

GUIDELINES FOR GENERAL PRE-TREATMENT & MAINTENANCE REQUIREMENTS FOR TRADE WASTE GENERATORS

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INTRODUCTION

The following policy provides general information on treatment, disposal, maintenance and installation of trade wastewater equipment associated with the management of trade wastewater.

Many liquid wastes generated as a by-product of trade industries contain products which can have detrimental effects within the house drains and the Corporation's sewerage system. These liquid wastes are defined as Prohibited Substances (trade waste).

Trade Wastewater is defined as "the liquid wastewater generated from any industry, business, or manufacturing process. It does not include domestic wastewater."

An application for an agreement to discharge trade wastewater must be lodged with the Corporation and approval granted, prior to the installation of any trade wastewater facility or the discharge of trade wastewater into the Corporation's sewer.

All treatment facilities accumulate residual wastes, both solid and liquid which must be regularly cleaned out and disposed of in an approved manner. The disposal of residual wastes such as greases, oils and sludges must be carried out in accordance with local council requirements.

The information in this book is to be treated as a guide only. Further policy details can be found in the 'Hunter Water Trade Wastewater Policy'. This policy is available on Hunter Water's website www.hunterwater.com.au.

TRADE WASTEWATER APPLICATIONS

Before installation of any trade wastewater facilities, written application to do so must be made on a prescribed form and lodged with any **Hunter Water Corporation Customer Centre or the Trade Wastewater Group.**

On completion of installation of the trade wastewater facility, the plumbing contractor is to contact Hunter Water's Trade Wastewater Group. This will allow the agreement to be issued.

There are two types of application:

- The **Major Agreement** is where the Corporation considers the proposed discharge to be significant, usually because of the nature or the quantity of the wastewater.
- The **Minor Agreement** is suitable for the majority of trade wastewater dischargers.

Criteria for Major Agreements

A trade wastewater discharger will be issued with a Major Agreement if it complies with and meets one or more of the following criteria:

- The average concentration of BOD or NFR discharged to sewer is greater than 350 mg/L and the volume is greater than 500 kL/annum, or the average BOD or NFR concentration discharged to sewer is greater than 500 mg/L.
- The discharger cannot meet the acceptance standards for discharge to sewer contained in this document.
- A business which discharges, or is likely to discharge, heavy metals into the Corporation's sewerage system with a concentration greater than that which is normally associated with domestic sewage.
- A premises with 4 or more businesses which would be issued with separate trade wastewater agreements if they were "stand alone" businesses.
- A discharger which discharges, or is likely to discharge, any substance which, due to its concentration or quantity, is considered by the Corporation to represent a significant risk to the Corporation's operations and/or works.

INSTALLATION REQUIREMENTS FOR TRADE WASTEWATER FACILITIES

- A trade wastewater pre-treatment facility must be installed in accordance with the relevant “Plumbing Codes AS 3500”.
- The plumbing and drainage work is to be carried out by a licensed plumber and to the relevant Codes of Practice and manufacturers guidelines.
- If the discharge from the premises does not meet the Corporation’s acceptance standards for discharge to sewer, then an approved alternative system will be required.

Additional installation requirements for oil separators

- For the installation of trade wastewater facilities in a service station, reference also needs to be made to the following:
 1. Department of Environmental and Conservation NSW (DEC): Environmental Guideline: Surface Water Management on the Covered Forecourt Areas of Service Stations.
 2. The Australian Institute of Petroleum Ltd. (AIP): Specific Requirements for the Control of Water Effluent’s from Service Stations in NSW.

ABOVE-GROUND SEPARATORS

- **If a site producing trade wastewater requires separators, Above-ground oil separators with plate packs are the only oil separators to be installed**
- If an upgrade is to be performed on an existing trade wastewater site requiring oil separators, Above-ground oil separators with plate packs must be installed.

The size required for an above-ground coalescing plate separator is determined by the volume of wastewater produced that the facility is to handle, and the time in which the separator must treat the wastewater. Consultants approached for the installation of trade wastewater facilities will stipulate facility size.

CHEMICAL AND/OR BACTERIAL ADDITIVES

With regards to bacterial additives, they are highly sensitive to changes in their environment. They only operate in a narrow band of temperature and pH. If detergents or hot water are flushed into the grease trap this is enough to kill the colony of bacteria.

Use of biological additives in grease traps may be approved, provided that each additive meets the following criteria:

- the company marketing the product has a letter from Hunter Water stating that Hunter Water has no objection to the use of the additive in grease traps.
- use of the additive must not significantly reduce the buoyancy of the greasy layer in a grease trap and must not, in any way, increase the risk of the grease being discharged to sewer.
- the wastewater pumped from any grease trap, which contains the produce, must be acceptable for treatment and disposal at grease trap wastewater disposal depots.
- the use of the product in a grease trap must not increase the concentration of odours, especially sulphide, or other sulphur containing compounds in the sewerage.
- the product must not cause any adverse conditions or events, which might interfere with or cause reduced performance of the sewage transport and treatment systems.
- The additive and by-products resulting from its use must be demonstrated to cause no hazard for sewer maintenance staff working downstream from the grease trap, or to any contractor who pumps out, or otherwise maintains the grease trap.
- A suitable management program for the addition of these substances is developed and implemented.

QUICK-BREAK DETERGENTS IN OILY WATER PRE-TREATMENT

Oil Separators

Quick-break detergents are to be used in a pre-treatment facility, such as an oil separator, the oil must separate from the water within residence time of the facility.

Residence time is the time taken for a particle to move from the inlet of a pre-treatment facility to the outlet to sewer. If, for example, the residence time is twenty minutes, the detergent must release the oil within twenty minutes. If the detergent does not break within residence time, there is a risk that the oil may enter the sewer. In the sewer the detergents may then release the oil and untreated oily wastewater goes to the Corporation's treatment works and becomes hard to treat.

GLYCOLS AND ANTIFREEZE, TREATMENT AND DISPOSAL

- **No Glycols or Antifreeze are to enter the Corporation's sewer system**

Glycols or antifreeze to be used on site must be contained. After containment, it is the responsibility of the site's owner/operator to contact a licensed wastewater contractor to collect and dispose of the glycols and antifreeze.

BOUNDARY TRAP AND INSPECTION SHAFT REQUIREMENTS FOR TRADE WASTEWATER SITES

All new commercial properties with new trade wastewater facilities require a boundary trap.

GENERAL PRE-TREATMENT REQUIREMENTS FOR TRADE WASTEWATER GENERATORS

BREACHES OF AGREEMENT

Division 4, Section 31.(1) of the Hunter Water Board (Corporatisation) Act of 1991 makes reference to the discharge of substances to works owned by the Corporation without the written agreement of the Corporation.

Maximum Penalty: \$10 000 (or \$20 000 in the case of a corporation).

Note: Schedule 2, Section 7.1(a) of the Act makes reference to the requirement of written permission from the Hunter Water Corporation prior to the discharge of Prohibited Substance into the Works.

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
Textiles	high alkalinity high BOD high temperature high NFR heavy metals high pH COD	CO ₂ injection pH Correction and Neutralisation. Cooling Detention Tank. Solids Settlement Pit. Screening pH Monitoring Device Flowmeter Acid	pH Correction, Neutralisation and Cooling to HWC sewer. Solids pump-out by trade wastewater carrier or landfill
Laundry Trades	alkalinity high BOD high COD high temperature high NFR detergents-phosphates TOG	Cooling trough or Detention Tank. Discharge below 38 degrees Celsius lint arrestors Heat exchanges	HWC sewer Solid wastewater to landfill.

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
FOOD			
Dairy Products	high BOD (protein, fat and lactose)	DAF unit or On Site Biological Treatment Plant	Pump-out by trade wastewater carrier. floculant dry:- landfill, floculant wet: - goes to WRAPS
Brewed Beverages	high pH high BOD high NFR Yeast	On Site Biological Treatment Plant Solids Settlement Pit pH Correction and Neutralisation Screens	Solids and screening to landfill.
Bakeries, Pastry Cooks etc	high BOD grease flour products vegetable and animal oils detergents- phosphates NFR	Min 1000 litre Grease Arrestor or Solids Settlement Pit Floor Basket Traps D.A.F. Units Filter Systems	Solids to landfill Grease arrestor pumped-out by trade wastewater carrier and recycled
Wholesale/ Commercial Fresh Fish and Oysters etc	high BOD solids organic solids odour	Solids Settlement Pit - Min 1000 L Screening Floor Waste Baskets Salt water reticulation.	All wastewater to be pumped out by wastewater contractor.
Retail Fresh Fish & Oysters Shop Front	High BOD Solids Organic solids Odours	Screening Pit Floor waste Baskets	All Solids to landfill

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
Meat and Poultry Wholesale	high BOD solids organic solids sulphide Grease NFR	Solids Settlement Pit - Large Screens Aeration Floor Waste Baskets	All wastewater to be pumped out by wastewater contractor
Soft Drinks	high BOD high pH	pH Correction and Neutralisation Screening Dilution Pit	Wastewater goes to sewer
Sugars	high BOD high COD	Dilution Pit or Biological Treatment	Wastewater goes to sewer
Vegetable Oil Refinery	high pH high BOD grease	DAF unit Biological Treatment Plant Holding Tanks pH Monitoring Device	All wastewater to be pumped out by wastewater contractor.

MATERIALS

Commercial Painters	colour high BOD, NFR, Total Hydrocarbons	Sand Filtration or Chemical Treatment	Wastewater sand from filtration to landfill
Glass	Suspended Solids Fluorides Mercury pH	Solid Settlement Pit Precipitation by calcium carbonate and calcium chloride Filtration	Wastewater goes to landfill

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
<p>Paper and Pulp Production</p>	<p>high or low pH colour high suspended solids colloidal and dissolved solids</p>	<p>pH Correction and Neutralisation DAF unit or On Site Biological Treatment Plant Holding Tanks pH Monitoring Device Flowmeter</p>	<p>DAF unit pump-out by trade wastewater carrier. Neutralisation to sewer. Solids to landfill.</p>
<p>Photographic Products</p> <p>Note: Discharge of wastewater from photographic processing and diagnostic imaging must comply with the P.U.R.E. Code of Practice available at the Environment Unit, Newcastle Office, Hunter Water.</p>	<p>developer and fixer high alkaline organic and inorganic reducing agents</p>	<p>Silver Recovery Unit (See Pure Code)</p>	<p>Silver collected by recovery contractor</p>
<p>X-ray Laboratory</p> <p>Note: Discharge of wastewater from photographic processing and diagnostic imaging must comply with the P.U.R.E. Code of Practice available at the Environment Unit, Newcastle Office, Hunter Water.</p>	<p>developer and fixer high alkaline organic and inorganic reducing agents</p>	<p>Silver Recovery Unit</p>	<p>Silver collected by recovery contractor</p>
<p>Steel Products including Metal Finishing and Iron Foundry Products</p>	<p>high or low pH cyanide phenol's heavy metals NFR</p>	<p>pH Correction and Neutralisation Chemical Coagulation Alkaline Chlorination of Cyanide Precipitation of Chromium and other metals Holding Tanks pH Monitoring Device Flowmeter</p>	<p>All wastewater to be collected by wastewater contractor</p>

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
MISCELLANEOUS			
Cooling Towers New Installations	sediment	Sediment Pit	HWC sewer
Boarding Kennels	pH high BOD, solids, organic solids, odour NFR	Sump Floor Waste Basket	Solids can go to landfill
Dental Surgery	silver plaster mercury	Silver Recovery Unit Plaster Arrestor	Silver collected by recovery contractor Plaster pumped- out by wastewater contractor
Chemical Factories	range of organic and inorganic chemicals COD pH, methyl blue total phosphorus	Dilution Pits Balance Tanks also allowing for Safety Retention pH Monitoring Device	Wastewater allowed to sewer if proper neutralisation and correction of chemicals takes place
Hospitals	BOD NFR radioactive isotopes organic and inorganic chemicals hospital refuse grease pH	Retention Dilution Pits Grease arrestor Cooling pit	Radioactive isotopes to WRAPS Other wastewater to be collected by wastewater contractor
Laboratories General including Schools	high or low pH NFR Mercury	Dilution Pit (min 500 litres) pH Monitoring Device	Wastewater allowed to sewer
Industrial	as above COD Metals	Dilution Pit (min 1000 litres)	as above

Generator/Source	Major Characteristics of Wastewater	Treatment Methods and Facilities	Pre-treatment Outcome
Laboratories Coal	low pH coal residue NFR	Solids Settlement Pit Dilution and/or Neutralisation pH Monitoring Device	Solids to landfill Other wastewater to be pumped-out by wastewater contractor
Mobile Services ie Portable Garbage Bin Wash Dog Cleaning Carpet Cleaning	NFR detergents	Screening Collection of Solids	Garbage wash solids to landfill Liquids to sewer
Pesticide and Herbicide	organic chemicals odours	Biological Treatment Plant, Active Carbon Absorption, Alkaline Chlorination	Wastewater to be removed by specialist contractor.
Screen Printing	colour pH BOD NFR total hydrocarbons	Drum Filtration Solids Settlement Pit	Wastewater sand from filtration and pit to be removed by contractor.
Veterinary Surgery (General)	organic wastes high BOD pH detergents	Floor Waste Baskets	Solids to Landfill Pits to be pumped out by wastewater contractor
Horse Stables	Organic Waste BOD, pH Detergents	Floor Waste Baskets	Solids removed by contractor.

TRADE WASTEWATER AGREEMENTS

Written permission to discharge Prohibited Substances (trade wastewater) will only be given on receipt of an application for an Agreement, which can be made at any of the Hunter Water Corporation's District Offices.

There is a Trade Wastewater application establishment fee payable prior to the establishment of an Agreement.

A Trade Wastewater agreement will be issued on completion of installation to the Corporation's requirements.

CONDITIONS OF AN AGREEMENT

An agreement is subject to a number of conditions (which will be specified on the agreement) and may relate to the following:

- a) (i) The type of equipment to be installed for pre-treatment and monitoring of the wastewater; and
- (ii) The conditions associated with the operation of such equipment.
- b) The agreed rate of discharge to sewer.
- c) The type of wastewater to be accepted.
- d) The agreed times of discharge and the days of operation.
- e) Conditions relating to the payment of fees.
- f) The power of the Corporation to enter land or buildings.
- g) The power of the Corporation to impose standards in relation to the quality of wastewater to be discharged.

TRANSFER OF AGREEMENT

An Agreement cannot be transferred by the holder of the agreement to any other person.

CANCELLATION OF AN AGREEMENT

The Corporation may cancel or suspend an agreement at any time:

- a) If the holder has contravened any conditions of the Agreement.
- b) For any other reason the Corporation considers sufficient.

On cancellation or suspension of an Agreement, discharge of trade wastewater to the sewerage system must cease, and the Corporation may take all reasonable steps to ensure that this occurs.

AGREEMENT RE-ESTABLISHMENT

After an Agreement has been cancelled the Corporation may decide to issue a new agreement with altered Schedules. This will allow the Applicant to continue discharging to the Corporation's sewer.

AGREEMENT BREACHES AND NOTIFICATION

If the owner/operator of the trade wastewater facility does not follow the rules stated in the agreement the Corporation can take action to make sure the rules are followed. Action is graded in the following:

Level 1: Do the Right Thing. Inspection may reveal that the trade wastewater facility is not operating to the agreement specifications. The Corporation will serve notice of what action needs to be taken by the owner/operator to operate according to the agreement. A follow up pollution control inspection fee will be charged with breaches of agreement conditions.

Level 2: Warning and Letter. If the second inspection of the trade wastewater facility reveals that the facility is not operating to the agreement specifications, notice will be served again and a letter will be sent. This letter will contain what needs to be done to operate the facility within agreement limits and a warning. The warning is of disconnection from the Hunter Water's sewerage system.

Level 3: Notice of Disconnection. If on the third inspection, the facility is still in breach of agreement specifications, a notice of disconnection will be served and the sewer will be disconnected immediately from the offending premises. Connection will only re-occur when the owner/operator notifies the Corporation that they have the facility operating within agreement specifications and inspection reveals this.

- **Action will be taken to recover costs incurred by the Corporation in relation to sewage blockages caused by grease.**

TRADE WASTEWATER MAINTENANCE PROGRAM

- **Cleaning**

The Corporation requires that facilities be completely pumped out by the wastewater contractor when the grease or sludge layer exceeds 100 mm (4 inches). This will prevent an excessive accumulation of wastewater entering the Corporation's sewerage system.

Trade wastewater pre-treatment facilities are required to be cleaned out by a licensed liquid wastewater contractor at regular intervals. The frequency may vary, depending on the type of activities carried out on the premises.

The Corporation's Trade Wastewater group will advise on the necessary intervals for the cleaning of treatment facilities.

- **Cleaning Frequency**

The following cleaning frequencies for facilities must be done at least within the time indicated. The cleaning time may vary within the time frame mentioned depending on the nature of wastewater generated and how much is produced.

- **Screens, Floor Baskets and Lint and Cotton Arrestor**

To avoid excessive build-up and a back flow of wastewater onto the premises, screens, floor baskets, and lint and cotton arrestor must be cleaned every day.

- **Dilution Pit and Solids Settlement Pit**

Dilution and solid settlement pits should be pumped-out and cleaned at least every three months and depending on the nature of the wastewater can either go to landfill or the Lidcombe Liquid Wastewater Plant.

- **Silver Recovery Unit**

A Silver Recovery Unit must be cleaned by a silver recovery contractor at least every four months.

- **Plaster Arrestor and Retention Tanks**

Plaster arrestors and retention tanks must be cleaned and pumped-out by a wastewater contractor at least every six months.

- **DAF Unit**

DAF units, if not cleaned, accumulate solids and sludge on the bottom of the facility and this can build up and go untreated to sewer.

- **Cleaning Procedure to be Adopted by Licenced Contractors**
 - Facilities are to be completely pumped out
 - The sides are to be cleaned of all residue
 - The facilities are to be re-filled with water
 - A docket is to be completed by the contractor and left with the generator.

Note: Dockets for the cleaning of the facility are to be kept on site for inspection purposes. Managers should review contract cleaning regularly to avoid under-servicing or over-servicing. It is the responsibility of the owner/operator to contact the Corporation's Trade Wastewater Group if any incidence or malfunction occurs with regard to the treatment facility.

- **The Corporation requires the owner/operator to have a written maintenance program in place to record:**
 - * cleaning frequency
 - * pump maintenance
 - * maintenance of facility
 - * and must contain all dockets regarding treatment facilities

TRADE WASTEWATER MANAGEMENT

Reducing pollutants does not necessarily mean spending a lot of money on additional pre-treatment facilities. As the cleaning frequency of a treatment facility is governed by the quantity of accumulated wastewater, it is in the agreement holder's interest to ensure minimal wastewater is deposited via the house drains into the facility.

By adopting some of the following practices you can help reduce pollutants

- Use less water by adopting dry (ie. waterless) cleaning methods. The less water used, the less trade wastewater to be treated.
- Dry cleaning methods include wiping up spills and sweeping, rather than hosing.
- Ensure all equipment is properly cleaned and maintained.
- Scrape cooking utensils and plates before washing
- Use low (or no) phosphate content cleaning products. Use as little cleaning product as possible. Detergents dissolve grease which allows the grease to pass through the grease trap more easily into the sewerage system.
- Dispose of waste oil and grease separately and not down the drain
- Use aluminium foil and absorbent material to collect grease and oil spills around stoves and fryers etc
- Use minimal grease and oil for cooking
- Never put solid wastes of any type down the sink, even coffee grounds or tea leaves. Provide suitable garbage containers.
- Maintain all pre-treatment equipment on a regular basis. Check the level of grease in the arrestor. Remove waste grease and sludge regularly
- Use cleaning products that have a pH range 6.5 - 10

Trade wastewater facilities are to be maintained by the owner/operator. They are to be maintained at a level that allows the facility to operate efficiently and effectively within agreement discharge limits. Failure to comply with agreement discharge limits will result with charges applied accordingly.

Any apparatus or equipment used for the treatment/monitoring of trade wastewater is to be maintained to the Corporation's satisfaction

The disposal of residual wastewater such as grease, oils and sludges must be carried out in accordance with local Council and Department of Environment and Conservation (EPA unit) requirements.

If the above suggestions are followed the pump out frequency can be reduced, blockages in house drains may be avoided and money can be saved.

The correct management of trade wastewater, including suitable and proper maintenance of treatment facilities will result in a cleaner environment.

TRADE WASTEWATER TERMINOLOGY AND DEFINITIONS

- Corporation** - Means Hunter Water Corporation Ltd, ACN 053 102 837, a company incorporated in NSW and having its Head Office at 36 Honeysuckle Drive, Newcastle.
- The Act** - The Hunter Water Board (Corporatisation) Act, 1991.
- Customer Contract** - Means a contract of a kind referred to in Section 36(1); of the Act
- Trade Wastewater Policy** - Means the policy developed by Hunter Water Corporation Limited to control the discharge of trade wastewater to sewer and to recover the costs associated with the acceptance of trade wastewater by the Corporation.
- Agreement** - This is a legally binding document setting out the conditions that the applicant must comply with before it may discharge any substance other than normal domestic wastewater to a sewer or stormwater channel operated by the Corporation.
- Trade Wastewater** - This is defined as “the liquid wastewater generated from any industry, business, or manufacturing process. It does not include domestic wastewater.”
- Prohibited Substances** - Prohibited Substances, in accordance with the Corporations Act, are substances which may not be discharged to a sewer or stormwater channel operated by the Corporation without the prior written permission of the Corporation. A list of such substances is attached to this document and from this it can be seen, Item (e), that this includes all trade wastewaters.
- Works** - Means water mains, sewer mains, sewage treatment works, drainage channels and any works ancillary to those works.
- Pre-treatment Facilities** - Means any apparatus or equipment used to modify the characteristics of an effluent prior to its discharge into Corporation works, and can include grease traps, oil separators, dilution pits etc.
- Biological Treatment** - This involves bacteria consuming the organic parts of an effluent within a controlled system eg activated sludge or trickling filters.

Treatment Works	- These are collections of treatment facilities which are generally described as Primary if they are based on physical processes (such as screening and sedimentation) and Secondary if they are based on biological processes (such as activated sludge and trickling filters). The distinctions between types of works based on such nomenclature are continually becoming less clear, and definition based on measurable parameters is preferred.
Oxygen Demand	- Is an indirect measure of the organic matter present in an effluent, usually specified in such a way as to identify the means used in measurement, eg Biochemical Oxygen Demand (BOD) or Chemical Oxygen Demand (COD).
Suspended Solids	- Suspended solids or Non-filterable residue (NFR) is a measure of the suspended particles in an effluent, and is determined by retention on a prescribed filter.
Biological Treatment	- This involves bacteria consuming the organic parts of the wastewater within a controlled system, eg. activated sludge or trickling filters.
Grease Arrestor	- A facility used to cool the discharge from commercial premises engaged in food preparation and arrest grease, oils and sludges.
Hazardous Waste	- This is any wastewater containing significant quantities danger to the life of living organisms when released into the environment or to the safety of a substance or substances which may present a humans or equipment if incorrectly handled.
pH	- This is a universal number scale from 1 - 14 used for expressing the acidity or alkalinity of an effluent; numbers lower than 7 indicate acidity and those higher than 7 indicate alkalinity.
WRAPS	- Waste Recycling And Processing Service. This is a State owned company located in Sydney that handle trade wastewater and toxic wastewater that is unable to be treated locally by the limited recycling facilities provided by wastewater contractors.
HWC	- That is the 'Hunter Water Corporation'
Fees	- Breach of agreement conditions will require a follow up pollution control inspection and a fee will have to be paid for cost recovery.

PROBLEMS CAUSED BY TRADE WASTEWATER AND ADVERSE EFFECTS

Grease, Oil and Sludges

- a) Cause blockages in poorly maintained treatment facilities.
- b) Upon cooling, accumulate on the walls of sewer pipes and pump stations causing blockages and other maintenance problems.
- c) Build-up in wastewater treatment works on channels, screens and tanks. If the treatment works is a primary works, the grease and oils can flow through causing pollution of beaches.
- d) Deposit in changes of direction and pipe lips within sewers causing restrictions and blockages.
- e) Cause overflow conditions in premises where facilities are not cleaned on a regular basis.
- f) Contribute to pollution and odour problems if these residual wastes are not disposed of properly.

Mineral Oils, including Diesel

In large quantities, these can inhibit biological treatment in secondary treatment works. Oils can also cause pollution of beaches, swamps and creeks receiving the final discharge from treatment works.

Petroleum Products

These can cause explosions within the sewerage system and result in problems at treatment works.

Solvents

Solvents can also cause explosions in the sewerage system and the vapours, when inhaled, can have serious effects on the Corporation's personnel.

Suspended Solids

These are small particles of matter in wastewater. High levels of suspended solids cause problems in the sewerage system including blockages and damage to pump stations.

Acidic Wastes

Wastewaters with a pH below 6.5 can be hazardous to the Corporation's personnel and cause structural damage within the sewerage system. These can also adversely affect treatment works.

Alkaline Wastes

Wastewaters with a pH above 10 may cause burning on exposed tissue and can damage rubber ring joints within the sewerage system. Alkaline wastes can also cause problems in treatment works.

Detergents

The major problem caused to treatment works from detergents occurs after treatment. Foaming can sometimes occur in around wastewater structures. However, since the introduction of biodegradable detergents, this problem has been greatly reduced.

High Strength Wastes (BOD)

Wastewaters with a high biochemical oxygen demand can cause severe disruption to secondary treatment works (especially activated sludge plants).

Excessive detention periods in treatment facilities or in the sewerage system can cause hydrogen sulphide emission (toxic gas).

Heavy Metals

Used in the metal finishing industry (eg chrome plating, nickel plating, galvanising, textile production). Most common metals include: copper; chrome; nickel; zinc; lead; titanium; manganese; and arsenic.

Problems associated with discharge of heavy metals to the environment include:-

- a) Build-up of heavy metals in sewage sludge
- b) Disruption to the biological activity at wastewater treatment works
- c) Bio-accumulation in aquatic organisms
- d) Disruption of aquatic ecosystems.

Existence of some heavy metals in sewerage effluent is often indicated by colour, for instance:-

Chrome (yellow)

Copper (blue)

PROHIBITED SUBSTANCES

The discharger shall not allow any substance to enter the Corporation's sewers or stormwater system except as provided for by the Agreement. In particular, the discharger shall not directly or indirectly discharge prohibited substances without the prior written permission of the Corporation.

Prohibited Substances

- (a) Any substance which could cause an explosion or fire in any of the Corporation's works.
- (b) Discrete oil.
- (c) Any infectious or contagious substance, whether solid or liquid, which has not been disinfected.
- (d) Any toxic substance.
- (e) Any trade wastewater.
- (f) Any substance, whether or not a solvent, an enzyme, a mutant bacteria or an odour control agent, which could materially affect the operation of a grease arrestor or other device or equipment used for the treatment of waste.
- (g) Any substance which is carcinogenic or mutagenic and could materially affect the environment.
- (h) Any animal matter, wool, hair, fleshings, feathers, dust, ashes, soil, rubbish, grease, garbage, dead animal, vegetable or fruit parings, wood, rags, synthetic plastics, steam or any solid matter.
- (i) Any matter which, in the opinion of the Corporation:
 - (i) is injurious to, or liable to form compounds injurious to any part of the Corporation's Works or to employees of the Corporation engaged in the operation or maintenance of the works; or
 - (ii) will impair or be liable to impair the operations or functions of the Corporation, or which the Corporation has, by notice in writing, served personally or by post, required the customer to cease or refrain from discharging.
- (j) Any other substance which may, within the meaning of the Protection of the Environment Operations Act 1997, cause pollution of any water.
- (k) Any other substance which the Corporation may declare to be prohibited by notice published in a newspaper circulating generally in the area covered by the Operating Licence.

SAMPLING, MONITORING AND INSPECTION OF TRADE WASTEWATER FACILITIES

The Corporation must be notified on completion of installation of the trade wastewater facility. A trade wastewater agreement to discharge trade wastewater to the Corporation's sewerage system will then be forwarded to the applicant.

It is the discharger's responsibility to ensure that both the quality of the wastewater discharged to sewer is in accordance with the Corporation's requirements.

To ensure compliance with the Corporation's acceptance standards and the conditions of the Agreement, authorised Trade Waste officers of the Hunter Water Corporation may enter premises to carry out inspections and collect samples for analysis.

Samples are to be collected and analysed in accordance with Standard Methods for the Examination of Water and Wastewater (Current Edition APHA - AWWA - WPCF), and every effort is to be made to ensure that such samples truly represent the nature and extent of the discharge.

All analyses of samples shall be carried out by a NATA approved laboratory or a laboratory approved by the Corporation.

Maintenance personnel may require inspections and sampling when reporting unusual odours or build-up of wastewater in the Corporation's sewerage system.

- **Sampling of Trade Wastewater**

The purpose of sampling trade wastewater before it enters the Corporation's sewer is to check that it complies with acceptance standards prescribed under the Hunter Water Corporation's 'Trade Wastewater Policy'.

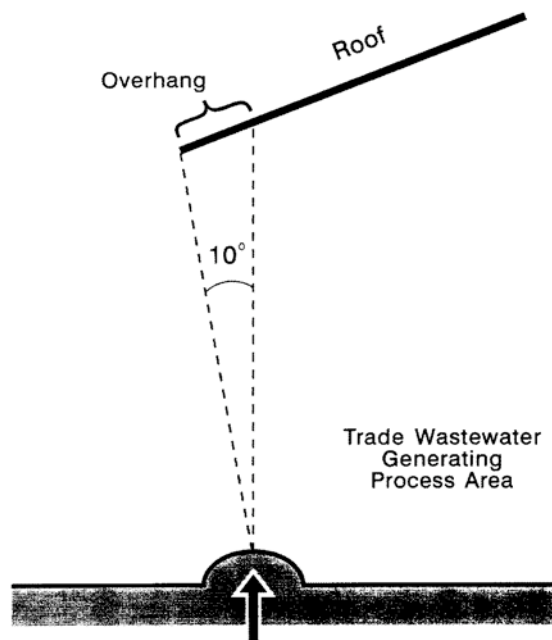
It also allows inspectors to determine if the facility is functioning efficiently in reducing the amount of contaminants being discharged to sewer.

ROOFING OF TRADE WASTEWATER GENERATING AREAS

When a trade wastewater generating process does not occur fully within a building, suitable roofing must be constructed to prevent the ingress of rainwater to the sewer. For a structure where one or more sides is open to the weather, the roof must extend outwards to at least 10° from a vertical line taken from the peak of the bund (see drawing below).

Note: This does not imply that the roof must be slanted at 10o to the horizontal.

Hunter Water is aware that, under certain conditions, some rainwater will blow under the roof.

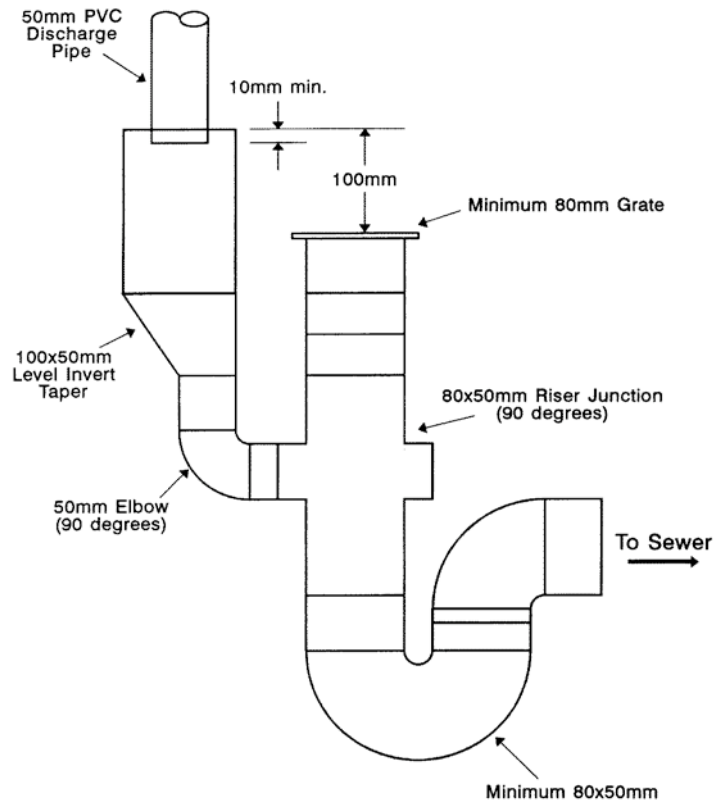


To ensure that no surface stormwater can flow onto the trade wastewater generating process area, a bund/speed hump/kerbing, at least 150mm high, is necessary around the area. As the overall surface water flow across the site must be taken into consideration, the height of the bund/speed hump/kerbing may have to be increased, to prevent stormwater flow onto the process area.

CONNECTIONS TO SEWER / HOUSE DRAINS

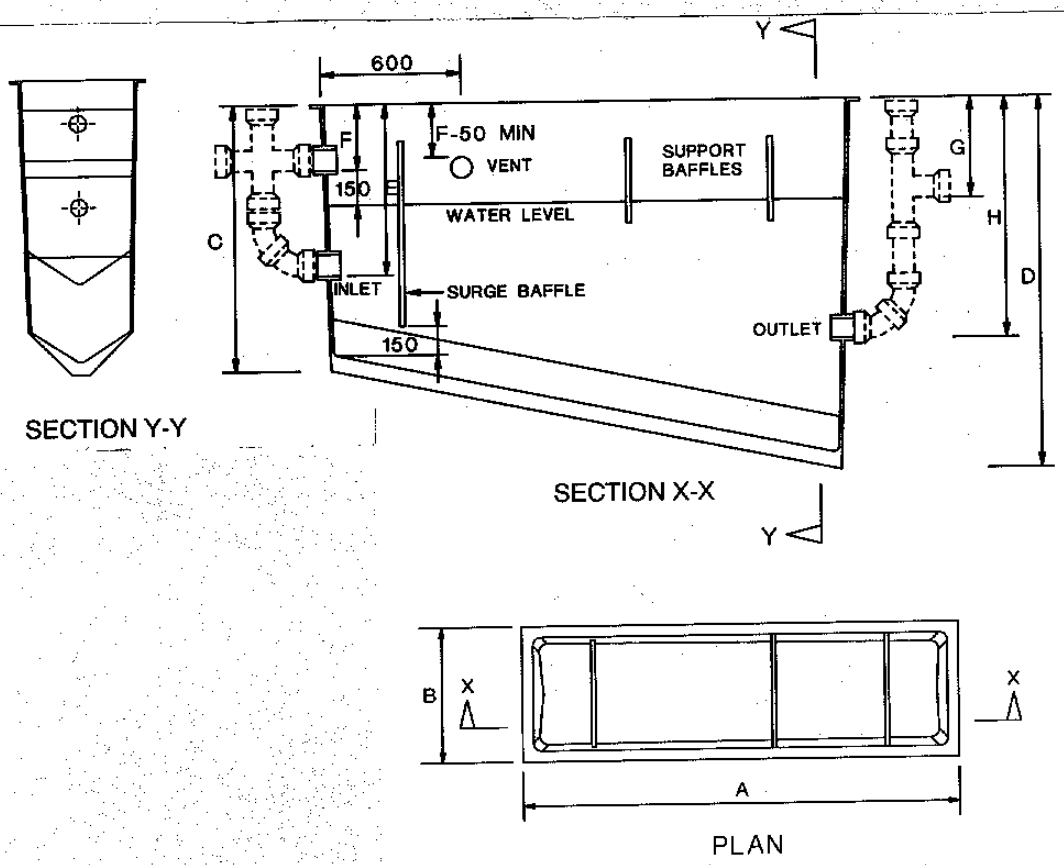
From hydrocyclone separation systems, corrugated plate interceptors and vertical gravity separators.

The treated water from HSS, VGS or CPI shall discharge via an inlet riser to a gully as shown on the attached diagram. This point is to be used for sampling the quality of the effluent from the pre-treatment equipment.

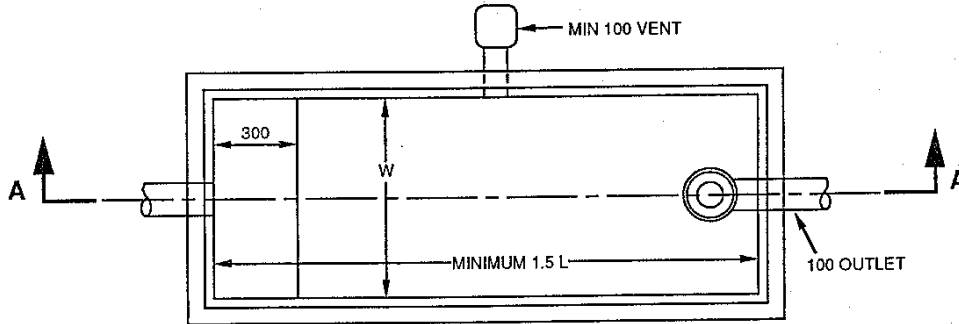
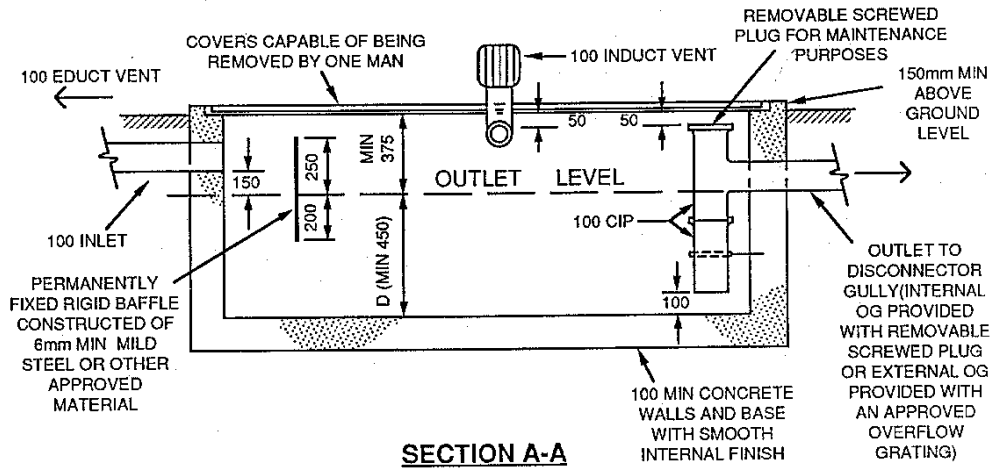


GENERAL FOOD WASTE TREATMENT FACILITIES

STANDARD SLOPING BOTTOM GREASE ARRESTOR DESIGN



TYPICAL FLAT BOTTOM GREASE TRAP

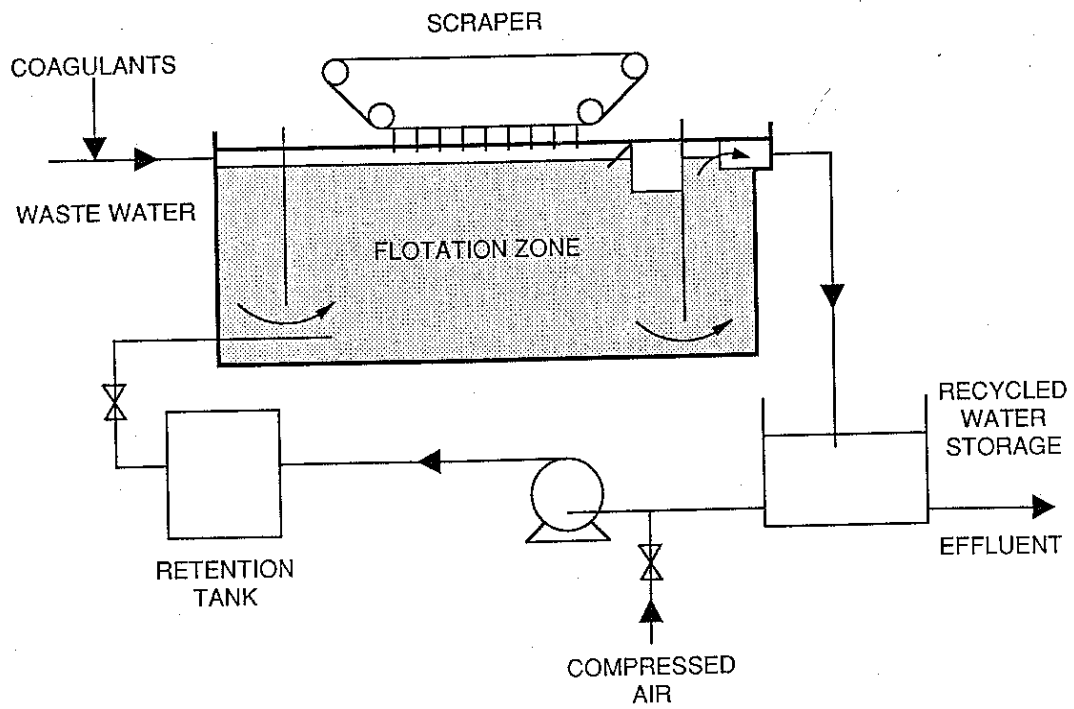


NOTE:

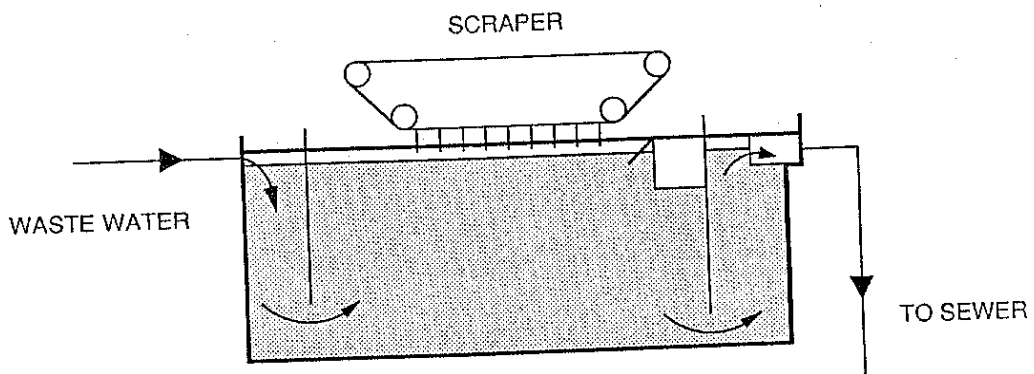
- INTERCEPTOR TO BE CONNECTED AND SIZED AS SPECIFIED IN THE TRADE WASTE APPLICATION
- INTERCEPTOR SHALL HAVE A MINIMUM CAPACITY BELOW THE INVERT LEVEL OF THE OUTLET PIPE OF 250 LITRES, OR HAVE A CAPACITY EQUIVALENT TO THE MAXIMUM HOURLY DISCHARGE, WHICHEVER IS GREATER
- WHERE INSTALLED ABOVE GROUND THE INTERCEPTOR MAY BE CONSTRUCTED USING OTHER APPROVED MATERIALS SUBJECT TO ADEQUATE STRUCTURAL SUPPORT FOR THE INTERCEPTOR BEING PROVIDED
- CONSTRUCTION TO BE SIMILAR TO SLOPING BOTTOM (BOAT SHAPE) GREASE TRAP

VOLUME CALCULATION
 VOLUME LTRS = $\frac{L \times W \times D}{1000000}$
 L, W & D ARE IN MM

NOT TO SCALE

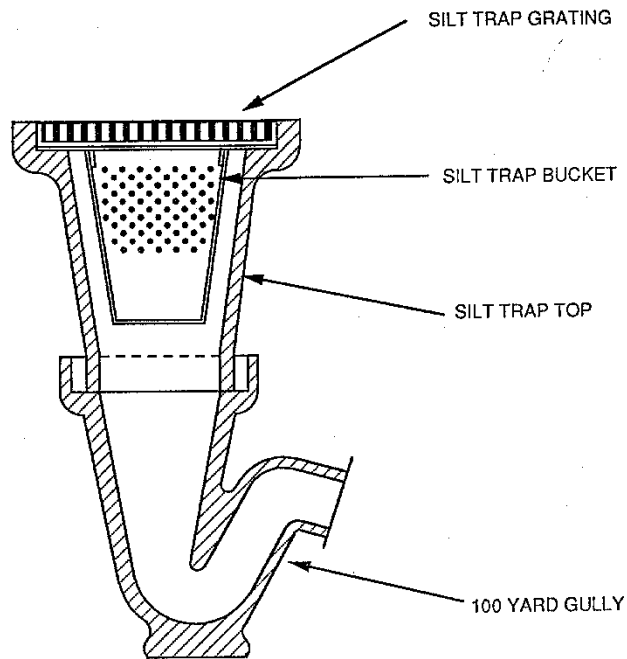


BASIC DESIGN OF AIR FLOTATION SEPARATOR

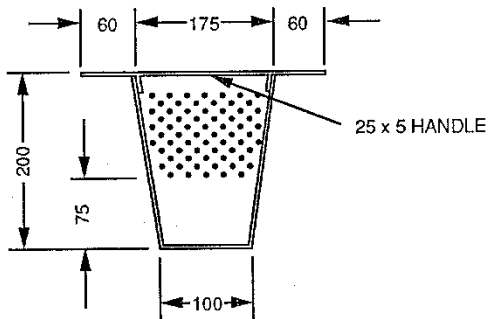


BASIC DESIGN OF A SAVE ALL

SILT TRAP



SILT TRAP ASSEMBLY



BUCKET SPECIFICATION

BUCKET TO BE CONSTRUCTED OF 3mm MIN THICK MILD STEEL PLATE WITH 5 ROWS OF 10mm DIAMETER HOLES AT 25mm CENTRES.

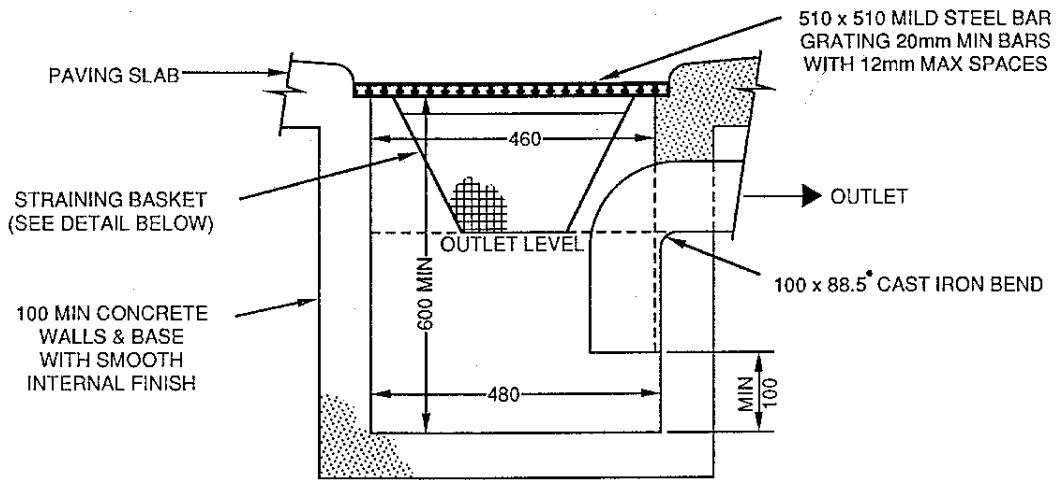
BUCKET TO BE GALVANISED AFTER FABRICATION.

BUCKET DETAILS

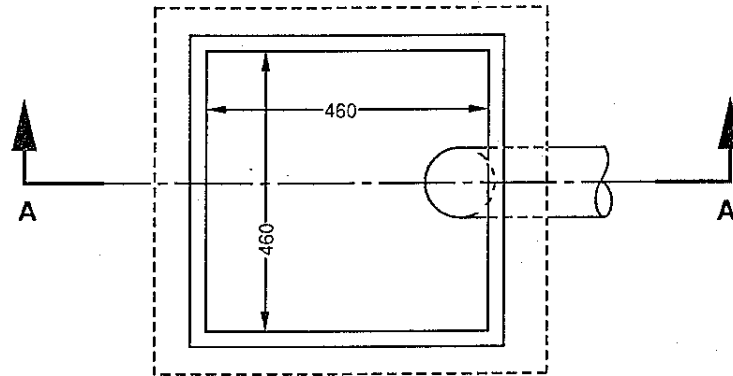
NOTE: ALTERNATIVELY TRAP MAY BE CONSTRUCTED USING CAST IRON PIPES AND FITTINGS WITH APPROVED JOINTS

TRAP TO BE CONNECTED AS SPECIFIED IN THE CONSENT FOR INSTALLATION

STRAINING PIT

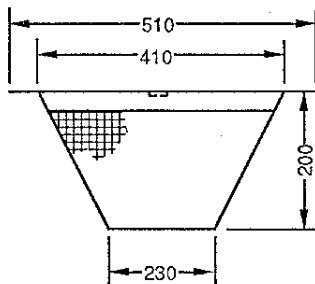


SECTION AA

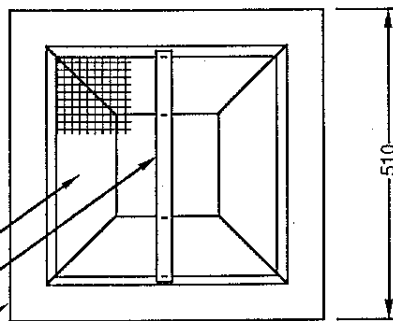


PIT PLAN

BUCKET AND GRATING REMOVED



WOVEN WIRE MESH BASKET
25 x 10 HANDLE
ANGLE IRON FRAME



PLAN

BASKET SPECIFICATION

BASKET TO BE CONSTRUCTED OF 2.5mm MIN DIA MILD STEEL WIRE WOVEN TO GIVE 7mm APERTURE WIDTHS ON A 32 x 32 x 3 ANGLE IRON FRAME. BASKET TO BE GALVANISED AFTER MANUFACTURE. ALTERNATIVELY THE BASKET MAY BE CONSTRUCTED FROM 3mm MIN THICK MILD STEEL PLATE WITH 6mm DIA HOLES AT 12mm CENTRES OVER THE ENTIRE AREA OF THE BASKET. THE BASKET TO BE GALVANISED AFTER MANUFACTURE.

BUCKET DETAILS

PIT TO BE CONNECTED AS SPECIFIED IN THE CONSENT FOR INSTALLATION