



# **NZTIWF TECHNICAL GROUP**

## **Paper #001**

### **Grease Trap Guidelines for NZ Trade Waste Officers**

2017 Edition - Version 1

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## **INTRODUCTION**

All premises that are likely to produce fats, oils or grease must have a pre-treatment device (a grease trap). This device must be sized, installed and maintained appropriately to prevent fats, oils and grease entering council networks and or the environment.

Incorrect management of grease traps leads to blockages in council networks which can cause overflows in the sewer system, increased costs in network maintenance and pollution issues.

This document has been written to provide guidelines to NZ Trade Waste Officers for all aspects of managing grease traps.

## **ACKNOWLEDGEMENTS**

This Guide has been produced from information supplied by the following organisations:

- Timaru District Council
- Rotorua Lakes District Council
- Wellington Water
- Hutt City Council
- New Plymouth District Council
- Sydney Water

## **Definitions**

For the purposes of this document the term “Council” may be any of the following:

- An approved Trade Waste Officer.
- A person / contractor authorised by the Territorial Local Authority to monitor grease traps.

The term “Servicing” refers to the change of replacement parts (as per the manufacturer’s recommendations) and or the removal of some or all of the contents of a trap.

## Grease Trap Sizing Guide for New Installations or Upgrades

The sizing criteria outlined on this form is a guide only. Council will issue formal sizing requirements after a written *Trade Waste Application FORM* has been received.

There are two methods that we use to determine the appropriate size of a grease trap. Both are based on ensuring the wastewater has a minimum retention time of one hour.

### Method 1. Fixture Unit Rating:

Add the fixture unit ratings for all fixtures that feed into the grease trap and multiply this by 100 L. Check where this calculated volume lies in the 'Calculated Grease Trap Size Range' in Table 2 below to determine the corresponding 'Recommended Grease Trap Size'.

**Table 1: Fixture Unit Ratings**

| Fixture          | Fixture Unit Rating | Fixture             | Fixture Unit Rating |
|------------------|---------------------|---------------------|---------------------|
| Steamer          | 1                   | Kitchen sink        | 3                   |
| Wok (per burner) | 1                   | Double kitchen sink | 3                   |
| Hand basin       | 1                   | Pot sink            | 5                   |
| Rinse sink       | 3                   | Double pot sink     | 5                   |

**Table 2: Recommended Grease Trap Size**

| Max. No. of Fixture Units | Calculated Grease Trap Size Range | Recommended Grease Trap Size |
|---------------------------|-----------------------------------|------------------------------|
| 7                         | 100L - 700L                       | 500L                         |
| 13                        | 701L - 1300L                      | 1000L                        |
| 17                        | 1301L - 1700L                     | 1500L                        |
| 26                        | 1701L - 2600L                     | 2000L                        |

Example:

If a restaurant kitchen has: 1 Double Pot Sink (5 FU), 1 Single Pot Sink (5 FU), and one Hand Basin (1 FU), the max. hourly flow that could be expected can be calculated as follows:  
 $11\text{FU} \times 100\text{L} = 1100\text{L}$   
 Therefore the recommended size is 1000L (From Table 2).

### Method 2. Peak Flow Rates

Where the hourly peak wastewater flow rate is known this can be used to determine the recommended grease trap size. Compare the peak hourly flow with the 'Calculated Grease Trap Size Range' in Table 2 to determine the corresponding 'Recommended Grease Trap Size'.

Example:

The peak flow rate from a kitchen area is known to be 0.5L/sec. The recommended grease trap size is calculated as follows:  
 $0.5\text{L/sec} \times 3600\text{sec/hour} = 1800\text{L/hour}$   
 Therefore the recommended size is 2000L (From Table 2).

## Minimum Sizes and Exceptions

Minimum size shall be 500 litres (passive traps) or 500 litre equivalent for mechanical grease removal systems or grease converters. In some situations smaller grease traps (due to space restrictions) may be permitted, however these must be approved in writing by the council. Should a smaller grease trap be approved, council will require that this is the largest trap possible for the available space and will offset the smaller size with an increased frequency of service.

Exemptions to these minimum levels for sizing should only be by **prior approval** with the local councils Trade Waste Officer and each one should be judged on a case-by-case basis.

## Installation Considerations

When installing grease traps there are a couple of points to consider:

- Reasonable access for Vacuum Trucks for servicing
- Clear access to the trap for inspections and service
- Installation of a hose tap within 5-6m for cleaning
- Installation should be as close to the building as possible
- Installation must be prior to toilet connections

## Maintenance Frequencies and Usage Checks

Frequency of service should be based on usage and should be set by the Trade Waste Officer. Generally passive traps require servicing at least every 3 months. However it is the responsibility of the business to service their grease trap to ensure they do not exceed the maximum permitted levels. Grease converters and mechanical grease removal systems should be based on manufacturer's recommendations, but should be serviced by a qualified technician at least every 6 months. Consult the supplier for the best practice for that model.

When checking usage on passive traps to set maintenance frequencies it is recommended that a set unit of time is used to gauge fat or grease accumulation. For instance if a similar business has a 3 monthly cleaning regime on the same size trap then the trap should be inspected at a time frame between 9 to 10 weeks after the last clean to gauge remaining capacity in the trap. A good rule of thumb is to have at least 30% capacity still in the trap at the time of servicing, this allows spare capacity for peak periods to ensure that fats and grease are prevented from entering the network. So after 10 weeks in this example there should be well over 30% of the traps capacity still available.

When setting frequencies seasonal variations may need to be taken into account. For instance in an area that may have an influx of customers over summer months there may need to be a dual frequency setup – During Autumn and Winter a 3 monthly frequency may be adequate but over spring and summer it may need to be done every month or 6 weeks.

Exemptions to these minimum levels for servicing frequency should only be by **prior approval** with the local councils Trade Waste Officer and each one should be judged on a case-by-case basis.

Common examples of frequency exemptions would be sports clubs, or venues where limited cooking is done on site or may only be utilised a few times a year. In these cases a 6 monthly frequency may be more appropriate.

The council may require a review of the servicing frequency for the following reasons:

- The grease trap size is not adequate for the activity taking place on site.
- Sewer network blockages show a build up of fat in the sewer near the dischargers lateral.
- A sample of the grease trap discharge shows a FOG value above 500g/m<sup>3</sup>.
- The grease trap capacity for fats, oils and grease is exceeded.

### **Service Agreements**

Service Agreements are recommended to be in place between the waste generator and the service operator for all treatment devices and should be linked to the applicable Council Trade Waste Consent or data logging system to ensure that servicing is completed regularly.

### **Records**

Records should be kept of all Treatment devices – these should include location, device type, size, servicing frequency, servicing operator and generator number (if applicable).

If not using a national waste tracking system then records should also be kept of actual servicing dates. It is recommended that the above general information is kept in a suitable format for ease of reference.

If your council does use a national waste tracking system you should contact your administrator for methodology on how to use the system to track the maintenance of grease traps and other treatment devices in your area.

Inspections - for trap condition it is best to inspect when it is empty. Talk to your servicing operator they may be able to take a photo of the empty trap at the time of service. Integrity checks on concrete passive traps may be done whilst in operation using the Tap Method outlined later in this document.

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## **Grease trap integrity testing – Manual test method version 1.0**

### **Rod / Tap testing**

#### **Background**

This guide has been written to formalise local practice for testing the structural integrity of concrete grease traps, which can suffer erosion issues and accelerated failure. The breakdown of fatty materials captured in the grease traps commonly results in mildly acidic conditions leading to dissolution/erosion of the lime in the concrete and corrosion of steel components (e.g. baffles, lids and handles).

This degradation can result in an exposed aggregate type finish to the concrete work below the waterline along with holes in more advanced cases. Spotting these failures can be difficult due to the inability to see the bottom of the trap during normal usage though the failures are readily apparent when the trap is cleaned. Occasionally there are indications as to leakage such as low water levels in the trap however normal usage flows can at times temporarily mask this.

#### **Manual testing using a rod/tapper**

A simple way to carry out a check on the integrity of the concrete whilst the trap is in-use involves using a steel rod (6 to 10mm in diameter and around 1.2m long) as a “tapper”. The rod is used to lightly tap the base or walls of the trap aiming to feel for rough or uneven sections of concrete and for holes. Normally where there are holes the rod will go deeper (into the ground below). When a hole or holes is suspected there is a need to confirm via requiring the trap cleaned and then either inspected prior to refilling or photographed (ideally both) at the time of cleaning.

## **Quick Guide – Recommendations**

### **Grease traps**

#### Passive Trap

- 500L Minimum
- 3 monthly service minimum
- Service agreement

#### Mechanical Traps

- 500L equivalent minimum
- 6 monthly technician servicing
- Weekly and daily cleaning requirements by waste generator
- Collection drums for collected fats and oils
- Service agreement

#### Grease Converters

- 500L equivalent minimum
- Auto – Dosing Unit set to dose at appropriate time.
- Sufficient Enzyme Solution between servicing intervals
- 6 monthly servicing minimum by a trained technician
- Service agreement

### **Wash Pads**

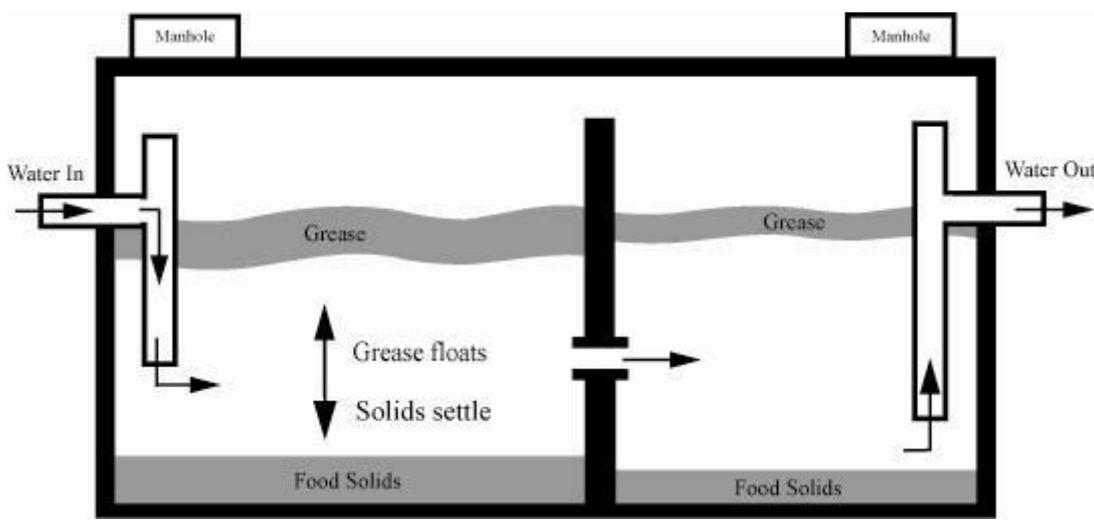
- 500L Oil Interceptor Minimum (1500L minimum for pads over 25m2)
- Grit Trap
- Backflow Device for Water Supply (potable water protection)
- 6 monthly minimum servicing frequency (oil interceptor)
- Specialist Disposal (oil recovery/recycle)
- Maximum Pad sizes for Stormwater reduction to sewer– roofing /first flush valves for larger sizes. Varies amongst councils.
- Regular Servicing of First Flush valves (if installed)
- Service Agreements

### **Stormwater Devices**

- Annual Servicing Minimum
- Sizing Based on Area and Treatment requirements - Consult local Stormwater Engineer
- Specialist Disposal requirements for Filter Mediums (Heavy Metals and Hydrocarbons)
- Consult specific product guides for servicing requirements of each device.
- Service Agreements

### Fuel Interceptors – Forecourts and fuelling stations.

- Connection to Storm Water networks
- Specialist disposal Facilities (oil/fuel recovery)
- Annual Servicing minimum (in a spill event it should be serviced as soon as possible)
- Service Agreements



**Figure 1 – Typical Passive Grease Trap**

# ADDITIONAL INFORMATION FOR RETAIL FOOD PREMISES

## INTRODUCTION

Wastes like cooking oil, grease and food solids are produced by food outlets and services throughout NZ every day. When this waste is discharged directly into our sewers it can block them, cause overflows, overload sewage treatment plants and cause major pollution problems.

This guide explains how retail food outlets and services can effectively dispose of greasy waste and obtain a Trade Waste Consent. It also includes tips for reducing the waste that goes down the sink.

**All businesses that prepare food should refer to this booklet, including:**

- Bakeries
- Butcheries
- Cafeterias and canteens
- Cafes and restaurants
- Caterers
- Kitchens in clubs, hospitals, hotels, motels, nursing homes, schools and other commercial operations
- Fishmongers
- Takeaway shops
- Food courts
- Small goods and wholesale businesses
- Delicatessens

## OBTAINING A TRADE WASTE CONSENT

**You must obtain a trade waste consent from Council before you discharge your wastewater to the sewer.**

A trade waste consent establishes the conditions under which food outlets and services can discharge waste to the sewer. The consent will help you determine what type of treatment (known as pre-treatment) to install so oil, grease and food solids are removed from wastewater. Grease traps, mechanical grease separators, grease converters and dry basket traps are common forms of pre-treatment for food outlets and services.

To apply for a consent please contact your local Council to obtain an application. The application may also be available on your Council webpage.

Consents are issued on the basis that wastewater pre-treatment equipment authorized by Council is installed before discharge occurs, along with contracts to have the equipment regularly cleaned and maintained. A licensed plumber will need to complete any alterations or pipe-work.

### **Who is responsible for on-site treatment equipment?**

The consent holder is responsible for ensuring the specifications, installation and maintenance of the pre-treatment equipment complies with the conditions in the consent.

## **PASSIVE GREASE TRAPS**

### **How it Works**

Passive Grease Traps are the most common type of pre-treatment device found at food premises. They are often found in the ground outside a kitchen's back door. These devices are typically made up of two or three chambers separated by baffles and filled with cold water. The cold water within the trap cools down any hot wastewater entering it, solidifying the greases which then float to the top. Any solid materials that are washed into the trap will settle to the bottom, forming sediment. Inspection ports on the outside of both the inlet and outlet allow samples to be taken to determine how efficient the trap is at removing grease.

### **Maintenance**

Maintenance of a passive grease trap involves removing both the layer of fat from the top and the sediment from the bottom of the grease trap. This requires the entire contents of the trap be sucked out along with scraping down the trap walls and baffles and hosing down. All water from the cleaning must also be sucked out. The final important step involves re-filling the trap with cold water to allow the trap to get back to work separating the grease from the wastewater.

All food premises must use a Council approved contractor to undertake the grease trap cleaning. A list of approved contractors can be obtained by contacting the Council.

Our Trade Waste Officer will determine the cleaning frequency of your grease trap in conjunction with yourself and the contractor engaged to clean your grease trap.

### **Sizing**

All food outlets and food services are required to install and maintain an adequately sized grease trap. The size of the grease trap depends on the volume of trade waste discharged. Please follow the supplied *Grease Interceptor Sizing Guide* to determine the appropriate size for your business. This guide may be obtained from Council or on the website.

## **GREASE CONVERTERS**

### **How it Works**

A grease converter works by using nature's own process of breaking down oils and fats using enzymes and bacteria. Inside grease converters, specially designed baffles cause the grease to float to the surface of the water, preventing them from leaving the trap. During the day the oils and greases build up. Each night a dose of enzymes and bacteria is added, and overnight the grease is broken down and flushed through the system the next day. This daily cycle ensures your pipes and drains remain free and clear, preventing expensive blockages.

## **Operation**

It is extremely important that grease converters are operated properly. The daily dose of enzyme/bacteria must be added last thing at night so it has the required four hours to break down the oil and grease. Council requires that all premises using grease converters install automatic dosing system to ensure the device functions properly.

## **Maintenance**

Typically a properly functioning grease converter will require only one 6 monthly servicing. A certified and registered installer must carry out the servicing. Grease converters should **not** be cleaned out like a passive grease trap as it will disrupt the bacteria living in it which break down the oil and grease. It is recommended that enough of the enzyme is supplied at the time of service to ensure it will not run out prior to the following service.

## **MECHANICAL GREASE SEPARATORS**

### **How it Works**

A mechanical grease separator works by first passing the waste water through a strainer basket to remove any solids. The grease is then separated by a paddle-wheel which has been specially coated to allow the grease to stick as it spins through the waste water. As the wheel leaves the water a wiper blade scrapes the fat and oil from the surface of the wheel. The grease is channeled into a container on the side of the device to be emptied. A heater makes sure the grease remain liquid during this process to aid separation and transfer.

### **Maintenance**

Mechanical grease separators require regular maintenance for good operation.

Every day:

- Empty the strainer basket into the rubbish bin and rinse before replacing.
- Empty fat and oil collection container into oil recycling bins.

Once a week:

- Clean the wiper blades and grease outlet trough.
- Check the timer is set properly – 15 minute minimum, 1 hour maximum.

Once a month:

- Clean sediment from the bottom of the main tank.

## **ADDITIONAL REQUIREMENTS FOR ALL FOOD OUTLETS AND SERVICES**

- A **dry basket arrestor or bucket trap** is necessary if there are floor wastes in the food preparation and handling areas. If the premises are new, liquid floor wastes must drain to the grease trap servicing the kitchen.
- Cooking oil storage areas must be bunded so that leaks or spills do not drain into the sewer or stormwater systems.
- Garbage cleaning areas must be bunded to prevent stormwater entering the sewer and have a dry basket arrestor or bucket trap.
- All used oils and fats generated by cooking processes such as; BBQ cooking, rotisseries, griddles, and pan-frying and deep frying processes must not drain into the sewer. Oil and grease must drain to a separate recycling collection system.
- If your business increases, you may need to upgrade the size or type of your pre-treatment equipment.

### **Vegetable peeling**

- Commercial food preparation outlets and services that use vegetable peeling machines must have the machine set up to drain through an appropriate dry basket arrestor with removable basket and fixed screen. The drainage should bypass the grease trap.

### **Hospital kitchens**

- The quality and quantity of trade waste from hospital kitchens can vary because hospitals are required to scald plates and may have kitchen waste disposal units. The temperature of wastewater leaving the hospital kitchen grease trap must not exceed 40°C.
- Food waste disposal units may be used provided an appropriately sized grease trap is installed.
- Requirements for dry basket traps, garbage cleaning areas and cooking oil storage are the same as for retail food outlets.

### **Barbequing and rotisserie processes and deep fryers**

- The fat and oil generated by barbequing and rotisserie processes or from deep fryers must be collected for recycling and must not be drained directly to a grease trap or to the sewer. Only the washwater can drain directly to the grease trap.

## **MAINTAINING PRE-TREATMENT DEVICES AND DISPOSING OF GREASY WASTES**

Only trade wastewater from food preparation areas, floor wastes, kitchen sinks, dishwashers and garbage areas may be disposed of through a grease trap.

Wastewater from toilets, showers and other processes that generate trade wastewater must not be directed through a grease trap.

In order to ensure that greasy wastes are being appropriately disposed of, a service contract with a Council approved contractor will be required by all consent holders.

### **MAINTAINING DRY BASKET ARRESTORS**

In general, dry basket arrestors collecting floor wastes do not drain through grease traps in food handling or preparation areas. Where authorized floor wastes are required to drain to a grease trap a bucket trap must be installed. Dry basket arrestors must be emptied regularly.

All sinks are required to have dry-basket arrestors. To ensure that the devices are used properly, the arrestors must be of a type with a “shut-off” valve, which prevents the sink from draining when the basket is not in place.

### **DISCONNECTING GREASE TRAPS**

If your business process changes or your wastewater is no longer discharged to sewer, a plumber must be engaged to disconnect your grease trap from the sewer.

Prior to disconnection the trap must be cleaned by an authorized person.

The trade waste permit will not be cancelled until evidence is supplied to Council that the grease trap has been cleaned and disconnected.

## **TRADE WASTE TIPS TO SAVE YOU MONEY**

Keep your costs down with the following tips:

### **Save Water**

- Where possible use dry or waterless cleaning methods such as wiping or sweeping spills rather than hosing.
- Turn off taps when not in use, and repair leaky faucets.
- Avoid running the tap continuously when rinsing.
- Ensure the dishwasher has a full load every time its used.

### **Reduce Solid Wastes in Grease Traps**

- Scrape leftover food from plates and utensils into the garbage before washing up.
- Never put solid waste such as coffee grounds or tealeaves down the sink.
- Use sink strainers.
- In-sink garbage disposals are not permitted.

### **Recycle Cooking Oil**

- Collect used cooking oil & fat for recycling and never pour cooking oil down the sink or into a grease trap.
- Store cooking oil in a bunded area to keep it from leaking or spilling into the sewer or stormwater system.

### **Limit the Use of Cleaning Products**

- Detergents dissolve grease, allowing it to pass through the grease trap, causing blockages in the sewer system.
- Avoid using strong cleaning agents like bleach or caustic soda.
- Don't use solvents, bacteria, enzymes or other substances in your grease trap without permission from Council.

### **Educate Staff**

- Train kitchen staff about what they can and cannot put down the sink.
- Use signs and stickers around the kitchen to remind staff of proper practices.