municipal swimming pool
	Concrete batching plants	Optical factory
Delicatessen (no meat cooked on site). No hot food prepared or served)	Dairy processing plants	Photo processors
	Day care centre (with hot food cooked and served on site)	Premises with commercial macerators
Doctors surgery (excluding day care surgical facilities)	Dentists	Printers
Dog groomers	Doctor's surgeries/medical centres (with day care surgical facilities)	Restaurants (excluding those with commercial macerators)
Florist	Drycleaners	Schools, polytechnics, universities (with laboratories)
Fruit & vegetable market (retail)	Electroplaters	Scientific and other laboratories
Funeral parlour	Fellmongers	Spray painting facilities
Hairdressing salon	Food processors including canneries	Stock sale yards
Ice cream parlour	Foundries	Takeaway Premises
Kennels	Fruit and vegetable processors including canneries	Tankered wastes
Nut shop	Galvanisers	Tanneries and leather finishing (including fellmongers)
Optical processes	Hospitals (including day care surgical facilities)	Textile fibre and textile processors
Painter (small commercial)	Hotels and motels with catering facilities	Truck wash facilities
Pet shop (retail)	Laundries	Vaccine manufacturers
Pizzas cooking/re-heating (no preparation nor washing up on site, pizza heated in retail container and sold for consumption off-site)	Landfills (leachate discharge)	Vehicle wash facilities
Sandwich bar/salad bar	Manufacturers of chemicals and of chemicals, petroleum, coal, rubber and plastic products	Veterinary surgeries
Coffee lounge (no cooking)	Manufacturers of clay, glass, plaster, masonry and mineral products	Waste management processes
School canteen (no cooking)		Wholesalers/retailers including butchers, greengrocers and fishmongers (excluding those with commercial macerators)
School ceramic and pottery		
Swimming pool (non-municipal)		
Takeaway food (no hot food)	Manufacturers of fabricated metal products, machinery and equipment	Wool scourers
Venetian blind cleaning		

SPECIFIC GUIDELINES TO THE BYLAW

G 1 Review of the Bylaw

A review of the Council's Bylaw is required under s.158 of the LGA. Reasons for reviewing the Bylaw prior to this may include:

- (a) Higher environmental standards set for treated wastewater discharges. Future resource consents may also require higher standards;
- (b) Greater community demands for environmental sustainability;
- (c) Increasing emphasis on (true) environmental sustainability;
- (d) Increased charges for Trade Waste disposal to meet increased costs to the Council. This may include direct funding, or part thereof, of depreciation through the Trade Waste charges;
- (e) Review of the Model General Bylaw.

Any of these changes may result in more stringent conditions and management of Trade Waste by the Council. A review of the Trade Waste Bylaw will be associated with consultation as required under the Act, however a review of the Guidelines may be carried out without this.

It is in the interest of Industry, the Council and the community to minimise Trade Waste discharge now and in the future.

G 1.7 Definitions

Conditional Trade Waste - allows the Council to place conditions on the discharge. Examples of such conditions are as follows:

- (a) The requirement for cleaner technology to be used and waste minimisation to be practised;
- (b) A waste management plan may be required e.g. how often a grease trap is to be cleaned out;
- (c) Variations, either higher or lower, of the characteristics from Schedule 1A;
- (d) Variations to Schedule 1A tend to be lower with larger loads but can be determined and established to suit the flows and loads in a given Sewerage System. The decision whether or not to accept a given load shall be made with a sound understanding of the Sewerage Systems capacity - this includes the wastewater treatment plant and Consent discharge conditions. For a 'large' increase in load advice should be sought from experienced process engineers; and
- (e) Where a waste is prohibited Pre-treatment may result in an improved effluent to a degree that the treated effluent may become a Conditional Trade Waste.

Foul water - definition taken from the New Zealand Building Code definitions as at April 2004.

G 3.1 Classification of Trade Waste discharges

3.1.1

The Trade Waste Bylaw considers three types of Trade Waste:

- (a) Permitted - the acceptance of such Trade Waste is 'automatic'. The source is generally from such businesses as small restaurants, retail butcheries and schools. However under some circumstances such industry may be required to be consented.
- (b) Conditional - a consent with specific conditions to discharge is required. This type of Trade Waste is generally from such businesses as larger meat processing plants, fellmongeries, landfills, food and fish processing plants.
- (c) Prohibited - a liquid waste that the Council will not accept into the Sewerage System. However if this waste is pretreated in an appropriate manner the resultant discharge may become a conditional discharge.

3.1.2

Trade Waste discharges place an additional load on the Sewerage System and can also affect wastewater treatment processes and/or affect the reuse of Biosolids and treated effluent or the Council's environmental discharges (i.e. to air, water and land). These effects must be controlled.

In accordance with the type of discharge, each business or person may pay Trade Waste charges as set by the Council. Permitted Dischargers may pay by rates and/or an annual fee. Conditional Dischargers pay through rates and Trade Waste charges. Prohibited waste is not accepted at all unless appropriate pretreatment is carried out to an extent that the discharge can become a conditional discharge.

Schedule 1C contains a list of prohibited Characteristics.

The Council is not obliged to accept any Trade Waste discharge particularly if this discharge affects or has the propensity to affect the Sewerage System operation or resultant discharges to the environment or products e.g. Biosolids resulting from the Sewerage treatment process. If the Council wishes to refuse a waste it can decline the application and notify the applicant of the decision giving a statement of the reasons for refusal (refer to 3.5(c)).

The Council cannot arbitrarily refuse a waste as the decision may be challenged in the High Court as being unfair or unreasonable.

Reasons for refusing a waste would be the quantity, quality or both may have an adverse effect on the effectiveness of the reception, treatment and disposal of the waste.

G 3.2 Application for a trade waste consent

3.2.1 Formal application

A formal application is required from the Discharger. The exact nature of the application form prescribed for that purpose shall be determined by the Council and some examples are included in this Guideline.

Filling in the form

An essential first step is to clearly identify those responsible for the application and their contact details to ensure that the process is efficiently and effectively carried out. Consents should be issued to the legal business name rather than the trading name. In order to be legally robust you could use both names, for example consent would be issued to "Waste Discharges Limited trading as We Dump It".

Refer to Figure G1 for a flow chart that sets out the application process.

3.2.3

Although this Bylaw targets and refers to Consent Holders of Premises, in some situations where individual buildings or compartments in buildings with one Owner have a number of Consent Holders it may be in the interest of the Council to deal directly with the Owner, who shall make application for all Trade Waste discharges.

G 3.3 Information and analysis

3.3.1 Management Plans

The provision of a Management Plan may be required and should include aspects relating to:

Cleaner Production

Cleaner Production provides an opportunity for industry to improve their operations with the benefit of reduced wastage, system control/understanding and reduced impact on the environment. When identifying options and developing a Cleaner Production Plan consider the following areas:

Use of more efficient processes

The production and implementation of Cleaner Production Plans should prompt businesses to examine how they carry out their production. In many cases processes are undertaken because "they have always done it that way" and little effort has gone into examining why.

Use of less raw materials

The methodology to be employed in the reduction of the usage of raw materials, e.g. water, so as to produce less waste for disposal. Reduction efforts to be meaningful should result not merely in volume reductions but also in reduced total waste loadings.

Use of less toxic chemicals

The introduction or intended implementation, with timelines, of substitute less toxic raw materials which will produce less toxic waste products or wastewater for disposal. The plan should include the introduction or intended implementation, with timelines, of substitute less toxic raw materials which will produce less toxic waste products or wastewater for disposal.

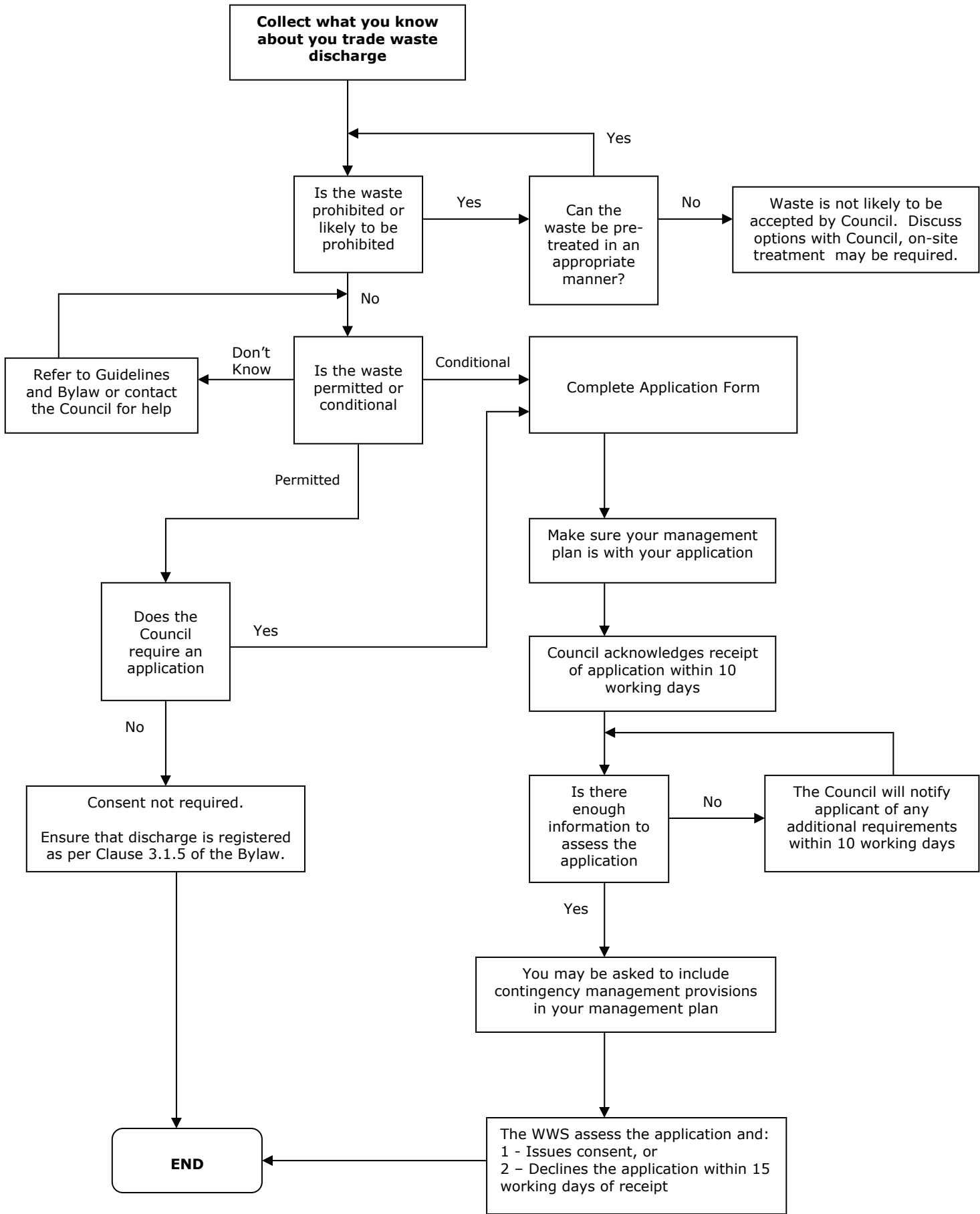


Figure G1 – Flow chart for the application process

Efficient use of materials

Examination of outputs compared to inputs along with associated wastage can assist in determining whether materials are being used efficiently or not. In many cases optimum quantities have not been determined and the installation of measurement and automation equipment can reduce unnecessary consumption of materials.

Housekeeping

Good housekeeping practices to minimise wastage due to factors such as poor storage of materials, contamination of raw materials due to sloppy practices.

Waste Minimisation

Management Plans should address the reduction of wastes produced by the business. Wastes to be covered primarily include solid and liquid wastes (Trade Wastes, wastewater to Stormwater or the sea and liquid wastes removed by contractors). Gaseous wastes may also be an issue. When identifying options and developing a Waste Minimisation Plan consider the following areas:

Reduce, reuse, recycle and recover materials

Management Plans should address the issues examining of raw material reduction, the ability to reuse input materials not utilised by processes, the availability of options for recycling their waste materials and the ability to recover materials or resources such as heat that may be of use to either themselves or others.

Water conservation

Reduce, reuse, recycle and recovery should also apply to water use. Management Plans should detail those utilised and those planned to be utilised to conserve water. Where intentions are stated they should be accompanied by implementation dates.

Stormwater Management

Management Plans should address issues related to the protection of Stormwater outflows from contamination and the minimisation or prevention of Stormwater merging with trade wastes. It is an offence to breach the Stormwater discharge acceptance standards in schedule 1E of the Bylaw. Issues addressed will need to include the following:

- (a) Appropriate removal of Stormwater from storage bunds;
- (b) The need for Stormwater containment and shutoff valves;
- (c) Stormwater catchments that need to be directed to the Trade Waste system due to surface contamination and subsequent management of flows from these areas;
- (d) Signage and training/education of staff e.g. only Stormwater to Stormwater and no washing to Stormwater;
- (e) Control of product or vehicle loading/unloading areas.

The Council is available to assist with advice on Stormwater management.

Contingency

Management Plans should address the Premises response to unplanned for events, unintended events and emergency events. These plans should detail responses to events and the means to prevent events from becoming major problems.

Discharge management in the event of an emergency

Management Plans should detail actions to be undertaken in the event of an emergency to manage discharges that could occur from a site. Plans should include the following:

- (a) Chain of responsibility, identification of key personnel/positions, contact numbers;
- (b) Measures taken to prevent a spill from entering the Stormwater and/or foul Sewer system.
- (c) Steps to be taken dependent upon seriousness of the event i.e. who to call and their numbers;
- (d) Location of shutoff valves or spill mats, responsibility for shutting and reason for shutting along with policy for opening again;
- (e) Procedures for getting rid of wastes created on site due to an emergency.

Storage and/or bunding of liquid and solid materials

Plans should indicate the locations and protective measures employed for liquid and where appropriate solid materials (that may produce a risk to Stormwater or Sewer on contact with water or other materials).

These protective measures may include:

- (a) Bunding, with capture volume appropriate to storage vessels size;
- (b) An appropriate secure means of removal of Stormwater captured by the bund; NOTE - the ideal is not to have a drain valve.
- (c) Bunding of internal areas to prevent egress of spillages;
- (d) Level alarms;
- (e) Adequate identification of contents.

Management of a spill

Plans should indicate measures to be taken to contain/control spillages and then indicate the methodologies for cleanup and waste disposal. It may be necessary to have a range of options dependent upon the nature of the spill.

Industry code of practice

Individual industries may have developed their own code of practice and this industry best practice should be considered in the development of the Management Plan.

3.3.2

The time restrictions under both 3.3.2 and 3.5 are considered the minimum reasonable times. Extensions to these times may be given, subject to requirements outlined in 3.5.

3.8 Technical review and variation**3.8.1**

A Permitted Discharge could range from small supermarkets, to fish and chip stores, to vehicle service stations.

If the Council is having problems with excess organic material from say supermarkets, oil and grease from fish and chip shops, or mineral oils from service stations then control of those excesses may be necessary.

To control discharges adversely affecting the Council's Sewerage System then the offending industry may be required to apply for a Conditional Trade Waste Consent such that the Consents imposed will meet the objectives of the Council in terms of quality of waste it will accept to ensure that the Sewerage System operates as required.

If industries are not managing their waste correctly, such as regular cleaning out of grease/solids traps then the Council may require a particular discharge to be conditionally Consented such that conditions may be imposed e.g. clear the grease trap once per month to ensure that a given industry complies with a reasonable requirement.

If a small industry changes its scope of operation from e.g. a small supermarket to a larger supermarket, greater controls may be required over the wastewater discharges from the site and hence a Conditional Trade Waste consent may be required.

G 4.1 Pre-treatment

Grease traps

Food Premises are likely to produce wastewaters that contain varying amounts of fats, oils and greases (FOGs). There is a need and a requirement (via Trade Wastes Bylaws and the Building Act) to provide a means of reducing the amount of FOGs discharged to a Sewer. A grease trap is the most common means of achieving this goal and there are a number of different types of traps available including the following:

- (a) In ground cavity separation, requiring regular emptying;
- (b) Enzyme/bacteria traps - under bench usually, requiring regular dosing;
- (c) Semi-mechanical/electrical- under bench units.

The trap should meet the standards set out in G13, Section 4 of the New Zealand Building Code and Approved Documents published by the Building Industry Authority.

pH control

For some Dischargers there will be a need to not only monitor pH but also to actively control it to an acceptable range for discharge to the Sewer system. Whilst batch Dischargers may be able to achieve the desired level of control with manual dosing there may be a need for automated systems on continuous discharges. Some may also require automated shutoff valves and alarms triggered by pH excursions.

Some examples of businesses that might require pH adjustment systems areas follow:

- (a) Electroplaters;
- (b) Waste treatment companies;
- (c) Tanneries and fellmongeries;
- (d) Large laundries;
- (e) Radiator repair shops;
- (f) Concrete manufacturers.

There is a need to ensure that pH electrodes are calibrated and maintained properly, dosing chemical stocks are maintained and that the system remains functional.

Screening

For wastes composed primarily of water and particulate matter rather than dissolved material, screening can be a cost effective efficient method of wastewater Pre-treatment. Screens of various mesh sizes and operational types can be obtained or built to suit differing requirements and budgets including the following:

- (a) Static screens requiring manual cleaning;
- (b) Vibratory screens - self cleaning, available in a range of sizes;
- (c) Step screens - self cleaning, range of sizes available;
- (d) Milliscreens - self cleaning, range of sizes available;

Typical screening applications include fish processing wastewaters, small goods manufacture, laundries, meat processing and vegetable processing.

Dissolved air flotation (DAF)

If the density difference between solids and wastewater is marginal or if the solids have a high oil and grease content then a form of DAF can be an effective Pre-treatment process.

In a DAF process gaseous (air) fine microbubbles attach themselves in the DAF process tank to the effluent-feed solids. This reduces the solids apparent density to below that of water, float to the surface and are scraped off the surface of the DAF plant for disposal. Some DAF designs are effective in removing settleable solids from the bottom of the DAF tank.

Process issues to note where relatively high reductions are sought are:

- (a) The use of appropriate coagulants and polyelectrolytes for a given effluent (often determined by trials);
- (b) The proper formation and distribution of the fine microbubbles;
- (c) Regular de-sludging and maintenance of the DAF tank;
- (d) Ensure that the DAF tank is not overloaded hydraulically or by the solids loading rate;
- (e) General DAF plant cleaning to limit build up of greases particularly on scraper flights;
- (f) To maintain floc integrity pumping needs to be limited and with pumps that handle flocs gently; and
- (g) Dewatering of the resultant sludge, particularly greasy sludge will be challenging.

Typical applications include meat processing plants, tanneries and fellmongeries.

Filter bags

A filter bag system is a method of pressurised liquid filtration in which the product to be filtered is passed through a filter bag from inside to outside leaving the solids trapped in the bag. Filter bags are made of polymers with the capability of filtering to 1 micron. Once full the bags can be cleaned out or disposed of.

Make sure that the bag 'cleanings' are not returned to the Sewerage System.

Typical applications include small meat and food processing plants with relatively high oil and grease loads.

Biological

The biological Pre-treatment of effluent is not normally necessary if the industry's effluent can be accepted into a municipal Sewerage System. However if the Sewerage System cannot accept the industry's effluent; e.g. a high $\text{NH}_3\text{-N}$ then a sequencing batch reactor (SBR) could be used to nitrify/denitrify or a small trickling filter could be used to reduce a relatively high BOD_5 effluent prior to discharge into a municipal Sewerage System.

Sludge handling/dewatering

The greater the amount of Pre-treatment required the greater the amount of sludge that will be produced by a given industry. This sludge is often at about 1 % dry solids (DS) and potentially difficult to dispose of, particularly to landfill. The volume of sludge can be reduced by digesting (anaerobic, aerobic) or more usually for the smaller scale of New Zealand industry by some form of dewatering and then disposal to landfill. Digested sludge would also require dewatering before final disposal.

The landfill acceptance criteria for sludge going to landfill states that for waste to be considered non-liquid it shall meet the following requirements:

- (a) A solids content of greater than 20% and liberate no free liquids when transported; or
- (b) No free liquids when tested in accordance with the US EPA Paint Filter Liquids Test (US EPA) Method 9095A (1996) and liberate no free liquids when transported.

Options available for dewatering sludges (which may include the use of coagulants and flocculants) are as follows:

- (a) Dewater sludge using generous capacity storage and reasonable settling times. Use of a sludge thickener will assist;
- (b) Screwpress;
- (c) Decanter/centrifuge;
- (d) Belt press or filter press;
- (e) Composting - use with bulking solids e.g. sawdust, shredded greenwaste;
- (f) Evaporation;
- (g) Indirect thin film rotary dryers.

Direct fired dryers and fluidised bed/multi-hearth incinerators can be utilised for the significant industry or municipal plant.

In many cases the Pre-treatment of industrial wastewater and effective/sustainable disposal of the resultant sludge is site-specific and demands specialised and experienced knowledge to achieve reliable plant operation. Too often Pre-treatment operations fail to meet expectations because sustainable sludge treatment and disposal has not been considered adequately enough.

Disposal of industrial sludges

Some options for disposal of industrial sludge:

- (a) Dispose of to landfill - a minimum DS will be required. Disposal to landfill of a given sludge will also depend on the grading of the landfill, the proportion of other solid waste to mix with the sludge and acceptance criteria used;
- (b) Sludges from metal processing or chemical Pre-treatment will need to be disposed of in an appropriate landfill and may even require additional treatment e.g. cement stabilisation to ensure leaching is controlled;
- (c) Composting;
- (d) Drying to utilise as a fuel;
- (e) Reuse or alternative application.

There may be a situation where a group of industries and perhaps the Council could combine to more effectively treat and dispose of sludge.

The MfE New Zealand Waste Strategy will have a considerable effect on the requirements for the future sustainable disposal of sludges and solid wastes. The strategy should be considered for ongoing planning with respect to sludge disposal.

G 4.2 Flow balancing

For discharges with batch type processes and/or large working day discharge flows, flow balancing can be very effective in terms of reducing the Trade Waste charge when it is based on a flow rate basis. Flow balancing can also allow greater volumes to be accommodated in the Council Sewerage System, particularly if there are hydraulic restrictions on the conveyance system and/or at the treatment facilities.

Flow balancing can also even out the contaminant loads arriving at the Council's treatment facilities and accordingly assist in improved treatment efficiency. One technique that can have advantages with some types of Council treatment plants is to discharge Trade Waste into the system at night when domestic flows are low. The merits of this would depend on the treatment plant type and/or the conveyance hydraulic capacities. Such an arrangement could result in a rebate to the Trade Waste Discharger, or alternatively allow a Trade Waste discharge to be made that could not otherwise be accepted into the Council system (NOTE - this does not happen at present).

G 5.1 Flow metering

Assessment of the loading of any discharge is dependent upon the ability to determine not only its quality but also the quantity. The required flow metering can be achieved in a number of ways with the method used depending upon the nature and significance of the discharge, the amount and type of information required and the most cost effective way of obtaining it. Methods may include:

- (a) The usage of the main site water supply meter;
- (b) A potable water meter or meters on the supply lines for processes that produce the Trade Waste discharge for a site;
- (c) Flow meters installed on the discharge line to the Sewer or ideally on the Trade Waste discharge line.

Flow meters are specifically designed for dealing with non-potable flows and there are a wide variety of types each with specific requirements and limitations and care should be exercised in selecting and fitting flow meters. Additional to the flow meter, a data logger can be fitted which allows the flow meter data to be recorded/analysed by a computer or integrated into a site management system. The use of data logger systems can allow the graphical presentation of flow data.

Potable water meters, though cheap, should not be used to measure Trade Waste; they are designed for clean flows and will fail in a Trade Waste environment.

Calibration of any flow-monitoring device will be required to ensure that its performance is acceptable.

In practical terms this can be difficult particularly with in-ground installations and specialist assistance or the assistance of the manufacturer's agent will normally be required. Logs of usage can act as a guide to ongoing performance via comparison with past records. Acceptable performance criteria for meter calibration are provided in 5.1.5 and 5.1.6 of the Trade Waste Bylaw.

The following British standards may be of assistance (taken from the Model Trade Waste Bylaw):

- ⇒ BS 3680: Measurement of liquid flow in open channels.
 - Part 11A: 1992 free surface flow in closed conduits - methods of measurement.
 - Part 11 B: 1992 free surface flow in closed conduits - specification for performance and installation of equipment for measurement of free surface flow in closed conduits.
- ⇒ BS 5728: measurement of flow of cold potable water in closed conduits.
 - Part 3: 1997 methods for determining principal characteristics of single mechanical water meters (including test equipment).

G 5.3 Sampling and analysis

5.3.3

The Council or its agent should familiarise itself with the health and safety requirements pertaining to each particular Premises. Considerations may include but are not limited to:

- (a) Procedures for permission to enter;
- (b) Accompaniment on site by Premises' employees;
- (c) Appropriate person for delivery of any notice;
- (d) Required personal safety equipment;
- (e) Site specific safety training.

G 5.4 Monitoring

5.4.1 Monitoring for compliance

When, how and why monitoring of Dischargers may be necessary to determine their compliance with the specific conditions of their Consent. It primarily involves sampling and sample analysis but can involve auditing of other parameters such as self-monitoring records/data, waste disposal receipts, cleaning records or the examination of flow data and waste Management Plans.

When and at what frequency and by whom a Discharger is to be monitored is best determined by a combination of factors including:

- (a) The nature of the business, e.g. is it seasonal, when do they operate?
- (b) The scale of the discharge;
- (c) The presence of an approved or accredited laboratory on the Premises;
- (d) The potential risks to the Council Sewerage System from the discharge;
- (e) The compliance history of the person discharging;
- (f) The need for information for purposes additional to compliance monitoring such as for user charges purposes;

Some Dischargers may not require frequent monitoring or perhaps any monitoring, whilst others that can have a significant effect upon the Council Sewerage System will require frequent monitoring.

The New Zealand Municipal Wastewater Monitoring Guidelines should be consulted before embarking on a monitoring, sampling and analysis programme either for a particular industry or district Sewerage System. Chapter 14 is particularly useful with respect to sampling and analytical methods.

The following gives more detailed examples of various, particularly manual, sampling methods:

Auditing self monitoring programmes

The programme should be checked initially by visual observation. The sampling place, frequency of samples, type of sampler being used and the laboratory or methods of analysis being used should be verified.

In addition to the visual observation duplicate samples should be taken and analysed by a separate laboratory.

Auditing laboratory results

The audit is carried out by taking a duplicate sample and having the analyses carried out by separate laboratories or utilising a blind duplicate (separate sample identification but the same sample) being analysed by the same laboratory.

As with all sampling and analysis, and depending on the policy of the Council, this work will be to the cost of the person discharging.

5.4.2 Sampling methodology

Once the need for sampling has been determined there is then a need to determine an appropriate sampling programme that covers the following issues:

- (a) Sampling location;
- (b) Method of sampling;
- (c) Frequency, number and timing of samples;
- (d) Sample preservation, transportation and storage;
- (e) Who is to sample and analyse the wastewater;
- (f) Sample containers
- (g) Sample identification and records;
- (h) Sample transport; and
- (i) Reporting procedure, timings and format.

The details for the above are covered in the New Zealand Municipal Wastewater Monitoring Guidelines. More specific information relating to Trade Waste is as follows:

Sampling location

In all cases when selecting sampling locations, site health and safety implication should be considered. The sampling location should be the first manhole or other Access Point upstream of the Point of Discharge, unless, because of poor mixing or some other reason, a location giving more representative samples can be found.

The sampling location should be kept clean by e.g. removing scale, Sewage Sludge, bacterial film from the walls of the sampling point.

If turbulent flow conditions do not exist at the sampling location they should be induced by restricting the flow, for example with a baffle or weir. The restriction should be made in such a way that sedimentation upstream of the restriction does not occur.

The sampling intake point should always be located downstream of the restriction. The inlet of the sampling equipment should preferably face the direction of flow, but may face downstream if too many blockages result. If mixing is good just upstream of the obstacle, then the intake can be located there, taking care that sediment is not sampled and ensuring that the intake remains below liquid level.

As a general rule, the sampling point should be 1/3 of the depth below the surface of the discharge.

Method of sampling

The method of sampling chosen will vary to suit information needs, the nature of the discharge and available sampling locations. Where sampling is required there are a range of methods, both manual and automated, available including:

- (a) "Spot" or "grab" sampling;
- (b) Composite sampling e.g.:
 - (i) Constant time - constant volume;
 - (ii) Constant time - volume proportional to flow increment;
 - (iii) Constant time - volume proportional to flow rate;
 - (iv) Constant volume - time proportional to flow volume increment.

The method of sampling should be agreed with the Discharger.

Sampling programme

The objective of a sampling programme often dictates when and how a sample is collected. When sampling Trade Waste, allowance should be made for the following sources of variation in quality:

- (a) Diurnal variations (i.e. within day variability);
- (b) Variations between days of the week;
- (c) Variations between seasons (if applicable).

Sample containers

The laboratory responsible for analysing the samples should be consulted about the type of container that should be used for sample collection and subsequent sample, storage and transportation.

Sample identification and records

A printed form for the sampling report should as a minimum include at least the following information:

- (a) Name of the trade Premises;
- (b) Trade Waste consent number;
- (c) Sampling point;
- (d) Date, start and stop of sampling;
- (e) Time, start and stop of sampling;
- (f) Duration of the sampling period;
- (g) Details of the sampling method;
- (h) Preservation method;
- (i) Details of any field tests;
- (j) Name of the person who carried out the sampling;
- (k) Information required for a complete chain of custody.

Transportation of samples

- (a) Samples may include infectious substances;
- (b) Segregation of packages of dangerous goods for road transport is necessary;
- (c) Sewage is classified in the Land Transport Rule Dangerous Goods 2005 Rule 45001 as Class 6.2 - infectious substance and any be carried by road and air transport as a diagnostic specimen in limited amounts;
- (d) By road the maximum volume of liquid in any one package should not be greater than 5 litres. By air the limit per package is 4 litres;
- (e) Containers shall be sufficiently robust to remain intact and continue to contain goods safely and without leaking for normal conditions of handling and loading;
- (f) Three layers of packaging shall be used;
- (g) Primary containers and one other layer of packaging shall be leak-proof;
- (h) Ensure that you have filled out the appropriate documentation;
- (i) Check with the laboratory that you are using, that they supply containers that meet the required standards.

Reporting procedure, timings and format

Sample results should be reported to the Council or their agent and the Discharger as soon as they are available. The format for the reporting should be agreed between the laboratory and the Council or their agent and the Discharger.

It is important that Dischargers are rapidly made aware of results so as they can better investigate and remedy and non-compliances observed.

Electronic formats for reports to the Council or their agent may prove useful for inclusion into databases or for producing summaries of multiple reports.

There are many publications which may assist in the development of a sampling programme. These include:

- ⇒ AS/NZS 5667: water quality - sampling.
 - Part 1: 1998 guidance on the design of sampling programmes, sampling techniques and the preservation and handling of samples.
 - Part 10: 1998 guidance on sampling of wastewaters.
- ⇒ BS 6068: water quality.
 - Part 6: Sampling.
 - Section 6.10: 1993 guidance on sampling of wastewaters.
- ⇒ BS EN 25667-1: 1994 water quality. Sampling. Guidance on the design of sampling programmes. BS 6068-6.1: 1981
- ⇒ BS EN25667-2: 1993 water quality. Sampling. Guidance on sampling techniques. BS 6038-6.2: 1981
- ⇒ BS EN 5667-3: 2003 water quality. Sampling. Guidance on the preservation and handling of water. BS 6068-6.3: 2003 samples.
- ⇒ New Zealand Municipal Wastewater Monitoring Guidelines.

G 5.4.3 Tankered waste

Tankered wastes are conveyed to the Council reception point by the use of a vehicle require Consent. By definition house buses and motor homes are excluded. Tankered Waste can be collected from a variety of sources:

Grease traps

Grease traps are used for the removal of grease prior to discharge into the reticulation system. The waste removed from these grease traps will be high in fats and suspended solids. Normally the Tankered Waste from grease traps would not be allowed to be discharged into the system without further Pre-treatment.

If the treatment system that follows after the discharge point is able to cope with the shock loads and removal of contaminants, then discharge may be allowed.

Septic tanks

Septic tank waste collected solely from domestic Premises is generally accepted for discharge at permitted points. If the treatment plant is sensitive to shock loads or has a resource consent condition relating to objectionable odour then Pre-treatment may be required.

Oil interceptors

These are designed to remove liquid oils from the waste stream. Normally Tankered Waste collected from oil interceptors would not be allowed to be discharged into the system.

Stock truck effluent disposal sites

These sites have been developed for the disposal of the wastes collected in the tanks on stock trucks.

Acceptance of this waste will require investigation into the effects of this waste on the treatment and disposal system.

Motor caravan effluent

This comprises sewage collected from motor caravans and generally has chemical additives. The council has motorhome disposal points connected to strategic locations throughout the reticulation system. NZS 5464 relates to the self-containment of motor caravans.

G 5.4.4 Disinfected/super chlorinated water

Consultation with the Otago Regional Council is required.

Refer to section 12.11.2. in the Regional Plan: Water (dated January 2004) and section 10.5.3 of the Regional Plan: Coast (dated September 2001).

G 6.3 Charges and payments***Charging principles***

Fees and charges payable to Council for Trade Waste acceptance are allowed for under s.150 of the LGA.

The procedure followed in this Bylaw is to specify in Schedule 1 D: Trade Waste Charges, the categories which Council will, or may, charge under the tenure of the Bylaw.

Schedule 1 D

Includes a wide range of charges, some of which may be currently in use. Once listed in Schedule 1D, the Council can then set the actual fee and/or charge (i.e. dollar amount) on an annual or other basis through their special consultative procedures i.e. LTCCP or annual planning process. This procedure avoids the need for a Bylaw change when Council wishes to change a particular fee or charge. Furthermore, this procedure allows Council to include in Schedule 1D a fee or charge type it may wish to impose in the future, but for which it is not yet able to charge. This for example allows for a Bylaw to include for a future Trade Waste charge relating to a future wastewater treatment plant upgrade and initially set it at \$0.00 pa, then initiate the actual dollar charge once the upgrade is complete.

Recovery of not more than reasonable costs

In determining all fees and charges, the principle of s.150(4) of the Act is the one under which calculations shall be made. That is the Council shall not recover more than the reasonable costs that it (or an adjoining one, if a joint wastewater system) incurs for the matter for which the fee is charged.

In some cases the Council may have deemed a public good component in the calculation and in that case, the fee or charge will be less than the maximum that could otherwise be charged by the Council.

Rebates for Trade Premises (as included in Administrative Charges of Schedule 1D, Category A8) allows for the reduction and fees that are otherwise prescribed by the Council. Such rate charges are included in Table G3.

The Council should have due regard for seasonal variations within an industry.

Table G3 – Rates Charges

Targeted (sewerage or drainage) charge	A separate charge for sewerage which is uniform within defined sectors of the Council
General rate	Sewage charges included in property rates
WC levy ("pan charge")	A levy on each toilet or urinal in each Premises
Special rates for loan charges	Additional rates for servicing loans raised for the purposes of constructing or improving the Council's Sewerage System.

For Trade Waste charges a cost causative approach is used in determining both capital and annual operating and maintenance charges for the actual Trade Waste itself, that is Category B in Schedule 1D, the appropriate form of calculation is:

- (a) To first establish the key components that are to be charged, that is the cost causative component; and
- (b) Secondly the proportion between Trade Waste, and then individual Trade Waste Dischargers, and the local authority's domestic and future allowance.

For secondary wastewater treatment it is common for example, to charge for the following cost causative agents volume and/or flow (but ensuring there is no double-up), suspended solids and organic strength either as BOD₅ or COD.

Charges for capital apportionment

These are normally set on a *pro rata* apportion basis, that is the total capital amount divided by the total cost causative component (volume, suspended solids, BOD₅, etc). Alternatively, situations may arise where a plant extension for a large Trade Waste Discharger could be more fairly charged on a marginal capital costing basis.

There is also the provision in the suggested charges for a capital up-front payment. This can be applied where the Council needs to expand facilities for an individual Trade Waste discharge. Such a payment could be made as a condition of a new Trade Waste consent to receive that particular discharge. This procedure requires agreement between the Council and the Trade Waste Discharger(s) involved.

Currently the Council does not charge for capital apportionment, although it has done in the past (e.g. Green Island Borough Council).

Charges for annual operating and maintenance costs

These (excluding a capital payment component) are most appropriately set on a uniform or *pro rata* basis as the larger part of operating costs are in direct proportion to wastewater volume and contaminant load, e.g. electricity costs for pumping and wastewater aeration in secondary treatment plants, sludge treatment and disposal.

Depreciation

Depreciation is now required to be fully funded by local bodies. This is an operating charge and relates to the asset capital value. From the NZ Waste Strategy full cost recovery is to be achievable over a period acceptable to the local community.

This means that at some point full depreciation on Sewerage Systems will need to be recovered and may become part of the Trade Waste charges. Depreciation would be applied instead of charges for capital apportionment.

G 6.4 Authorised officers

All the powers to constitute Bylaws and enforce the Bylaw come under the Act. The power to make Trade Waste Bylaws is given in s.146 with special requirements contained in s.148. Section 150 gives the power to charge fees. Sections 171 to 174 cover the powers of entry. The discharge of sewage and Trade Waste is covered in Sections 195 and 196 respectively. Penalties are set out in s.242.

A Trade Waste Officer needs to be a warranted enforcement officer of Council per s.177 of the Act. This will allow the Trade Waste Officer to enter onto private land to inspect and take samples. The warrant is required to be delegated by a full Council meeting and cannot be delegated to a committee of Council even if that committee comprises all members of the Council.

The warrant shall be signed under seal, and also dated.

Section 179 enables the Council to engage contractors to undertake enforcement, inspection and administrative duties. Paragraph 32 of Schedule 7 of the Act contains the Council's power to delegate enforcement, inspection and administration powers.

Entry power of warrant

Under normal circumstances an officer of Council would obtain permission from the Trade Waste consent holder to enter the Premises for the inspection and sampling purposes. For normal compliance operations this is satisfactory. If it is likely that enforcement action may need to be taken then the warrant should be produced on entry to the Premises even if entry is with the permission of the Trade Waste consent holder.

The power of entry for enforcement purposes is covered in s.172 of the Act.

Entry onto private Premises may be withheld under the Health and Safety in Employment Act.

If entry to Premises is withheld then forced entry should not be undertaken, the police should be contacted to accompany the enforcement officer onto the site.

G 6.5 Transfer or termination of rights and responsibilities

These clauses are intended to encourage a new owner to appreciate their responsibilities with regards to discharges.

Discharges of Domestic Sewage and Trade Waste into Councils Sewage drain in accordance with the Council's Bylaw must also comply with any other relevant legislation such as the RMA or Building Act. However, the Local Authority is not absolved from liability for the discharge of a contaminant from a Council Sewerage System into the environment in contravention of the RMA (s.195 of the LGA). The Council's means of control is to regulate Discharges into their Sewerage System by use of Council Bylaws.

Trades range from the simple to complex, trade discharges therefore vary from requiring no regulation for low risk trade Premises; to requiring complex regulation for high risk trade Premises; and prohibition for unacceptable Trade Waste discharges that would put the Council's Sewerage System and environmental liability at extreme risk.

The Bylaw therefore mandates the ability of the Council to permit discharge from a no/low risk trade Premises as of right, whilst enabling the Council to identify the trade Premises that pose a risk requiring discharge conditions, or prohibit trade Premises discharges that put the Council's Sewerage System or environmental liability at an unacceptable extreme risk.

To this end the Bylaw enables the Council to classify trade discharges into a:

- (a) Permitted classification (for which no consent is required but which must be registered); or
- (b) Conditional classification (for which an application and consent is required); or
- (c) Prohibited classification (for which the discharge is not consentable).

As already stated, in all cases no permission is given to breach any of the Trade Waste Bylaw conditions.

Guidance as to which classification to apply to trade Premises is given by linking the discharge classification to the Bylaw's schedules of discharge characteristics so that for a:

- (a) Permitted classification: the discharge should not exceed, nor need any conditions to meet, the Bylaw's Schedule 1A
- (b) Conditional classification: the discharge needs conditions to meet, and not exceed the Bylaw's Schedule 1A Permitted Discharge Characteristics, or remove any of the Bylaw's Schedule 1C Prohibited Characteristics (for which an application and consent is required); or a
- (c) Prohibited classification: the discharge has prohibited characteristics as contained in the Bylaw's Schedule 1C Prohibited Characteristics (the discharge is not consentable).

Note that by having a Trade Waste Bylaw in place, the Council, in any case, is not obliged to accept any Trade Waste discharges that risk damaging the Council's Sewerage infrastructure or put at risk the Council's RMA consent liabilities for their Sewerage System's discharges into the environment.

G 6.7 Offences

Every person commits an offence who breaches the Trade Waste Bylaws, and is liable on summary conviction to a fine not exceeding \$200,000.00 (s.239, s.242[5] of the Act). The Act also provides for the implementation of infringement notices and infringement fees (s.243 to s.246). For these to be implemented the necessary regulations under s.259(a) need to be passed.

Discharge offences under the Resource Management Act are applicable.

G SCHEDULE 1A

PERMITTED DISCHARGE CHARACTERISTICS

G1 A.1 Discharge characteristics

Acceptable criteria

The tables in this section and the contaminant concentrations shown are indications of what is acceptable. The acceptance criteria/characteristics are generally sourced from the ARMCANZ/ANZECC Guidelines for Sewerage Systems - Acceptance of Trade Waste (industrial waste).

Local acceptance criteria may need to be developed dependant on the wastewater plant type and the treated wastewater disposal Consent, locality and conditions.

Factors affecting acceptance conditions

The following factors should be considered when developing local accepted criteria:

- (a) Volume, concentration, contaminant hazard assessment of the Trade Waste;
- (b) Effectiveness and reliability of industry-based Pre-treatment, if any. Reliability includes a given industries track record in operating a pre treatment plant;
- (c) Effectiveness and reliability of the Council's Sewerage collection, treatment and disposal of facilities;
- (d) Treated wastewater disposal location, e.g. high energy coastal outfall, inland waterways, irrigated land disposal system, wetlands;
- (e) Reuse of treated wastewater and/or Biosolids;
- (f) Sludge disposal method by both industry and the Council. Disposal to a Class A landfill will require less control over the resultant sludge than disposal to a Class B landfill or reuse as Biosolids;
- (g) Occupational health and safety requirements.

The Council shall take into consideration the combined effects of wastewater discharges and may make any modifications to the following acceptance Characteristics for individual discharges the Council believes are appropriate.

G 1 A.2 Physical Characteristics

1A.2.1 Flow

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
a) The 24-hour flow volume shall be less than 5m ³ . b) The maximum instantaneous flow rate shall be less than 2.0 L/s.	Flows larger than the Guideline values should be a Conditional Trade Waste Consent. Conditional Consents will be dependant on the Contaminant concentration/mass load.

1A.2.2 Temperature

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>The temperature shall not exceed 40°C.</p>	<p>Higher temperatures:</p> <ul style="list-style-type: none"> - Cause increased damage to Sewer structures; - Increase the potential for anaerobic conditions to form in the wastewater; - Promote the release of gases such as H₂S and NH₃ (can adversely affect the safety of operations and maintenance personnel); and - Reflect poor energy efficiency.
	<p>It should be noted that this temperature has been reduced from 50°C to come into line with the ARMCANZ/ANZECC Guidelines for Sewerage Systems.</p>
	<p>A lower maximum temperature may be required for large volume discharges.</p>

1A.2.3 Solids

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>a) Non-faecal gross solids shall have a maximum dimension that shall not exceed 15mm.</p>	<p>Gross solids can cause Sewer blockages.</p> <p>In case of Conditional Trade Waste Consents, fine screening may be appropriate.</p> <p>High suspended solids contents can cause Sewer blockages and overload the treatment processes. Where potential for such problems is confirmed, a lower limit appropriate to the risk may be set.</p> <p>The ARMCANZ /ANZECC Guidelines recommend a limit of 600 g/m³.</p>
<p>b) The suspended solids content of any wastewater shall have a maximum concentration that shall not exceed 600 g/m³. For significant industry this may be reduced.</p>	
<p>c) The settleable solids content of any wastewater shall not exceed 25mL/L.</p>	

d) The total dissolved solids concentration in any wastewater shall be subject to the Approval of the Council, having regard to the volume of the waste to be discharged, and the suitability of the Sewerage System (including any wastewater treatment plant) to accept such waste.

e) Fibrous, woven, or sheet film or any other materials which may adversely interfere with the free flow of wastewater in the Sewerage System (including any wastewater treatment plant) shall not be present.

High total dissolved solids reduce effluent disposal options and may contribute to soil salinity. Where potential for such problems exists, a limit of 10,000 g/m³ may be used as a guideline.

1A.2.4 Oil and grease

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>a) There shall be no free or floating layer.</p> <p>b) A Trade Waste with mineral oil, fat or grease unavoidably emulsified which in the opinion of the Council is not biodegradable, shall not exceed 200 g/m³ as petroleum ether extractable matter when the emulsion is stable at a temperature of 15°C, and when the emulsion is in contact with and diluted by a factor of 10 by raw wastewater, throughout the range of pH 6.0 to pH 10.0.</p> <p>c) A Trade Waste with oil, fat or grease unavoidably emulsified, which in the opinion of the Council is biodegradable, shall not exceed 500 g/m³ when the emulsion is stable at a temperature of 15°C and when the emulsion is in contact with and diluted by a factor of 10 by raw wastewater throughout the range of pH 4.5 to pH 10.0.</p> <p>d) Emulsified oil, fat or grease shall not exceed 100 g/m³ as petroleum ether extractable matter when the emulsion is unstable at a temperature of 15°C and when the emulsion is in contact with and diluted by a factor of 10 by raw wastewater throughout the range pH 4.5 to pH 10.0.</p>	<p>Oils and greases can cause Sewer blockages, may adversely affect the treatment process, and may impair the aesthetics of the receiving water.</p> <p>Where the wastewater treatment plant discharges to a sensitive receiving water, lower values should be considered.</p> <p>If the Council only has screening and/or primary treatment prior to discharge, it is recommended that oil and grease be reduced to 100 g/m³.</p> <p>In the terms of oil and greases, biodegradable refers to the bio-availability of the oil and greases and the biochemicals thereby produced, and means the oil and grease content of the waste decreases by 90% or more when the wastewater is subjected to a simulated wastewater treatment process which matches the Council treatment system.</p> <p>If quick break detergents are being used, it should be ensured that proper separation systems are being used by the Consent Holder. If not, oil will reappear in drainage systems as a free layer.</p>

1A.2.5 Solvents and other organic liquids

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>There shall be no free layer (whether floating or settled) of solvents or organic liquids.</p>	<p>Some organic liquids are denser than water and will settle in Sewers and traps.</p>

1A.2.6 Emulsions of paint, latex, adhesive, rubber, plastic

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>Where such emulsions are not treatable these may be discharged into the Sewer subject to the total suspended solids not exceeding 600 g/m³.</p> <p>The Council may determine that the need exists for Pre-treatment of such emulsions if they consider that the wastewater containing emulsions unreasonably interferes with the operation of the Council's wastewater treatment plant, e.g. reduces % UVT (ultra violet transmission).</p> <p>Such emulsions of both treatable and non-treatable types, shall be discharged to the Sewer only at a concentration and pH range that prevents coagulation and blockage at the mixing zone in the public Sewer.</p>	<p>'Treatable' in relation to emulsion wastewater, means the Total Organic Carbon content of the waste decreases by 90% or more when the wastewater is subjected to a simulated wastewater treatment process that matches the Council treatment system.</p> <p>Emulsions vary considerably in their properties and local treatment works may need additional restrictions depending on the experience of the specific treatment plant and the quantity of emulsion to be treated.</p> <p>Emulsion may colour the Council's treatment plant influent such that % UVT is unacceptably reduced.</p> <p>Emulsions will coagulate when unstable and can sometimes cause Sewer blockage. Emulsions are stable when dilute or in the correct pH range.</p>

1A.2.7 Radioactivity

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
Radioactivity levels shall not exceed National Radiation Laboratory Guidelines.	Refer National Radiation Laboratory <i>Code of safe practice for the use of unsealed radioactive materials</i> NRL C1.

1A.2.8 Colour

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
No waste shall have colour or colouring substance that causes the discharge to be coloured to the extent that it impairs wastewater treatment processes or compromises the final effluent discharge Consent.	<p>Colour may cause aesthetic impairment of receiving waters, and adverse affects on lagoon treatment processes and ultra-violet disinfection.</p> <p>Where potential for such problems exists, a level of colour that is rendered not noticeable after 100 dilutions may be used as a guideline. Where UV disinfection is used special conditions may apply.</p>

Inhibitory Substances

Bylaw Requirements	
Should any characteristics of a discharge be found to inhibit the performance of the wastewater treatment process, such that the Council is significantly at risk or prevented from achieving its environmental statutory requirements, then the Council reserves the right to amend the corresponding Consent summarily.	

1A.3 Chemical Characteristics

In the setting of restrictions for Chemical Characteristics the Council shall be mindful of the production or noxious waste streams from some tests, such as chemical oxygen demand and total Kjeldahl nitrogen. The need to set such restrictions and therefore the requirement to undertake the associated testing shall be determined by the Council.

1A.3.1 pH value

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>The pH shall be between 6.0 and 9.0 at all times.</p>	<p>Extremes in pH:</p> <ul style="list-style-type: none"> - Can adversely affect biological treatment processes; - Can adversely affect the safety of operations and/or maintenance personnel; - Cause corrosion of Sewer structures; and - Increase the potential for the release of toxic gases such as H₂S and HCN. <p>Relaxation of these limits to 5.5 and 11.0 is acceptable for low volume Premises which discharge into a large flow. Significant industries may need to be restricted to limits between 6.0 and 8.5.</p>

1A.3.2 Organic Strength

Bylaw requirements	Commentary from NZS 9201: Part 23: 2004
<p>The Biochemical Oxygen Demand (BOD₅) of any waste may require to be restricted where the capacity for receiving and treating BOD₅ is limited. A BOD₅ restriction may be related to Mass Limits</p> <p>Where there is no Council treatment system for organic removal the BOD₅ shall not exceed 1000g/m³. For significant industry this may be reduced to 600g/ m³.</p>	<p>The loading on a treatment plant is affected by Biochemical Oxygen Demand (BOD₅) rather than Chemical Oxygen Demand (COD). For any particular waste type there is a fixed ratio between COD and BOD₅. For domestic wastewater it is about 2.5:1 (COD: BOD₅), but can range from 1:1 to 100:1 for Trade Waste.</p> <p>Therefore BOD₅ is important for the treatment process and charging, but because of the time taken for testing, it is often preferable to use COD for monitoring. However, the use of COD testing shall be balanced by the possible environmental effects of undertaking such tests due to the production of chromium and mercury wastes.</p> <p>Where a consistent relationship between BOD₅ and COD can be established the discharge may be monitored using the COD test.</p> <p>If the treatment plant BOD₅ capacity is not limited, and sulphides are unlikely to cause problems, there may be no need to limit BOD₅. High COD may increase the potential for the generation of sulphides in the wastewater.</p> <p>A BOD₅ limit which is too stringent may require the installation of Pre-treatment systems by some Consent Holders, imposing unnecessary costs because the most cost effective treatment method may be the Council's treatment plant.</p> <p>The concentration and mass loads of BOD₅ may be set to reflect the Council's treatment plant capacity: e.g. ARMCANZ/ANZECC Guidelines for Sewerage Systems use a concentration of 600 g/m³.</p>

1A.3.3 Maximum concentrations

Bylaw Requirements	Commentary from NZS 9201: Part 23: 2004
<p>The maximum concentrations permissible for the chemical characteristics of an acceptable discharge are set out in the following tables:</p> <p>Table 1A.1 and G4 - General Chemical Characteristics</p> <p>Table 1A.2 and G5 - Heavy Metals</p> <p>Table 1A.3 and G6 - Organic Compounds and Pesticides</p>	<p>Where appropriate, maximum daily limits (kg/day) for Mass Limit Permitted Discharges may also be given.</p> <p>The maximum concentration permissible should not exceed that achievable from the appropriate best available technology.</p> <p>Concentration limits should also be set to ensure the health and safety of Council personnel, the integrity of the collection systems and the treatment process.</p> <p>Mass Limits are more complex to administer. Continuous flow measurement is required.</p>

Table G 4: 1A.1-General Chemical Characteristics

Characteristic	Maximum concentration (g/ m ³)	Reason for limit
MBAS (Methalyene blue active substances)	500	MBAS is a measure of anionic surfactants. High MBAS can: <ul style="list-style-type: none"> - Adversely affect the efficiency of activated wastewater sludge plants; - Impair the aesthetics of receiving waters. <p>For wastewater treatment plants that suffer from the effects of surfactants the Maximum Concentration could be reduced significantly, e.g. Sydney Water utilise a level of 100 /m³.</p>
Ammonia (measured as N)		High ammonia: <ul style="list-style-type: none"> - May adversely affect the safety of operations and maintenance personnel; and - May significantly contribute to the nutrient load to the receiving environment.
- free ammonia	50	
- ammonium salts	200	
Kjeldahl Nitrogen	150	High Kjeldahl nitrogen may significantly contribute to the nutrient load of the receiving environment. A value of 50 g/m ³ should be used as a guideline for sensitive receiving waters.
Total Phosphorus (as P)	50	High phosphorus may significantly contribute to the nutrient load of the receiving environment. A value of 10 g/m ³ should be used as a guideline for sensitive receiving waters.
Sulphate (measured as SO ₄)	500	Sulphahte: <ul style="list-style-type: none"> - May adversely affect the Sewer structures; and - May increase the potential for the generation of sulphides in the wastewater if the Sewer is prone to becoming anaerobic.
	1500 (with good mixing)	
Sulphite (measured as SO ₂)	15	Sulphite has potential to release SO ₂ gas and thus adversely affect the safety of operations and maintenance personnel. It is a strong reducing agent and removes dissolved oxygen thereby increasing the potential for anaerobic conditions to form in the wastewater.
Sulphide – as H ₂ S on acidification	5	Sulphides in wastewater may: <ul style="list-style-type: none"> - cause corrosion of Sewer structures, particularly the top non-wetted part of a Sewer; - generate odours in Sewers which could cause public nuisance; - release the toxic H₂S gas which could adversely affect the safety if operations and maintenance personnel. <p>Under some of the conditions above sulphide should be < 2.0 g/m³.</p>

Characteristic	Maximum concentration (g/ m ³)	Reason for Limit
Chlorine (measured as Cl ₂)		
Free chlorine	3	Chlorine: <ul style="list-style-type: none"> - Can adversely affect the safety of operations and maintenance personnel; and - Can cause corrosion of Sewer structures. ARMCANZ/ANZECC Guidelines for Sewerage Systems utilize a figure of 10 g/m ³
Hypochlorite	30	
Dissolved aluminium	100	Aluminium compounds, particularly in the presence of calcium salts, have the potential to precipitate on a scale that may cause a Sewer blockage.
Dissolved iron	100	Iron salts may precipitate and cause a Sewer blockage. High concentrations of ferric iron may also present colour problems depending on local conditions.
Boron (as B)	25	Boron is not removed by conventional treatment. High concentration in wastewater may restrict irrigation applications. Final wastewater use and limits should be taken into account.
Bromine (as Br ₂)	5	High concentrations of bromine may adversely affect the safety of operations and maintenance personnel.
Fluoride (as F)	30	Fluoride is not removed by conventional wastewater treatment, however pre- treatment can easily and economically reduce concentrations to below 20 g/m ³ .
Cyanide - weak acid dissociable (as CN)	5	Cyanide may produce toxic atmosphere in the Sewer and adversely affect the safety of operations and maintenance personnel.

Table G 5: 1A.2- Heavy metals

METAL	MAXIMUM CONCENTRATION (g/m³)
Antimony	10
Arsenic	5
Barium	10
Beryllium	0.005
Cadmium	0.5
Chromium (trivalent and hexavalent)	5
Cobalt	10
Copper	10
Lead	10
Manganese	20
Mercury	0.05
Molybdenum	10
Nickel	10
Selenium	10
Silver	2
Thallium	10
Tin	20
Zinc	10

Heavy metals have the potential to:

- a) Impair the treatment process;
- b) Impact on the receiving environment; and
- c) Limit the reuse of wastewater sludge and effluent.

Where any of these factors are critical it is important that local acceptance limits should be developed.

The concentration of chromium includes all valent forms of the element. Chromium (VI) is considered to be more toxic than chromium (III), and for a discharge where chromium (III) makes up a large proportion of the characteristic, higher concentration limits may be acceptable. Specialist advice should be sought.

Metals will be tested as total, not dissolved. If sludge is used as a Biosolid then metal concentration/mass are important such that the Biosolids Guidelines are met.

For recommended mass loads of metals refer to the ARMCANZ/ANZECC (1994) *Guidelines for Sewerage Systems: Acceptance of trade Wastes (industrial waste) 12*.

Table G 6: 1A.3- Organic Compounds and pesticides

COMPUND	MAXIMUM CONCENTRATION (g/m ³)	REASON FOR LIMITS
Formaldehyde (as HCHO)	50	Formaldehyde in the Sewer atmosphere can adversely affect the safety of operations and maintenance personnel.
Phenolic compounds (as phenols) - <i>excluding chlorinated phenols</i>	50	Phenols may adversely affect biological treatment processes. They may not be completely removed by conventional treatment and subsequently impact on the environment.
Chlorinated phenols	0.02	Chlorinated phenols can adversely affect biological treatment processes and may impair the quality of the receiving environment.
Petroleum hydrocarbons	30	Petroleum hydrocarbons may adversely affect the safety of operations and maintenance personnel.
Halogenated aliphatic compounds	1	Because of their stability and chemical properties these compounds may: <ul style="list-style-type: none"> - adversely affect the treatment processes; - impair the quality of the receiving environment; - adversely affect the safety of operations and maintenance personnel.
Monocyclic aromatic hydrocarbons	5	These compounds (also known as benzene series) are relatively insoluble in water, and are normally not a problem in Trade Waste. They may be carcinogenic and may adversely affect the safety of operations maintenance personnel.
Polycyclic (or polynuclear) aromatic hydrocarbons (PAHs)	0.05	Many of these substances have been demonstrated to have an adverse effect of the health of animals. Some are also persistent and are not degraded by conventional treatment processes.
Halogenated aromatic hydrocarbons (HAHs)	0.002	Because of their stability, persistence and ability to bioaccumulate in animal tissue these compounds have been severely restricted by health and environmental regulators.
Polychlorinated biphenyls (PCBs)	0.002	
Polybrominated biphenyls (PBBs)	0.002 each	

Pesticides (general) <i>includes insecticides, herbicides, fungicides</i> <i>excludes organophosphate, organochlorine and any pesticides not registered for use in New Zealand</i>	0.2 in total	Pesticides may: <ul style="list-style-type: none"> - adversely affect the treatment processes; - impair the quality of the receiving environment; - adversely affect the safety of operations and maintenance personnel.
Organophosphate pesticides	0.1	-

G SCHEDULE 1C

PROHIBITED CHARACTERISTICS

Some contaminants listed in Schedule 1A may be present in the incoming water supply provided by the Council. The levels required by the Bylaw should not be more severe than the levels present in the water supply provided by the Council.