

STANDARD

TRADE WASTEWATER

JULY 2016

HUNTER WATER



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DOCUMENT INFORMATION

Version History

Version	Author	Sections Changed	Approved By	Date Approved
1.0	M Evans	New Document	Chief Customer Services Officer	1 July 2016

Summary of Changes in this Version

Section Title	Section No.	Change Summary

Document Control

Document Owner	Group Manager Technical Services
Approvals	Chief Customer Service Officer
Related Documents	Australian Sewage Quality Management Standards
Associated Regulations / Standards	Independent Pricing Authority Regulatory Tribunal (IPART) NSW State Government and Coalition of Australian Governments (COAG) Plumbing Code of Australia Hunter Water Customer Contract 2011 Hunter Water Operating Licence 2012-2017

1 PURPOSE

Hunter Water is licensed to operate water, sewerage and stormwater drainage systems in the Newcastle, Lake Macquarie, Cessnock, Maitland, Dungog and Port Stephens Local Council areas. The Operating Licence is granted under the Hunter Water Act 1991.

Hunter Water's Area of Operations



If you are a non-residential customer of Hunter Water, you are bound to meet and satisfy the requirements of the Trade Wastewater Policy, the Trade Wastewater Standard and any other requirements stipulated in a Trade Wastewater Agreement (see Section 4 of this Standard) issued under Section 37 of Hunter Water's Act (1991).

The Act requires Hunter Water to observe three equally important principles:

- To protect public health
- To protect the environment
- To be a successful business

2 SCOPE

Hunter Water will provide a trade and tankered wastewater acceptance service to non-residential customers in accordance with the principles of environmental sustainability and has developed the Trade Wastewater Standards to regulate these activities.

Trade wastewater is defined as the liquid waste generated from any non-residential property (commercial or industrial, business, trade or manufacturing process) regardless of whether the wastewater is discharged to sewer or transported by tanker to one of Hunter Water's Wastewater Treatment Works (WWTW). It does not include domestic wastewater (ie. water from toilet, hand wash basin, shower and bath wastes).

In contrast, all wastewater that is transported by tanker to a WWTW is classified as trade wastewater regardless of the source of the wastewater. In the instance of a tanker transporting wastewater to a Hunter Water WWTW, it is the tanker company that requires a Trade Wastewater (Tanker) Agreement with Hunter Water, not the owner of the premise from which the wastewater was generated. The owner of the premise that generates the wastewater however still a duty of care to ensure that only wastewater that meets this Standards acceptance criteria is discharged at a Hunter Water WWTW.

It is an offence under Section 31 of the Hunter Water Act 1991 to discharge any substance into a sewer or other works owned by Hunter Water without its prior written. Further, the Customer Contract specifically states that the discharge of trade wastewater will only be allowed with the prior express written permission of Hunter Water. The written permission will take the form of an Agreement commensurate with the category of risk determined for the proposed discharge.

Hunter Water, and those customers permitted to discharge to its sewer systems, are also required to comply with requirements of the 'Protection of the Environment Operations Act (1997)' and substances. Hunter Water may adopt more stringent acceptance limits and accordingly has listed them separately within this Standard.

Based on the information supplied from the applicant, Hunter Water will determine the risk associated with the business activity, the proposed discharge regime, effluent quality and the characteristics of the discharge catchment. Dependent on the associated risk level, Agreements may be offered with varying discharge requirements.

In all circumstances Hunter Water reserves the right to apply any requirements it deems necessary to control, limit or prohibit discharge of trade wastewater to its sewer system.

3 TRADE WASTEWATER POLICY

The purpose of the Trade Wastewater Policy is to outline Hunter Water's requirements for the discharge of trade and tankered wastewater into Hunter Water's sewerage system and WWTW.

4 TRADE WASTEWATER AGREEMENTS

In addition to Tanker Agreements, there are four types of Agreements that have been drafted to reflect increasing levels of risk associated with a particular discharge. The Category 1 Agreements represent the lowest risk, ranging up to Category 4 Agreements representing the highest level of risk. These are described in Table 2 below.

Table 1 Categories of Trade Wastewater Discharge

Agreement Type	Category	Description
Deemed	1	Due to the relatively low risk associated with Category 1, a 'deemed' Agreement is put in place
Minor	2	Category 2 Agreements are suitable for the majority of low-moderate risk trade wastewater dischargers
Moderate	3	Category 3 is suitable where Hunter Water considers that the proposed discharge has the potential to be significant, usually because of the nature or the quantity of the wastewater
Major	4	Category 4 is suitable where Hunter Water considers the proposed discharge to be significant, usually because of the nature or the quantity of the wastewater
Tanker	N/A	Category 5 Agreements are allocated to all tanker companies that discharge wastewater directly at a Wastewater Treatment Works.

At the time a business changes activity, owners or occupiers, and/or requires development consent from Council to do so, an application to discharge Trade Wastewater to sewer must be made allowing an individual assessment to be made.

The owner or occupier (as the business operator) or an independent agent representing either of these parties may make an application. Both the property owner and the business operator must sign the application. Applications can be made by emailing enquiries@hunterwater.com.au.

4.1 Quality Assurance

An internal review process will be undertaken for each Trade Wastewater application to ensure that the requirements of Hunter Water, including this standard, are applied consistently and fairly to all applicants.

4.2 General Terms and Conditions common to all Agreements

Each Agreement is subject to a number of site specific conditions nominated in the Agreement and the broader requirements set down in the Trade Wastewater Standard published by Hunter Water. The conditions prescribed may include, but not limited to:

- (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
- The permitted rate of discharge to sewer
- The discharge factors to be applied to metered water consumption and/or trade wastewater discharge
- The type of wastewater to be accepted

- The permitted times of discharge and the days of operation
- Conditions related to the payment of fees
- The authority to enter land or buildings
- The authority to impose standards in relation to the quality of wastewater to be discharged

4.3 Transfer of Agreement

The Application cannot transfer an Agreement to any other person or company.

An Agreement is not transferable between premises. In this instance a new application must be made to obtain a new Agreement from Hunter Water or steps may be taken by Hunter Water to prevent discharge that may include prosecution.

In considering the issue of a new Agreement, Hunter Water will take into account conditions at the time of the new application, it cannot be assumed that the conditions of the new Agreement will be identical to those previously specified.

4.4 Refusal to issue an Agreement

Hunter Water may refuse to issue a new Agreement or a renewal or an existing Agreement for any of the following reasons:

- a) The applicant has not provided adequate information to enable Hunter Water to establish an Agreement; or
- b) The applicant is unable to demonstrate to Hunter Water that they are able to meet the conditions contained in this standard; or
- c) Hunter Water has determined that the proposed discharge poses an unacceptable risk to Hunter Water's employees, assets or its ability to meet its Environmental Protection Authority (EPA) discharge licenses.

4.5 Cancellation of Agreement

Hunter Water may cancel or suspend an Agreement if the holder has contravened any conditions of the Agreement, Trade Wastewater Policy, Trade Wastewater Standard or Hunter Water's Customer Contract. On cancellation or suspension of an Agreement, discharge of trade wastewater must cease, and Hunter Water will take all reasonable steps to ensure that this occurs.

4.6 Agreement Re-establishment

After an Agreement has been cancelled or suspended, Hunter Water may decide to issue a new Agreement with altered Schedules. This will allow the Applicant to continue discharging to Hunter Water's sewer subject to new conditions. Fees and charges may apply as approved by the Independent Pricing and Regulatory Tribunal (IPART).

4.7 Change of Ownership

For customers with a Trade Wastewater Agreement, it will be necessary for the owner or occupier to notify Hunter Water when the property is sold. This will then enable Hunter Water to cancel the Agreement. The new owner or occupier is to make a new application to discharge trade wastewater to sewer.

4.8 Term of Agreement

MAJOR, MODERATE and TANKER – For new major/moderate customers, or major/moderate customers renewing Agreements based on changed business activity, a twelve month term will be adopted for any Agreement issued by Hunter Water. Following the initial twelve months of operation a review is required to be undertaken to determine the most appropriate final requirements for the customer in question. A term of five years will then generally be adopted for continuing Agreements.

MINOR – Generally an ongoing agreement will be adopted for customers with minor agreements. This term may be decreased at Hunter Water's discretion, based on results of inspections or special circumstances that result in greater risk to Hunter Water's assets.

DEEMED – Deemed agreements will have no term and operate infinitum unless the customer changes business activity or sells the premises.

4.9 Monitoring

It is the dischargers' responsibility to ensure that both the quality and quantity of the wastewater discharge to sewer are in accordance with Hunter Water's requirements.

To ensure compliance with Hunter Water's acceptance standards and the conditions of the Agreement, authorised officers of Hunter Water may enter premises to carry out trade wastewater inspections and collect samples for analysis. In the case of Tanker's, WWTW Operators and/or automated sampling machines may collect samples for analysis at the tanker company's expense.

Inspection and sample frequencies will vary depending on the risk posed by the discharge to Hunter Water's wastewater network.

All sample point locations are to meet Hunter Water's requirements which include accessibility and a safe working environment in which to carry out the sampling duty. It is the responsibility of the agreement holder to provide a safe sample point location and to maintain it in such a manner.

Samples are to be collected and analysed in accordance with Standard Methods for the Examination of Water and Wastewater (Current, 22nd Edition of APHA – AWWA – WEF). A duplicate sample may be provided to the agreement holder for independent analysis (where agreed prior to sampling taking place).

All analysis of samples shall be carried out by a NATA approved laboratory or a laboratory approved by Hunter Water. All sampling and analysis costs will be at the customers cost and will be added to the customers' next invoice.

Hunter Water may require a metering device to be installed to monitor the wastewater discharge volume from a premise. All costs associated with purchasing, installing and operating flow meters will be the responsibility of the owner of the property. The metering device is to be located in a safe, accessible location and be maintained in such a manner.

Septicity Discharge Levels

The trade waste discharge or sewerage discharge received at Hunter Water's agreed sewer connection point shall meet the acceptance limits as listed in Section 7 of this Standard.

4.10 Failure to obtain written Agreement

Section 31 (1) of the Act makes it an offence to discharge substances to works owned by Hunter Water without the prior written agreement of Hunter Water:

- Maximum Penalty: 100 Penalty Units (\$11,000) for an individual; or
- Maximum Penalty: 200 Penalty Units (\$22,000) in the case of a corporation

Section 3.2.4 of the Customer Contract requires customers to obtain a written Agreement with Hunter Water prior to discharge of trade wastewater.

4.11 Trade Wastewater Discharges within Unit Complexes

A Trade Wastewater Agreement will be made with the individual occupiers/owners of a strata unit not the strata master. This means that all Trade Wastewater dischargers within a strata complex that have a Hunter Water account will have an independent Trade Waste Agreement.

For Minor or Moderate Trade Wastewater customers within a strata complex, an annual fee will appear on any strata unit accounts that have a Trade Wastewater Agreement.

Similarly for Major Trade Wastewater customers, an annual fee will appear on any strata unit accounts within a strata complex with trade Wastewater Agreements. The Trade Wastewater high strength charge will be calculated using their water usage (by proportioned allocation) and the strength of discharge as measured at a sampling point from that unit specifically. Where the proportioned allocation is significantly different from actual water usage, the use of a Trade Wastewater meter will be suggested at the owners cost.

Hunter Water may choose to issue a Major or Moderate Agreement on the Strata Account if the number of units within the complex is likely to pose an increased risk.

5 TANKERING

5.1 Tanker Delivery Process

- All tanker companies must have a current Tankering Agreement with Hunter Water before any tankered waste can be transported to a WWTW.
- All tanker companies must ensure their drivers have also been inducted and abide by all conditions of the Service Provider (The Company managing Hunter Water's WWTW).
- Direct tanker discharge to 'HWC sewerage system (Access chambers) is not allowed. Tankered wastewater must be discharged at an approved WWTW.
- Hunter Waters WWTW are designed to treat domestic wastewater. For wastewater to be acceptable it must be comparable to household wastewater.
- Not all WWTW accept tankered wastewater. The below Table shows the WWTW that accept tankered wastewater as well as the type(s) of wastewater accepted.

Table 5.1 Acceptance of tankered wastewater to Hunter Water WWTW

WWTW	Address	Septic Effluent	Mixed load of septic effluent and septic sludge	Treated Greasy Effluent	Treated Oily Effluent	Portable Toilet Waste	Sludge (Septic or other)	Ground or Storm Water	Any other type of wastewater
				With prior approval by Hunter Water					
Raymond Terrace	Off Elizabeth Avenue, RAYMOND TERRACE	✓	✓				Prohibited		
Morpeth	Off Tank Street, MORPETH	✓	✓						
Dora Creek	Marconi Road, DORA CREEK	✓	✓						
Kurri Kurri	Off, MacLeod Rd, KURRI KURRI	✓	✓	✓	✓				
Burwood Beach	Off Scenic Highway, MEREWETHER					✓			

5.1.1 Septic wastewater generated inside Hunter Water's area of operations

- All tanker companies must comply with the conditions set out in the Trade Wastewater Policy, their Tankering Agreement, this Trade Wastewater Standard, as well as the requirements of the Service Provider.
- All tanker companies are to inform their drivers of these requirements so that full compliance is achieved at all times.
- All tanker operators/drivers are to have undertaken a General Induction by the Service Provider as well as a site specific induction at each WWTW before any deliveries are made. Prior to delivering to a WWTW not previously visited by the operator/driver, the WWTW operator must be contacted by the tanker operator/driver to arrange a site induction.
- Drivers are to comply with this standard, obey site signage, speed limits and advisory signs and any specific directions given by the WWTW Operators while on-site.
- Deliveries will be accepted only between 7am and 3pm, Monday to Friday except public holidays.
- The driver will contact a WWTW Operator onsite prior to discharge.
- Tankered waste may be checked and sampled by a WWTW Operator onsite to determine whether the load is of an acceptable quality.
- Where a sample is sent for laboratory analysis, and the load is determined to be a high strength load, additional fees will be invoiced for the acceptance of the load.
- A delivery receipt will be created by the WWTW Operator on site for every load discharged. Information required includes:
 - Company Name
 - Driver Name
 - Volume
 - Discharge Type
 - Source of load
- The driver will need to provide all required information for the load to be accepted. The WWTW Operator may inspect the driver's run sheets to confirm the information supplied.
- Tanker companies will send through a monthly summary of all loads delivered to Hunter Water WWTW via a spreadsheet provided by Hunter Water.
- Tanker loads will be charged in accordance with Hunter Water's IPART approved fees

5.1.2 Wastewater originating from outside Hunter Water's area of operations

Tanker wastewater sourced from outside Hunter Water's area of operation is not accepted as part of a standard Tanker Agreement. Where a tanker company wishes to dispose of wastewater sourced from outside of Hunter Waters area of operations, a Trade Wastewater Agreement Variation form must be submitted to Hunter Water at least 5 working days prior to proposed discharge to enable the request to be considered. Discharge of wastewater sourced from outside Hunter Water's area of operations may only occur after the applicant has received written approval from Hunter Water. Failure to comply with this requirement will result in the termination of the Tanker Agreement.

5.1.3 Industrial wastewater / non-septic tank pump outs

Industrial wastewater or non-septic tank pump outs will not be accepted unless prior approval in writing has been given by Hunter Water.

If disposal is proposed, sample test results from a NATA accredited laboratory are required to be submitted to Hunter Water at least 5 working days prior to the proposed disposal date. Samples are to be representative of the wastewater proposed to be delivered.

If accepted, charging will be based in accordance with Hunter Water's IPART approved charges.

The following information is also to be supplied:

- Company and site from where the wastewater originated
- Type of wastewater
- Volume of wastewater
- Sample results of wastewater
- Expected discharge frequency of the wastewater

Solids (eg gravel sand, rags, plastic) must not be delivered with loads.

It is prohibited to deliver non-domestic waste ie trade wastewater to Hunter Water's Wastewater Treatment works without permission.

6 TRADE WASTEWATER CATEGORY

Table 6.1 defines the categories of trade wastewater discharge and the typical characteristics associated with each. This table is used to determine the likely risk category within which a proposed trade wastewater discharger may fall. Categories 1, 2, 3 and 4 apply to trade wastewater customers that discharge directly to sewer. Where a business activity falls within Category 1, no further detailed assessment will be required, however, those falling within Categories 2, 3 and 4 require a more rigorous assessment commensurate with the increasing risk level. Tanker Agreements apply to all tanker companies regardless of the wastewater volumes and type they discharge.

6.1 The Assessment Process

The trade wastewater application must provide sufficient information to Hunter Water to allow the determination of potential impacts and the associated likelihood of these events occurring.

A preliminary risk assessment is carried out to initially classify the likely risk category (Table 3), following which, a detailed risk assessment may be necessary for higher risk dischargers falling with Category 2, 3 or 4.

Table 6.1 Determining the Likely Trade Wastewater Category

Agreement Type Required	Category	Description	Typical Business Activities	Overall Risk
Deemed Agreement	1	Domestic type waste discharged only, may have some process water, no special needs.	Hair dressers, nail salons	Very Low
Minor - Individual Written Agreement	2	Domestic and process water discharged, likely need pre-treatment prior to discharge or have restrictions on discharge	Smaller retail food producers, small restaurants, mechanical workshops, butchers, bakers, dentist, etc	Low
Moderate - Individual Written Agreement	3	Domestic and process water discharged, need of pre-treatment prior to discharge highly likely, restrictions on discharge highly likely	Restaurants, larger retail food producers, car wash, vehicle spray painters, Service Station, car detailers, large pubs and clubs, smaller shopping centres	Moderate
Major - Individual Written Agreement	4	Domestic and process water discharged, pre-treatment prior to discharge highly likely, restrictions on discharge highly likely, contaminant loads may be significant and/or include Restricted Substances. Multiple businesses may operate from the one premise.	Food manufacture, food processing, metal processing (galvanising, electroplating), oil refinery, chemical production, municipal swimming pools, Industry, hospitals, Laboratories, large shopping centres.	High
Tanker - Individual Written Agreement	N/A	Tanker Waste. Wastewater only. Duty of care lies with tanker company to ensure solids (sludge, rocks, sand, plastics etc) are not discharged to any Hunter Water WWTW	Residential properties not connected to sewer. Portable toilets at construction sites or entertainment or sporting events	High

7 SUBSTANCE DEFINITIONS AND ACCEPTANCE LIMITS

There is a range of substances that may be contained in a trade wastewater discharge that carry with them varying levels of risk. The three categories used by Hunter Water include:

- General Substances
- Restricted Substances
- Prohibited Substances

Each substance carries with it specific chemical and physical acceptance limits.

At the lower end of the risk range are those substances that are generally considered to be commonly occurring or display characteristics that categorises them as having a low risk. At the high end of the risk range are those substances that are prohibited from discharge to any of Hunter Water's assets or facilities.

7.1 General Substances

General Substances and their associated chemical and physical acceptance limits shall apply to all trade wastewater discharges unless specifically qualified in the written Agreement issued by Hunter Water. These acceptance limits may be varied for Major (Category 4) Agreements.

Table 7.1 General Chemical Characteristics

Description	Limit	Comments
BOD₅ Biochemical Oxygen Demand at 5 days	500mg/L	Will be determined by the capacity of the receiving wastewater treatment plant. When required a specific BOD ₅ load limit is kg/day and/or a higher limit for BOD ₅ concentration in mg/L will be applied as a special Agreement condition. High BOD also increases the potential for the generation of sulphides in the wastewater.
NFR Non-Filterable Residue TSS Suspended Solids	500mg/L	High NFR/SS can: <ul style="list-style-type: none">• cause sewer blockages;• overload the treatment processes. When required a specific Suspended Solids load limit in kg/day and/or limit for Suspended Solids concentration in mg/L will be applied as a special Agreement condition.
COD Chemical Oxygen Demand	1500mg/ L	As for BOD ₅
TOC Total Organic Carbon	1200mg/ L	As for BOD ₅

Description	Limit	Comments
TDS Total Dissolved Solids	4000mg/L	High TDS reduces effluent reuse options and may contribute to soil salinity.
TOG Oil and Grease	150mg/L	Grease and oil may: <ul style="list-style-type: none"> • cause sewer blockages; • adversely affect the treatment processes and result in a detrimental impact to the receiving waters.
Nitrogen Ammonia plus Ammoniacal ion (measured as N)	50mg/L	High nitrogen levels (in its various forms) may: <ul style="list-style-type: none"> • adversely affect the safety of operations and maintenance personnel; and • significantly contribute to the nutrient load discharged to the receiving environment. <p>Higher values may be allowed subject to local pH and temperature conditions.</p>
Total Kjeldahl Nitrogen	150mg/L	
Phosphorus /Total Phosphorus (measured as P)	20mg/L	High Phosphorus may significantly contribute to the nutrient load discharged to the receiving environment.
Sulphur / Sulphate (measured as SO ₄)	2000mg/L	The Sulphur group of substances may: <ul style="list-style-type: none"> • increase the potential for the generation of sulphides in the wastewater; • adversely affect sewer structures; and • cause generation of odours (eg SO₂ gas) negatively impacting on the environment and assets of Hunter Water.
Sulphite (measured as SO ₂)	15mg/L	

Table 7.2 – General Physical Characteristics

Description	Limit	Comments
Temperature	< 38°C	High temperatures may: <ul style="list-style-type: none"> • increase damage to sewer structures; • increase the potential for anaerobic conditions to form in the wastewater; • promote the release of gases such as hydrogen sulphide (H₂S) and ammonia (NH₃); • affect the safety of operations and maintenance personnel.
pH	6.5 -10.0 4.5 -10.0	Extremes of pH may: <ul style="list-style-type: none"> • adversely affect biological treatment processes; • adversely affect the safety of operations and maintenance personnel; • cause corrosion of sewer structures; • increase the potential for the release of toxic gases such as H₂S and HCN. <p>Due to the lower natural occurring levels from grease arrestors (traps), a lower pH level has been adopted for discharge from these types of facilities.</p>
Colour	100 Dilutions	Colour may cause unfavourable discolouration of receiving waters. If colour is not noticeable in the discharge then generally this will be acceptable to Hunter Water. Higher dilution levels, or other requirements, may need to be imposed where the particular colour is not biodegradable.

7.2 Restricted Substances

Other substances to be controlled in discharges to sewer are those which:

- Are persistent and/or toxic
- Pass through a treatment plant untreated or partially treated and affect the receiving environment
- Are deleterious to the sewerage system, employees of the sewerage authority and/or the public
- Inhibit process efficiency or make collection and treatment of wastewater more expensive
- Could lead to contamination of the wastewater treatment site

Typically metals and organic wastes fall within the category of “restricted” substances.

Tables 7.3 and 7.4 respectively, deal with metals and organic type wastes.

Table 7.3 Metals

Metal	Symbol	Maximum mg/L	Comments
Aluminium	Al	100.0	Aluminium compounds, particularly in the presence of calcium salts, have the potential to precipitate as a scale, which may cause a sewer blockage.
Arsenic*	As	0.5	
Cadmium*	Cd	0.5	
Chromium*	Cr	2.0	
Cobalt	Co	2.0	
Copper*	Cu	2.0	
Iron	Fe	30.0	Iron salts may precipitate and cause a sewer blockage. High concentrations of ferric iron may also present colour problems depending on local conditions.
Lead*	Pb	0.4	
Manganese	Mn	2.0	
Mercury*	Hg	Prohibited	
Molybdenum	Mo	10.0	
Nickel*	Ni	1.0	
Selenium*	Se	2.0	
Silver**	Ag	0.5	
Tin	Sn	2.0	
Zinc*	Zn	1.5	

Note: * These metals are used in determining the Heavy Metal Charges.

** Silver discharges (for example X-Ray, photographic, printing, dental and medical establishments) must conform to the Photographic Uniform Regulations of the Environment (PURE). Photographic Industry Code of Practice, as advised from time to time, in all aspects unless it contradicts this Standard.

The silver maximum concentration of 50mg/L is contained in the PURE Code. Peak discharges of this strength area acceptable where the total discharge of flow is low and thus the silver load is also low.

7.2.1 Maximum Daily Load Limit

Depending on the concentration and volume proposed to be discharged to sewer over time, Hunter Water may determine a Maximum Daily Load Limit (kg/day) to apply to the discharge.

In the future Hunter Water proposes to move towards the broader application of Maximum Daily Load Limits to all Restricted Substances (Metals).

Table 7.4 Organic Wastes

Organic Compounds	Maximum Concentration mg/L	Comments
Formaldehyde	50	Formaldehyde in the sewer atmosphere can adversely affect the safety of operations and maintenance personnel.
Phenolic Compounds	10	Phenols may adversely affect biological treatment processes. They may not be completely removed by conventional treatment and subsequently may impact on the receiving environment.
Pentachlorophenol	5	Pentachlorophenol: <ul style="list-style-type: none"> • can adversely affect the biological treatment process; • may impair the quality of the receiving environment.
Total Petroleum Hydrocarbons	30	Petroleum hydrocarbons may adversely affect the safety of operations and maintenance personnel.
BTEX - Benzene - Toluene - Ethylbenzene - Xylene	0.1 0.5 1.0 1.0	BTEX is the acronym used for benzene, toluene, ethylbenzene, and xylene. These compounds are soluble, flammable and may adversely affect the safety of operations and maintenance personnel.
Halogenated Aliphatic Compounds	5	Because of their stability and chemical properties these compounds: <ul style="list-style-type: none"> • may adversely affect the treatment processes; • may impair the quality of the receiving environment; • may adversely affect the safety of operations and maintenance personnel.
Boron Measured as B	25	Boron is not removed by conventional treatment. High concentrations in effluent may restrict irrigation applications.
Bromine Measured as Br₂	5	High concentrations may adversely affect the safety of operations and maintenance personnel.
Chlorine Measured as Cl₂	5	Chlorine: <ul style="list-style-type: none"> • can adversely affect the safety of operations and maintenance personnel; • can cause corrosion of sewer structures.

Organic Compounds	Maximum Concentration mg/L	Comments
Fluoride Measured as F	30	Fluoride is not removed by conventional treatment, however pre-treatment can easily and economically reduce concentrations to below 20mg/L.
Cyanide Measured as CN	1	Cyanide may produce toxic atmospheres in the sewer and adversely affect the safety of operations and maintenance personnel.
Sulphide Total measured as S₂	2	Sulphides in wastewater may: <ul style="list-style-type: none"> • cause corrosion of sewer structures; • generate odours in sewers which could cause public nuisance; • result in sewer gases which could adversely affect the safety of operations and maintenance personnel.

7.3 Prohibited Substances

A Prohibited Substance is any matter that:

- In the opinion of Hunter Water is injurious to, or liable to form compounds injurious to, any part of Hunter Water's or to employees to Hunter Water engaged in the operation or maintenance of the Works, the community, or the environment;
- Will impair or be liable to impair the operations of functions of Hunter Water;
- Falls within the meaning of the Protection of the Environment Operations Act 1997, causing pollution of any water body;
- Hunter Water may declare, from time to time, to be prohibited by notice published in a newspaper circulating generally in the area covered by the Operating Licence.

For the purposes of this Standard the measurable acceptance limit shall be either zero or the lowest detectable limit of the prohibited substance.

The substances that are prohibited from discharge to sewer or treatment at our works include but are not limited to:

Table 7.5 Prohibited Substances (Common)

Prohibited Substance	Description
Stormwater to sewer	<p>Uncontrolled discharge of stormwater runoff to sewer is strictly prohibited.</p> <p>Where contamination occurs, precluding discharge to normal stormwater drainage systems under EPA Guidelines, Hunter Water may grant approval for discharge to sewer under very controlled circumstances and where written approval has been granted by EPA or the relevant local council. Such restrictions may involve storage for subsequent discharge when sewer hydraulic capacity is available or pre-treatment.</p>
Ground Water / Run – off / Fracking Water / Leachate	See Stormwater definition above.
Trade Wastewater to Stormwater Channels	The discharge of trade wastewater to Hunter Water’s storm water system will only be permitted in exceptional circumstances and only after the Applicant has received a Licence from the EPA detailing the particular discharge requirements.
Households Waste Types	Any animal matter, wool, hair, flesh, feathers, dust, ashes, soil, rubbish, grease, garbage, dead animal, vegetable or fruit parings, wood, rags, synthetic plastics, steam or any solid matter.
Discrete oil	Oil, where it constitutes the majority of the liquid discharged, or has formed free floating discrete particles must be removed prior to discharge.
Toxic substances	These may be poisons, any substances that are carcinogenic, may cause mutations, and/or could materially affect the environment or cause harm to humans.

Table 7.6 Prohibited Substances (Rare)

Prohibited Substance	Description		
Explosives	<p>Any substance that could cause an explosion or fire in any of Hunter Water's Works.</p> <p>Generally substances may become explosive and/or flammable where LEL (Lower Explosive Limit) > 10%.</p> <p>Sewer connections to fuel dispensing areas, flammable and dangerous goods stores will not be permitted. In all cases the discharge must not exceed 10% of the lower explosive limit at 25°C.</p>		
Infectious & Medical Wastes	<p>Any infectious or contagious substance, whether solid or liquid, which has not been disinfected is strictly prohibited from discharge.</p> <p>The discharge of solid wastes from any hospital, clinic, surgery, laboratory or any other medical or veterinary facility to the sewers is strictly prohibited.</p> <p>Wastes may include, but not limited to, hypodermic needles, syringes, instruments, utensils, swabs, dressings, bandages, paper and plastic items of a disposable nature and any portion of human or animal anatomy.</p>		
'GM' Substances	<p>Genetically Modified substances as a general rule must not be discharged to sewer.</p> <p>Hunter Water may consider accepting such substances only where the Office of the Gene Technology Regulator approves of discharge to the broader environment under the Gene Technology Act 2000 as amended.</p> <p>For further information contact:</p> <p>Office of the Gene Technology Regulator Telephone: 1800 181 030 www.ogtr.gov.au</p>		
Radioactive Substances	<p>There are no circumstances in which Hunter Water can accept discharge of radioactive substances.</p>		
Biological Additives	<p>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.</p>		
Pesticides	Organophosphates Azinphos-menthyl Azinphos-ethyl Chlorypritos Coumaphos Demeton Diazinon Dichlorvos Dimehoate Disulfoton Fenitrothion	Fenthion Malathion Methamidophos Mevinphos Omethoate Oxydemeton- methyl Parathion Triazophos Trichlorfon	Organochlorines Aldrin Chlordane DDT Dieldrin Heptachlor Lindane Pesticides (General) Insecticides, Herbicides & Fungicides

Prohibited Substance	Description
Other Organic Compounds	Halogenated Aromatic Hydrocarbons (HAHS) Polychlorinated biphenyls (PCBS) Polybrominated biphenyls (PBBS)
	Polynuclear Aromatic Hydrocarbons (PAHS)

7.4 Adverse effects of non-compliance trade wastewater

Grease, Oil and Sludges

May:

- Cause blockages in poorly maintained pre-treatment (eg grease arrestor) facilities
- Upon cooling, accumulate on the walls of sewer pipes and pump stations causing blockages and other maintenance problems
- Deposit in wastewater treatment works on channels, screens and tanks.
- Cause overflow conditions in premises where facilities are not cleaned on a regular basis
- Contribute to pollution and odour problems if these residual wastes are not disposed of properly at an approved facility

Suspended Solids

These are small particles of matter in wastewater. High levels of suspended solids cause blockages/odours in the sewerage system.

Detergents

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

High Strength Wastes (BOD)

Wastes with a high biochemical oxygen demand (BOD) can cause severe disruption to secondary treatment works (especially activated sludge plants) with additional load resulting in extra costs. Excessive detention periods in treatment facilities or in the sewerage system can cause odorous hydrogen sulphide gas emission which is a hazard to workers and degrades and corrodes sewer assets.

Acidic Wastes

Wastes with a pH below 6.5 can be hazardous to Hunter Water's personnel and cause corrosion and structural damage within the sewerage system. High volumes of acidic waste can also adversely affect treatment works.

Alkaline Wastes

Wastes with a pH above 10 may cause burning on exposed tissue and can damage rubber ring joints within the sewerage system. High volumes of acidic and alkaline wastes can also cause problems in treatment works.

8 SPECIAL DISCHARGE REQUIREMENTS

8.1 Contaminated Surface or Groundwater to Sewer

The ingress of surface water and ground water to the sewerage system can cause severe operational difficulties for Hunter Water and potentially increase the number of sewer overflows.

However, Hunter Water recognises there are some circumstances where it is environmentally beneficial to accept contaminated surface or groundwater to sewer under strict controls.

It will be necessary for the applicant to allow sufficient time prior to requiring discharge to allow Hunter Water to determine our requirements and issue a Trade Wastewater Agreement reflective of the risk posed by the discharge where necessary.

Contaminated Groundwater Sources

If a customer wishes to discharge contaminated ground water, surface water run-off, fracking water, leachate or any other form of groundwater directly to a sewer or via tanker to a Hunter Water WWTW, a written statement from EPA or the relevant regulatory body prohibiting the ground water from being discharged to stormwater must be first obtained by the applicant and submitted to Hunter Water for consideration.

Where ground water is being extracted for discharge to sewer, the NSW Office of Water and EPA may require a licence for the ground water extraction. A copy of the licence must be furnished forwarded to Hunter Water.

Details of the proposed groundwater discharge will be required to be submitted for Hunter Water to determine the load of contaminants being ultimately discharged to its sewer system and whether it will agree to such a discharge to sewer. Details submitted need to include the following information:

- Proposed dewatering regime, pump rate, time of operation, total volume to be discharged;
- Full analysis of chemical, biological, and physical characteristics of the ground water source (concentrations, test pit locations, distribution across site, etc); and
- How the applicant proposes to meet the allowable discharge concentrations nominated elsewhere in this standard.

Hunter Water will advise the applicant of its assessment and the any conditions to be met for if approval to discharge is provided.

Long Term discharges

All discharge arrangements which continue for more than six months ie permanent type arrangements are deemed to be 'Long Term' and therefore must meet the allowable discharge concentrations nominated in the Trade Wastewater Standards.

Short Term discharges

A short term discharge is defined as an arrangement which will continue for less than six months ie is temporary in nature.

Hunter Water may elect to adopt a higher allowable acceptance limit only where Hunter Water is satisfied that the proposed contaminant load discharged to sewer does not affect compliance with its WWTW licence conditions.

For Short Term dischargers, the allowable concentration, if varied from Hunter Water's requirements for prohibited substances for long term users shall not exceed the Guideline Values nominated in the National Water Quality Management Strategy "Guidelines for Sewerage Systems – Acceptance of Trade Waste (Industrial Waste)" 1994.

Only short term discharges may be eligible to be assessed in terms of allowable discharge concentrations under the National Water Quality Management Strategy "Guidelines for Sewerage Systems – Acceptance of Trade Waste (Industrial Waste)" 1994.

Discharge from Open Areas

In order to prevent overloading the sewerage system with excess flows from discharging rainwater collected on open areas, any customers wishing to discharge surface run off to sewer must firstly obtain written permission from the relevant local council or the EPA and submit to Hunter Water for consideration.

Hunter Water will also need to approve any such discharge and depending on the size of the open area, will provide the appropriate list of conditions that must be followed regarding the design and operation of the facility.

8.2 Discharge to Stormwater Systems

Generally, the discharge of any liquid waste, other than stormwater, to Hunter Water's stormwater systems is prohibited. The contents of stormwater drains do not generally receive treatment prior to discharge to receiving waters and are very difficult to control due to the volumes generated and intermittent nature of discharge.

Prior to applying to Hunter Water for allowance to discharge to a stormwater system, the applicant must first obtain written acknowledgement/approval with their application. Discharge water quality must meet appropriate water quality guidelines and not have a measurable impact on the physical, chemical or biological characteristics of the receiving waters as defined by the POEO Act. It is advisable to engage a qualified environmental consultant to comprehensively test the water quality prior to and during any discharge to stormwater and treat the water as required. Ongoing discharge water analysis results are required to be forwarded to Hunter Water.

Where groundwater is being extracted for discharge to the stormwater system, the NSW Office of Water may require a licence for the groundwater extraction. A copy of the licence must be forwarded to Hunter Water.

Hunter Water will independently assess the application and may elect to impose additional discharge conditions, or, prohibit discharge altogether.

8.3 Sink-to-Sewer Waste Disposal Units

The use of sink-to-sewer disposal units (also called in-sink food waste disposers or garbage grinders) will be permitted for single/standalone residential customers, subject to the following conditions being met:

1. The installation of garbage disposal units is to be carried out by a licensed plumber.

For commercial customers and residential medium density/multi-unit developments, condition 1 must be met as well as the following:

2. Hunter Water must be notified in writing of the intention to install a sink to sewer disposal unit prior to installation.
3. Approval for the installation must be granted by Hunter Water to be connected to Hunter Water's sewerage system.
4. Appropriate pre-treatment facilities will be required to be installed after the sink to sewer disposal unit.
5. For new developments involving commercial premises, the trade wastewater pre-treatment facility will need to be sized to remove the additional load generated by the sink to sewer disposal unit.

8.4 Use of Additives in Pre-Treatment Systems

The addition of solvents, enzymes, mutant or natural bacteria, odour control agents and pesticides to grease traps or biological pre-treatment systems is not permitted except by specific written application and subsequent authorisation by Hunter Water.

8.5 Effluent Improvement Programs

Minor (category 2), Moderate (category 3) and Major (category 4) trade wastewater discharges will need to improve the quality of their trade wastewater if the average concentration of pollutants in their discharge does not meet acceptance standards nominated in the Agreement. In these circumstances the discharger, owner or applicant as appropriate, may be directed by Hunter Water to prepare and comply with an Effluent Improvement Program meeting the performance criteria set by Hunter Water.

As part of an Effluent Improvement Program the customer is required to:

- Identify methods to improve the quality and/or quantity of trade wastewater discharge
- Set time frames and expected improvements
- Report on progress of program
- Prepare a management plan
- Improve the quality and/or quantity of trade wastewater discharge.

Giving due consideration to both the customers' business circumstances and Hunter Water's needs and obligations, where a customer ignores, or unnecessarily delays implementation of an Effluent Improvement Program, Hunter Water may take direct action to cease the discharge of trade wastewater to sewer.

The customer may then reapply to discharge trade wastewater to sewer only when suitable pre-treatment is in place to meet the requirements of this Standard.

9 FEES AND CHARGES

The Trade Wastewater fees and charges described in Section 7 are in addition to the fees and charges assessed under Section 50 of the Hunter Water Act as specified in a 'Notice of Formal Requirements' letter specific to the development proposed.

Prior to issue of a Trade Wastewater Agreement the requirements of the Notice of Formal Requirements letter must first be satisfied and hydraulic designs (where required) for internal water and sewer services be assessed and approved by Hunter Water.

9.1 General

The fees and charges Hunter Water collects are regulated by the NSW Independent Pricing and Regulatory Tribunal (IPART) and remain in force for a specific term. Trade Wastewater fees and charges are subject to CPI adjustment on 1 July each year and a reviewed more extensively as part of each IPART price path.

Fees and charges for the discharge of trade wastewater to Hunter Water's sewers will be levied on the property owner as part of the normal water/sewage notice of charges issued three times per year.

In determining the fees and charges Hunter Water aims to recover the costs directly attributable to the acceptance and processing of trade waste. Accepting wastes of higher or different makeup than domestic waste incurs additional treatment costs, additional monitoring and analysis, inspections, and policing to ensure satisfactory performance over time.

The current charges are detailed in the separate Hunter Water publication "Trade Waste Fees" as amended.

The following charges will apply to a trade wastewater discharge to sewer commensurate with the type of Agreement entered into with Hunter Water:

- Establishment Fees
- Annual Agreement Fees
- Agreement Renewal Fees
- Analytical Fees
- Inspection Fees
- Strength Fees eg. BOD/NFR, Heavy Metals, Sulphate
- Usage (volume based)
- Miscellaneous
- Tankering Fees
- Variation Fee

There are no trade wastewater fees and charges associated with Deemed (Category 1) Agreements.

9.2 Breach of Agreement and Rectification Work

Where it can be demonstrated that a customer has breached the conditions of the Agreement the Applicant, owner, or occupier as appropriate, will also be required to pay all costs incurred by Hunter Water associated with a breach of Agreement or this Standard, and any rectification work undertaken.

9.3 Fee Structure for each Category

FEE DESCRIPTION	CATEGORY OF				
	TRADE WASTEWATER DISCHARGE				
	TANKER	Deemed 1	Minor 2	Moderate 3	Major 4
1. Agreement Establishment	✓	NA	✓	✓	✓
2. Agreement Renewal	✓	NA	✓	✓	✓
3. Annual Fee	NA	NA	✓	✓	✓
4. Inspection Fee Per Visit	NA	NA	✓ ¹	✓ ²	✓
4. Analytical Fees	✓	NA	✓	✓	✓
4. Delivery Processing Fees	✓	NA	NA	NA	NA
5. Strength Fees	✓	NA	NA	NA	✓

Notes: 1. The annual fee for Minor Agreements includes an inspection every five years. Additional inspections, if required are charged at the rate for a Major Agreement Inspection.

2. The annual fee for Moderate Agreements includes an inspection every year. Additional inspections, if required are charged at the rate for a Major Agreement Inspection.

NA Not Applicable

9.4 Analytical Fees

The discharger shall pay Hunter Water the analytical testing fees for analyses carried out by Hunter Water in accordance with the Agreement.

The discharger upon service of notice by Hunter Water shall pay charges of analysis testing carried out due to a breach of an Agreement.

9.5 Inspection Fees

Minor (Category 2)

One inspection every five years is included as part of the Annual Agreement Fee. However, if the conditions contained in the Trade Wastewater Agreement or Hunter Water's Trade Wastewater Standard have been breached, any subsequent inspections or sampling deemed to be required by Hunter Water will be charged at the rates for Category 4 dischargers.

Moderate (Category 3)

One inspection per year is included as part of the Annual Agreement Fee. However, if conditions contained in the Trade Wastewater Agreement or Hunter Water's Trade Wastewater Standard have been breached, any subsequent inspections or sampling deemed to be required by Hunter Water will be charged at the rates for Category 4 dischargers.

Major (Category 4)

Each inspection will be charged at a set rate according to the "Trade Waste Fees" publication.

If trade wastewater is discharged from a premise to Hunter Water's works, and that premise is operating without a Trade Wastewater Agreement, then the Owner/Operator will be charged for the inspection and any necessary sampling deemed to be required by Hunter Water and back charges with interest applied for the period of overdue payment.

9.6 High Strength Fees

BOD/NFR

The fees and charges applied by Hunter Water are aimed at recovering the additional cost of treatment where the discharge to sewer is more concentrated than typical domestic sewerage. Domestic sewerage typically displays a Biochemical Oxygen Demand (BOD) or Non-Filterable Residue (NFR) concentration of 350mg/L.

The trade wastewater high strength billing is triggered when the average BOD or NFR sample results exceed 350mg/L. The impact on the Hunter Water's sewerage system is measured as the load (kg) of BOD or NFR. This is a function of concentration (mg/L) and volume (kL) discharged to sewer.

Fees are calculated on an average concentration of the most recent sample results. A minimum of three results is used for the average. The average can be made up from all unbilled sample results (three or more) or three results drawn from unbilled and/or most recent past results. A minimum of one sample is taken per billing cycle, this generally gives a moving cycle due to the risk associated with the discharge.

The discharge of trade wastewater to the sewerage system places an additional load on that system and the charges applied, recover the costs of this additional loading on sewerage system. This additional waste load (measured in kg) is a result of the concentration (strength) of the substance in the waste, and the discharged volume.

Heavy Metal Charge

Metals in the sewerage accumulate in the wastewater treatment biosolids waste sludge and have the potential to reduce the reuse potential of biosolids. The discharge to the environment is also restricted by the Department of Environmental Protection Authority (EPA) by licences and the charging of load based licence fees. Hunter Water's heavy metal charges are based on the total load metals discharged to Hunter Water's sewer and the charge varies between treatment works catchments.

Sulphate Charge

Sulphate discharge can be converted to sulphides resulting in hydrogen sulphide gas (odorous rotten egg gas) and products that corrode pipes and concrete assets. The charge is for the load of sulphate discharged. The formula used for calculating the charge incorporates a multiplication factor for the discharge concentration of sulphate over the fixed concentration of 2000mg/L. This factors the base unit price up or down around a concentration of 2000mg/L:

Unit rate per Kg = \$ Base Rate x SO₄ value / 2000

Incentive Charge

Hunter Water has an 'incentive charge' as a way of encouraging customers to maintain compliance with limits specified in trade waste agreements. The incentive charge only applies when new load limits have been set or existing load limits have been agreed with the customer in full knowledge of the incentive charge.

The incentive charge is applied for loads exceeding an agreed load limit for each pollutant specified on a major trade wastewater agreement. The incentive fees apply to the proportion of load above the load limit for each billing cycle.

To make the incentive reasonable and effective, the 'incentive' load rate is set at triple the base load rate for loads beyond the load limit for each applicable pollutant set in the agreement.

9.7 Tanker Fees

Tanker Establishment and Renewal Fees

An initial establishment fee will be charged for Tanker Agreements. A renewal fee will be charged when a Tanker Agreement has either expired or requires updating to meet current circumstances.

Delivery Processing Fee

Tanker Companies are required to pay administration fees as outlined in the Trade Wastewater Schedule of Fees and Charges.

Waste Type and Volume Charges

Fees are charged for the volume and type of waste taken to the wastewater treatment works. Different fees are charged for the different waste types including Portable Toilet Waste, Septic Waste, Ship Waste and High Strength Waste. These charges are outlined in the "Trade Waste Fees" publication. High Strength Fees are explained above in Section 9.6.

Analytical Fees

Fees are charged for the cost of undertaking sampling and analysis of the wastewater being discharged to verify the wastewater quality. Where applicable, these analysis are used to charge high strength to the tanker company.

9.8 Miscellaneous Charges

Further fees for specific substances discharged may be determined by Hunter Water and will be specified in the Agreement.

10 TYPICAL COMMERCIAL AND INDUSTRIAL ACTIVITIES GENERATING TRADE WASTEWATER

10.1 General Trade Wastewater Generators

Listed below are some of the general businesses and industries that generate trade waste:

- Abattoirs
- Abrasive Blasting
- Aerial Spraying
- Agricultural Machinery
- Air Conditioning
- Auto Electrical
- Auto Mechanics
- Bakers
- Batteries
- Beauty Salons
- Bitumen Spraying
- Building Contractors
- Bus and Coach Service
- Butchers
- Cabinet Makers (French Polishers)
- Car and Truck Rentals
- Carpet and Lounge Cleaners
- Carriers/Transport Services
- Catering
- Clubs
- Commercial Cleaners
- Concrete Suppliers and Products
- Couriers
- Dairies
- Delicatessens/Small Goods
- Dentists
- Drycleaners
- Engine Reconditioning
- Fishmongers
- Hair Dressers
- Hire Equipment
- Hospitals
- Hotels
- Industrial Cleaners
- Joinery
- Laundrettes
- Lawnmowers
- Medical Practitioners
- Motels
- Motor Service Stations / Oil Companies
- Motorcycles
- Paint and Paint Manufacturers
- Panel Beaters and/or Smash Repairs
- Pest Control
- Photographers
- Poultry
- Printers
- Restaurants
- Screen Printers
- Take Away Food
- Taxicabs
- Transmissions – Automotive – Car Tyres
- Veterinary
- Waste Reduction & Disposal Services

10.2 Retail Food Businesses

Listed below are some of the retail food businesses that generate trade waste:

- Bakery (no pies nor sausage rolls)
- Bakery (pies and/or sausage rolls cooked on site)
- Boarding House
- Butchers
- Café
- Cafeteria
- Canteen
- Canteen (no food prepared, employees bring own meals)
- Caterer
- Cheese Cake Shop (made on premises)
- Chicken, Barbecue
- Chicken Charcoal
- Child Care Centre
- Chocolate Shop (made on premises)
- Club (with hot food)
- Coffee Shop (no hot food prepared)
- Coffee Shop (hot food prepared)
- Commercial Kitchen
- Community Hall (hot food cooked)
- Defence Force Mess
- Delicatessen (hot food cooked)
- Delicatessen (no hot food cooked and served, no meat cooked)
- Dessert Restaurant
- Doughnuts Cooking
- Fast Food Chains
- Fish Shop (no cooking on site)
- Fish Shop (cooking on site)
- Fruit and Vegetable Market (on site preparation of fruit salad and/or coleslaw)
- Fruit Salad Bar
- Food Hall
- Fudge Factory
- Function Centre
- Garbage Can Washing
- Hostel
- Hospital Kitchen
- Hot Bread/Pastry (no pies nor sausage rolls nor cream nor custards)
- Hot Bread (including pies, sausage rolls, creams, custards)
- Ice Cream Parlour
- Ice Cream Parlour (with hot food, take-away)
- Juice Bar
- Kebab Shop
- Loading Dock (roofed; vegetables and fruit unlocked)
- Motel Kitchen/Restaurant
- Noodle Bar
- Nightclub
- Nut Shop
- Pasta Meals
- Patisserie
- Pavlova Pantry
- Pie Shop
- Pizza Cooking (take-away/home delivery)
- Pizza Cooking Restaurant
- Pizza Cooking (no preparation nor washing up on site, pizza heated in retail container and sold for consumption of site)
- Potato Peeling (within commercial food preparation area)
- Restaurant
- Salad Bar
- Sandwich Bar
- Sandwich Bar (with hot food cooking/eat in or take-away)
- Service Station Forecourt Food Caravan
- Shopping Centre (with food preparation)
- Soup Kitchen
- Take-away Food Motorcycles
- Paint and Paint Manufacturers
- Panel Beaters and/or Smash Repairs
- Pest Control
- Photographers
- Poultry
- Printers
- Restaurants
- Screen Printers
- Take Away Food

10.3 General Pre Treatment Requirements for Trade Wastewater Generators

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
Automotive/Engineering		
<ul style="list-style-type: none"> • Auto dismantler 	Oil, Grease, Suspended Solids, Petroleum Hydrocarbons, Metals, Solvents, Detergents	Dry basket arrestor. Collection pit minimum capacity 300L. An oil interceptor/separator, sized accordingly (Note 1).
<ul style="list-style-type: none"> • Bus/Coach depot wash bay area 		
<ul style="list-style-type: none"> • Car detailing • Mechanical workshop • Service stations (workshop only) 	Kerosene	Kerosene and solvents, if used, are not permitted into the sewer.
<ul style="list-style-type: none"> • Vehicle washing (commercial- manual cleaning) • Vehicle washing (automatic robots) self service • Vehicle washing (including engine degreasing) 		Reuse of wash water
<ul style="list-style-type: none"> • Equipment hire company 		
<ul style="list-style-type: none"> • Construction Equipment maintenance • Truck wash (external only) 		Dry basket arrestor. A general purpose pit or a solids settlement pit minimum size 1000L, an oil interceptor/separator, sized accordingly (Note 1). Kerosene is not permitted into the sewer.
Engine/gearbox reconditioning parts washing	Oil, Grease, Suspended Solids, Detergents, Kerosene, Lead	Dry basket arrestor. Collection pit minimum capacity 300L. An oil interceptor/separator, sized accordingly (Note 1).
		Kerosene is not permitted into the sewer. Acid cracking, pH correction facility may be required.
Panel beater/spray painting	Oil, Grease, Suspended Solids	Dry basket arrestor. Collection pit minimum capacity 300L. An oil interceptor/separator sized accordingly (Note 1).
		Discharge from a spray booth area is not permitted. Paint solvents, thinners are not permitted into the sewer.
Radiator repair	Suspended Solids, pH, Metals	Solids settlement pit. Metal removal and pH adjustment may be required before discharge to sewer.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
		<ul style="list-style-type: none"> • Capture the radiator fluid in a tray or container before removing the radiator from the vehicle. Where possible, re-use radiator fluid, otherwise capture and store it for off-site removal by a DECC licenced contractor. • Floor must be bunded to prevent spillage draining to sewer.
<ul style="list-style-type: none"> • Service stations covered forecourt • Bus/Coach depot refuelling bay 	Oil, Grease, Petroleum Hydrocarbons	<p>Dry basket arrestor. A pump well (minimum size 750L) with:</p> <ul style="list-style-type: none"> • A sloping bottom and an expanded grill inspection aperture in a chequer plate lid. • A high level alarm switch fitted with alarm signal to service station console. • Manual start switch with a low level stop switch. <p>An oil interceptor/separator sized accordingly (Note 1).</p>
Food Service Industry		
Barbequing process	BOD, Suspended Solids, Grease	<p>Grease arrestor, for steam oven or gas vat minimum capacity 2000L, otherwise 1000L minimum capacity (Note 2).</p> <p>Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.</p> <ul style="list-style-type: none"> • The fat and oil generated by barbequing processes and discrete oil must be collected for recycling and must not drain directly to a grease trap or to the sewer. Only the wash water can drain to the sewer via the grease trap. • For steam oven or gas vat an oil and fat interceptor must be installed upstream a grease arrestor.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
		<ul style="list-style-type: none"> Place a container under the fat outlet of cooking equipment to collect fat produced over the production day. The fat must be placed in containers for collection by DECC authorised oil and fat recyclers.
<ul style="list-style-type: none"> Kitchen waste - no hot food prepared and/or no oily/greasy waste generated 	BOD, Suspended Solids	Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.
<ul style="list-style-type: none"> Fruit and vegetable market (retail) 		
<ul style="list-style-type: none"> Supermarket with fruit/vegetables section 		
<ul style="list-style-type: none"> Butcher retail Supermarket incorporating butcher, seafood sections 	BOD, Suspended Solids, Grease	Grease arrestor, minimum capacity 1000L (Note 2). All drainage from sinks and floors in food preparation and handling areas to pass through dry basket arrestors.
Butcher wholesale	BOD, Suspended Solids, Grease	Grease arrestor with the capacity equivalent to the volume of wastewater discharged in one hour at maximum flow. Minimum capacity 1,000L.
		All drainage from sinks and floor in food preparation and handling areas to pass through dry basket arrestors.
Commercial Kitchen/Caterer	BOD, Suspended Solids, Grease	Grease arrestor size related to size of operation, minimum capacity 1000L (Note 2).
		Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.
<ul style="list-style-type: none"> Bakery cooking meat and dairy products on site 	BOD, Suspended Solids, Grease	Grease arrestor sized accordingly to flow rate, minimum capacity 1000L (Note 2).
<ul style="list-style-type: none"> Chicken (fresh) retail only 		Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.
<ul style="list-style-type: none"> Kitchen waste – hot food prepared and/or oily greasy waste is generated 		
Fast food outlets (eg. KFC, McDonalds, Red Rooster, Pizza Hut)	BOD, Suspended Solids, Grease	Grease arrestor minimum capacity 2000L. Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
Fish - fresh (retail) no cooking on site and not including large operations such as Fish Co-op	BOD, Suspended Solids, Grease	Sink screens and dry basket arrestor in floor drains in food preparation and handling areas.
Fish shop cooking on-site	BOD, Suspended Solids, Grease	Grease arrestor minimum capacity 1000L. All drainage from sinks and floor in food preparation and handling areas to pass through dry basket arrestors.
Kitchen waste – Wok burner – wet process	BOD, Suspended Solids, Grease, large volumes of hot water.	Grease arrestor sized accordingly to a flow rate, minimum capacity 1500L. Sink screens and dry basket arrestor in floor drains in food preparation and handling areas. Water saving practices need to be implemented.
Oyster processing (shucking)	Grit, Suspended Solids	Dry basket arrestor, solids settlement pit, minimum capacity 1000L.
Potato peeling (small operation)	BOD, Suspended Solids	Peeling machine with built-in screens. Wastewater from potato processing areas must drain through a basket trap with a removable basket and fixed screen.
		Avoid discharge through a grease arrestor.
Medical Services		
Dental surgery		
• dental chairs	Amalgam Silver	Amalgam separator.
• plaster casts	Suspended Solids	Plaster arrestor.
• X-Rays (non-digital)	Silver, Ammonia, Thiosulphate, Sulphite	Refer to Photographic waste in this Table.
Dental technician		
plaster casts	Suspended Solids	Plaster Arrestor
Doctors surgery		
Medical centre		
• plaster casts	Suspended Solids	Plaster Arrestor.
• X-Ray (non-digital)	Silver, Ammonia, Thiosulphate, Sulphite	Refer to Photographic waste in this Table.
Hospital/Nursing homes		
• solid waste		Grease arrestor, minimum capacity 1000L (Note 2). Discharge of solid waste and waste from devices that macerate or pulverise solid waste to the sewer is prohibited.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
• food waste disposal units	BOD, Suspended Solids, Grease, high temperature	The installation of food waste disposal units are not permitted. Existing installations in hospitals may be allowed provided the wastewater is discharged through an adequately sized grease trap.
• Contaminated/infectious waste		Waste should be sterilised by autoclaving before discharge.
For other sources of waste, eg. Kitchen, X-ray various laboratories, laundry, plaster casts refer to relevant clauses in this Table.		See also the Prohibited Substances table in this Standard
Other Services		
Animal wash		
• Dog groomers	Suspended Solids	Sink screens and dry basket arrestor in floor drains. Animal faeces, litter and any waste disposal products should not be discharged to the sewer.
• Kennels		Animal waste disposal units are not permitted to be connected to sewer.
• Pet shop (retail)		
Carpet cleaning mobile units	BOD, Suspended Solids, Grease	20 micron or smaller filtration system fitted to a mobile unit.
Crafts – ceramic, pottery, gem stones, jewellery (eg hobby clubs, schools, cottage industries, tertiary institutions). Flow:	Suspended Solids	
• <200L/d		No pre-treatment.
• 200 L to 1000 L/d		Plaster arrestor.
• >1000 L/d		General purpose pit, minimum capacity 1000L.
Dry Cleaning	Solvents	Dry cleaning solvents are not permitted into the sewer.
Florist	Suspended Solids	Sink screens and dry basket arrestor in floor drains.
Funeral parlour		
• morgue	Suspended Solids	Dry basket arrestor in floor drains.
• autopsy table		Screens at the table drainage outlet.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
Garbage bin cleaning		Fixed screen over floor waste. If there is a grease arrestor installed, waste to pass through the arrestor.
• hotels/restaurants/shopping centres	Suspended Solids, Grease	
• mobile garage bin washing		
Glass cutting (non-optical services)	Suspended Solids	Solids settlement pit, minimum 2 hours detention at the maximum flow rate. Cleaning of the pit before thickness of settled material exceeds 200mm.
Hairdressing salon		Sink strainers (where available) and dry basket arrestor for floor waste.
Laboratory School	Chemicals	Balancing pit/tank minimum capacity 600L
Laboratory chemical related including tertiary institutions	Chemicals	Balancing pit/tank sized according to a flow rate, minimum capacity 600L. pH correction may be required.
Laboratory Coal Services	Chemicals	Solid settlement pit, sized according to a flow rate, minimum capacity 1000L. pH correction may be required.
Laboratory pathology including autopsy, hospital	Chemicals	Balancing pit/tank sized according to a flow rate, minimum capacity 600L. pH correction may be required.
Contaminated/infectious waste		Waste should be sterilised by autoclaving before discharge.
Laundry (coin operated)	Lint, high temperature	Lint screens, (washing machine internal screens acceptable). Cooling pit capacity calculated to reduce wastewater temperature to below 38°C.
Laundry commercial or industrial	Lint, high temperature	As above. pH correction may be required.
Optical services (grinding of glass and plastic)	Suspended Solids	Baffled settlement tank, minimum 1 hour detention, to be easily accessible for cleaning.
Shopping centre (including food preparation)		Refer to relevant types of business. For sizing of grease arrestor see Note 2.
• Swimming pool municipal	Suspended Solids	Backwash is accepted into the sewer through a holding tank. The waste to be discharged to sewer at a control flow rate. The discharge

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
• Hydrotherapy pool	Chlorine	to be limited to low flow periods in the sewer particularly when draining the pool for maintenance
School		
• canteen, home science		Refer to Food Service Industry section in this table.
• photographic and science laboratory		Balancing tanks can be combined, if activities are comparable (eg. laboratories) and sized to give a flow retention capacity of 1 hour.
Tertiary Institutions		Refer to a relevant activity in this Table.
Veterinary premises	Suspended Solids	Sink screens and dry basket arrestor in floor drains. Animal faeces, litter and any waste disposal products shall not be discharged to the sewer.
		Animal waste disposal units are not permitted to be connected to sewer. Animal waste should be collected and not discharged to the sewer.
• X-ray (non-digital)	Silver, Ammonia, Thiosulphate, Sulphite	Refer to Photographic waste in this table
Photographic waste		
Photographic processing and developing including X-Ray (non-digital)	Silver, Ammonia,	Balancing pit/tank, silver recovery unit for silver bearing waste (Note 3) or remove all silver bearing waste from the premises by a DECC authorised transporter.
	Thiosulphate, Sulphite	
Screen Printing	Suspended Solids Petroleum Hydrocarbons, Solvents, Grease, BOD, Silver, Ammonia, Thiosulphate, Sulphite, Volatile Halocarbons	Pre-treatment equipment is required for the pre-cleaning of new screens, stencil development, cleaning and reclamation. Suitable types include a settling tank or pit, a coalescing plate separator, or other approved products. Minimum size to equal the actual volume from 1 hour of washing.
		Solvents, if used in a stencil cleaning process for ink removal, are not permitted to be discharged to sewer. The waste must be disposed off-site.

Activity	Characteristics of Waste	Minimum Pre-Treatment Required
		Non-digital photographic processes: silver bearing waste should be treated in a SRU unit or be transported off site by a DECC authorised transporter
Miscellaneous		
Boiler blowdown	Total Dissolved Solids, high temperature	Cooling pit/tank to reduce wastewater temperature to less than 38° C. If the volume is less than three times the maximum blowdown volume, cooling calculations are to be provided by the applicant.
Comfort cooling tower bleed off	Corrosion inhibitors, biocides	No treatment. The use of products containing chromate is not permitted.

Note:

- 1 An oil interceptor/separator should be of an approved type such as a coalescing plate interceptor, a vertical gravity separator or a hydrocyclone separation system sized accordingly to the influent flow rate. Nominal size is 1000 L/h. Only "Quick-Break" detergents should be used.

Wash area is to be roofed, bunded and graded to exclude stormwater. In some instances, where roofing is impractical, a first flush system may be permitted
- 2 A grease arrestor should be of an approved type and sized accordingly to the influent flow rate. Approved types include a conventional boat type arrestor, standard design or "Sydney Water" design, or a modular grease trap. Nominal size is 1000L.

The use of bacterial, enzyme or odour-controlling agents in grease arrestors is prohibited unless specifically approved by Hunter Water
- 3 The discharger of photographic waste must comply with the Photographic Industry Uniform Regulation for the Environment (PURE) Code of Practice.

11 INSTALLATION AND MAINTENANCE REQUIREMENTS FOR TRADE WASTEWATER FACILITIES

The following points list some of the considerations to be made for a proposed trade wastewater installation:

11.1 Installation considerations of trade wastewater pre-treatment equipment

The following points list some of the considerations to be made for a proposed trade wastewater installation:

- Trade waste installations shall be subject to all relevant requirements including those of Hunter Water, the Plumbing Code of Australia, and AS/NZS3500 Plumbing and Drainage.
- Hunter Water holds no responsibility for the integrity and on-going operation of any pre-treatment facility.
- The property owner and facility manufacturer are jointly responsible for compliant operation of the pre-treatment facility in accordance with Hunter Waters allowed characteristics for wastewater discharge to sewer.
- Should the integrity or operation of the pre-treatment facility be compromised, Hunter Water reserves the right to require the facility to be repaired, replaced or removed at the expense of the manufacturer/property owner.
- The plumbing and drainage work is to be carried out by a licensed plumber and drainer.
- A pre-treatment facility should be located in an area that readily allows access for maintenance and inspections without creating a hazard.
- Consideration should be given to potential odour issues. In particular, screenings and sludges need to be stored in areas protected from flies and vermin. The screenings and sludges must be removed from the site frequently to avoid odours.
- Any pre-treatment facility must be properly maintained to ensure correct performance.
- Mechanical equipment requires regular preventative maintenance. You may need to carry spare items of equipment, i.e. pumps etc, if these items are vital for the effective operation of the pre-treatment facility. Mechanical failure of a pre-treatment facility is no excuse for discharging unacceptable wastewater to the sewerage system.
- A pre-treatment facility must not allow the ingress of storm/surface water or the spillages/overflow of trade wastewater, sludges or chemicals by gravity or mechanical means. This may require the surrounding area to be roofed and/or contained.
- The plumbing contractor should be given a copy of the trade waste approval so they are aware of any requirements pertaining to the trade wastewater installation.
- The available fall in existing drainage should be assessed to ascertain whether required depths, falls, lid heights, retention volumes and sampling points can be provided for.
- Manufacturer's instructions should be followed for installation of pre-treatment and associated equipment.
- Consideration should be given to materials selection. Eg. HDPE drainage pipe may be required in some installations, particularly where there is a high hot water load.
- Sites should be assessed for complying sewer overflow gullies to ensure the property is compliant with AS/NZS3500 Plumbing & Drainage requirements.
- A hose tap may be required to be installed adjacent a pre-treatment facility to ensure satisfactory cleanout and subsequent refilling.

11.2 General Maintenance of Trade Wastewater Facilities

Any apparatus or equipment used for the pre-treatment/monitoring of trade wastewater is to be maintained to Hunter Water's satisfaction at all times. Equipment may require a regular pump out and maintenance program with the minimum pump out frequency required being stated in the Trade Wastewater Agreement.

It is the responsibility of the discharger to arrange for the servicing of their pre-treatment facility. This may involve the setting up of a maintenance contract with a liquid waste pump out contractor to regularly service the pre-treatment facility or the contractor may be commissioned on a casual basis by servicing on demand. Hunter Water may require the pump out frequency to increase if a site inspection identifies that the pre-treatment facility is overloaded.

The disposal of residual waste such as grease, oils and sludge must be carried out in accordance with local Council requirements, the Department of Environment Protection Authority (EPA) requirements, and any other legal requirements. These wastes must not be disposed of to Hunter Water's wastewater network.

The pre-treatment facility must be re-filled with clean water immediately after cleanout to restore the facility to an operational condition.

11.3 Greasy Wastewater Installations

Greasy wastewater generally refers to liquid trade wastewater resulting from food processing as part of a commercial enterprise or as carried out in an institution. The obvious pollutants produced from this type of waste are oil and grease.

Retail Food Businesses where a grease arrestor is not required

The businesses listed below may not need a grease trap. However, all grease trap requirements should be made in consultation with Hunter Water.

- Works canteen (no food cooked/served, employees bring own meals)
- Chocolate shop (sales only - no chocolate making)
- Coffee shop/sandwich shop no food cooking)
- Delicatessen (no hot food cooked/served, no meat cooked)
- Fish shop/seafood (fresh, no cooking on site - floor wastes with basket traps)
- Fruit and vegetable market (no on site preparation)
- Fruit salad bar
- Juice bar
- Mixed business
- Oyster processing depuration
- Nut shop
- Pet shops (retail)
- School canteen (no food cooking, pie warmer may be used)

When a grease arrestor is required

All non-residential premises, engaged in the cooking and preparation of foodstuffs, are to install and maintain an adequately sized grease arrestor, to prevent the discharge of oil, fats, solids and grease wastes into Hunter Water's sewerage system.

No work is to commence on the installation of a grease arrestor until a completed Hydraulics Assessment Application has been submitted to Hunter Water's Technical Services Section and subsequent formal approval given.

Notification should be given to the Technical Services Group of completion of installation. Failure to comply with the above requirements is a breach of the Hunter Water Act of 1991.

Pre-treatment Options

The main type of pre-treatment used to treat greasy wastewater is the grease arrestor. The grease arrestor is simply a vessel that allows the waste water to be retained long enough for solid components to sink to the bottom and lighter components such as grease and oil to float to the top.

Some arrestors utilise filters that enhance the performance of the arrestor by minimising the quantity of suspended solids that exit the arrestor, and by providing some surge control to ensure a more consistent batch process.

Types of greasy wastewater pre-treatment options available:

- Grease Arrestors
 - Boat style
 - Modular
 - Filter type arrestors (may be variations of the above)
- Vertical Gravity Separators (VGS)
- Dissolved Air Flotation (DAF) Units

VGS and DAF units generally give a superior quality effluent but may require a higher capital outlay.

The benefits of producing a higher grade effluent should be considered in relation to reducing potential trade waste charges.

Grease Arrestor sizing

A minimum sized grease arrestor of 1000 litres is required by Hunter Water. The required size may increase depending on the premises size and use.

Installation considerations

The installation of pre-treatment equipment for a greasy wastewater process will require attention to the following issues:

- Grease arrestors, where installed in ground, should be placed on compacted fill to avoid settlement after installation. Some manufacturers specify stabilised sand or concrete backfill to support their product, depending on the materials used for the construction of the arrestor.
- Care should be taken to ensure excavations do not undermine existing structures by encroaching on the "zone of influence".
- The inlet and outlet assembly risers and sampling point riser must be extended to ground level. Any drainage risers from inlet or outlet assemblies, sampling points or inspection points that are subject to vehicular traffic should terminate independently with a cast iron trafficable cover. Offsets are not permitted in inlet or outlet assembly risers or sampling point risers.
-

- Venting - a grease arrestor requires two 100mm vents, one chamber vent (induct) and a vent on the upstream trade waste drainage line (educt). The 100mm induct vent may be low level or if potential odours are a concern, this vent may be extended as a high level vent.

Note: A grease arrestor often creates an aerial disconnection of the drainage downstream of the grease arrestor from the upstream vent. Additional venting may be required on the downstream drainage.

- An overflow gully for a premises should be located downstream of the grease arrestor to prevent sewer surcharge into the grease arrestor. A reflux valve may be required where the overflow gully height cannot protect the grease arrestor from sewer surcharge.
- A grease arrestor is not necessarily required to drain to a disconnecter trap and in most cases this should be avoided due to the potential for odours from the trap.
- Lids should be gastight gatic type covers. The weight of the lid (light, medium or heavy duty) will be determined by what traffic the lid will be subjected to (eg pedestrian, cars, trucks). The grease arrestor cover should finish slightly higher than ground level to reduce the potential for stormwater water ingress into the arrestor. Grease trap risers and covers shall be effectively sealed during installation to prevent ground water entering the grease arrestor.
- In above ground installations access platforms may be required around grease arrestors for maintenance and monitoring purposes. Bollards will be required to protect the pre-treatment facility from traffic. Above ground installations must ensure that there is clear unobstructed access above the grease arrestor for inspection and maintenance. The clear access required above the grease arrestor is to equal the depth of the grease arrestor as a minimum.
- Copper pipes and fittings are not permitted to be used in greasy wastewater installations.
- Special consideration needs to be given to installation of grease arrestors inside buildings. The installation must meet specific requirements regarding venting of the grease arrestor, ventilation of the building or room in which the arrestor is installed, and type of lid fitted to the arrestor. The local Council should be contacted to confirm allowance and requirements in these situations.

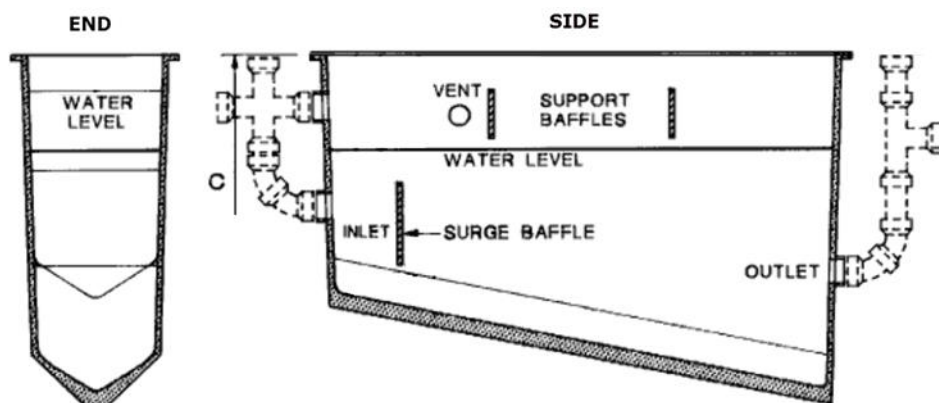


Figure 1 Typical Grease Arrestor design

11.4 Dry Basket Arrestor

Dry basket arrestors (DBA) are required to screen out gross solids such as rags, cigarette butts, stones etc. Dry Basket Arrestors and Screens are used in numerous applications with the most common being food preparation and automotive/mechanical wash bays.

Dry Basket Arrestors in food processing applications.

Dry basket arrestors should be of the types that comprise a stainless steel top grate, a stainless steel mesh lift out basket and a stainless steel fixed tertiary screen. Mesh/penetrations should not be greater than 3mm. The arrestor basket or screen should be able to be cleaned easily and should be sized so that normal loads do not block screens. Consideration should be given to size, weight, accessibility and lifting mechanisms required for baskets and grates.

When fitting dry basket arrestors to existing floor wastes smaller basket arrestors can be readily retrofitted into the existing riser whilst larger arrestors may need to be installed adjacent to the riser connecting to a junction in the riser with the existing riser terminating with a bolted trap screw (this method allows cleaning access to the disconnecter trap that the fixed screen in the DBA prevents otherwise).

Dry basket arrestors need to be emptied regularly; once a day is often not enough.

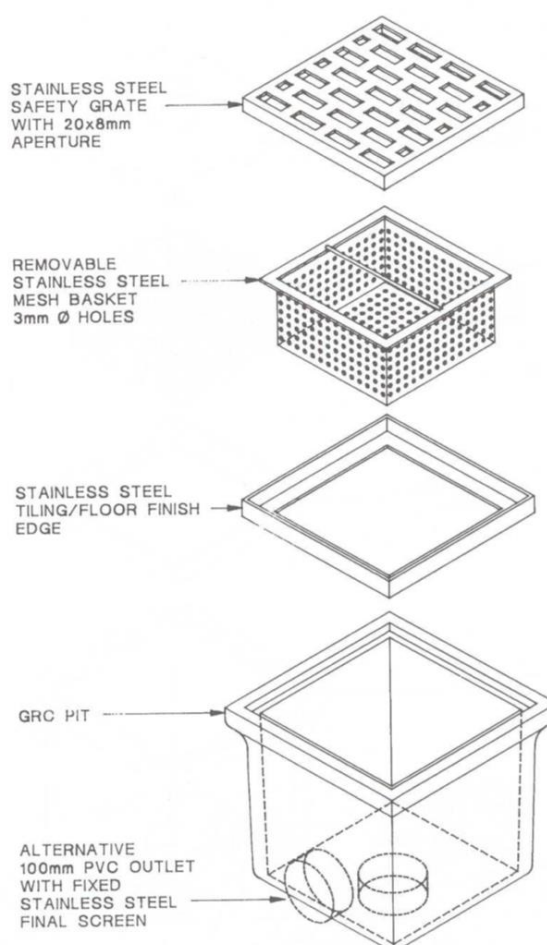


Figure 2 – Typical Dry Basket Arrestor (Diagram courtesy of Mascot Engineering Group)

Dry Basket Arrestors/Screens in oily water applications (wash bays)

Screens or Dry Basket Arrestors with a maximum mesh or orifice size of 3mm are required in any wash bay installation. The screen or dry basket arrestor is usually located in the primary collection sump but may also be located in line prior to the retention pit.

The screen/arrestor should be of a practical size to suit the process it is serving and should be able to be accessed and cleaned easily. A fixed tertiary screen is desirable but not essential as the retention pit and oil separator both provide further solids removal.

Consideration should be given to accessibility to the screen/arrestor for cleaning out and maintenance, frequency of cleaning, and type of access lid fitted to the screen/arrestor.

11.5 Oily Wastewater Installations

Oily waste generally refers to liquid trade waste resulting from the washing down of vehicles/machinery and parts. Pollutants produced from these activities include petroleum based oils and greases, solids, metals and solvents.

Primary Collection Sump

A collection sump/well is the first point of collection of effluent from a wash bay floor area and may perform the following functions:

- Directs the effluent to the retention pit.
- Houses the dry basket arrestor or screen.
- May provide first level of silt retention.

The size of the collection sump is not specified but should be designed to handle hydraulic loads, efficiently drain the wash bay and house a basket arrestor of sufficient size to adequately contain expected solids loads and screen out gross solids.

Retention Pit

The retention pit is required to provide minimum standing times for the effluent so the detergent/water/oil emulsion can break. If the emulsion has not broken prior to being treated by the oil separator, the oil separator's efficiency will be greatly reduced.

The retention pit shall have a minimum capacity of 750 litres. The retention pit volume may need to be increased in line with flow rates to achieve a minimum retention time of 1 hour. The pump out well should not be used to achieve retention volumes.

Sizing of the retention pit should also allow for the volume of the oil separator. This allows the oil separator to be drained, at the regular service interval, back to the retention pit. A sludge return line will facilitate this operation making the scheduled pump out of the multi-pit system more efficient.

The use of multiple pits, baffles, and relative positions of inlets and outlets should be considered to achieve required retention times and to minimise effluent short circuiting. The design of the inlet and outlet to the retention pit should consider effluent path eg inlet and outlet tee assemblies, whether oil is to be retained in the retention pit or transferred to the pump out well and design of effluent transfer to and from retention pit to create minimal turbulence to avoid re-emulsification.

The retention pit is often subject to the build-up of gases within the pit which may lead to a hazardous situation if the gases are flammable or toxic. Venting the pit can remove this

potential hazard and also contribute to effluent quality by allowing some volatile petroleum hydrocarbons to gas off. To this effect a 100mm high level vent shall be fitted to retention pits.

Any design for fabrication of retention pits on site shall demonstrate how adequate water proofing of the pit shall be achieved to prevent loss of effluent to the environment.

Pump Out Well

The pump out well simply provides containment for the effluent prior to being processed through the oil separator. The well should be sized to match the pumps capacity with expected flow rates from the trade waste process. The working volume or the difference in volume from the 'pump on' control and the 'pump off' control is the net result of this calculation.

The pump controls shall comprise Auto on/off operation, high level alert, and a Manual On control to facilitate sampling on demand, except in the case of fuelling station forecourts where special requirements for effluent draining to sewer from these areas do not permit an Auto on pump control.

Any design for fabrication of pump out pits on site shall demonstrate how adequate water proofing of the pit shall be achieved to prevent loss of effluent to the environment.

Retention/Pump out Pit Lids and Covers

Lids to Retention pits and Pump Out pits shall be gastight gatic type lids. The weight of lid (light, medium or heavy duty) will be determined by what traffic the lid will be subjected to (eg pedestrian, cars, trucks). The lids should provide adequate access for ease of cleaning and maintenance with the pit cover finishing slightly higher than ground level to reduce the potential for stormwater water ingress into the sewer. Pit risers and covers shall be effectively sealed during installation to prevent ground water entering the system.

11.6 Transfer Pumps

Pumps used to transfer greasy or oily trade waste effluent should be low flow, non-emulsifying type pumps. Generally this means a diaphragm pump.

Centrifugal and vortex pumps cause emulsification of grease and oil droplets making them unsuitable for effluent transfer prior to pre-treatment. However once the trade waste effluent has been treated, if pumped discharge to sewer is required the only restriction on pump selection will be to ensure the pumps output is matched to stated maximum instantaneous flows as conditioned by the trade waste approval.

Pump flow rates should match the manufacturers stated capacity for their pre-treatment device i.e. an oil separator with a capacity of 1500 litres/hour should have a pump supplying effluent at a rate not exceeding 1500 litres/hour.

11.7 Oil Separators

The oil separator should, as a minimum specification, be a CPI (corrugated plate interceptor) or a VGS (vertical gravity separator) system and should be installed within the roofed and bunded area. Hydrocyclones are also a pre-treatment option for oily waste water and are capable of producing a higher quality effluent than CPI or VGS units as they can draw smaller oil droplets out of emulsion.

Double or Triple Oil Interceptors are no longer approved as pre-treatment for oily waste. If an existing Interceptor pit has sufficient capacity it may be able to be utilised as a retention pit or pump out pit in an upgrade of a trade waste facility.

Manufacturers provide written instruction on how to operate and maintain their oil separator. This advice should be taken along with any Hunter Water requirement for maintenance and pump outs to develop a cleaning/maintenance schedule for the pre-treatment installation.

The benefits of producing a higher grade effluent should be considered in relation to reducing potential trade waste charges.

Quick Break Detergents in Oily Water Pre Treatment

If quick-break detergents are to be used in a pre-treatment facility, such as an oil separator, the detergent must separate and release the oils trapped 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 breakdown and release the oil within twenty minutes. If the detergent does not breakdown 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 Hunter Water's treatment works and becomes difficult to treat.

The "quick break" effect is defined as:

"a cleaning operation, consisting of a nominated proprietary formulation, used at a specified strength, with specified washing and rinsing unit operations, which generates a wastewater that, after a fixed time, separates into an oily layer and an aqueous layer".

Businesses which use detergents to clean vehicles, mechanical parts of workshop floors are required to use "quick break" detergents. These detergents assist the separation process where any type of oil separator is used as pre-treatment prior to sewer discharge.

When the oily layer and aqueous layer separate, pre-treatment equipment such as a Coalescent Plate Interceptor (CPI) can isolate the oily layer and allow the aqueous layer to pass to the sewer.

Detergents which are not "quick break" are unsuitable in that they allow the oily water to pass through the pre-treatment equipment direct to the sewer.

If the effluent from the pre-treatment equipment is "milky", this may indicate an emulsion has not 'broken' and a more efficient "quick break" detergent may be required or depending on the process, detergents may be able to be dispensed with in favour of high pressure washing, hot washing or a combination of the two. Pre-treatment manufacturers often recommend no chemical additives are used where practicable to ensure there is no loss of efficiency in the trade waste treatment process.

For suppliers of "quick break" detergents refer to businesses listed in the Yellow Pages under the heading: Cleaning Products and/or Suppliers or Soaps and/or Detergents and request a "quick break" detergent suitable for the relevant combination of cleaning operation and pre-treatment equipment.

The pre-treatment supplier and the trade waste generator will need to work with the suppliers of cleaning compounds to ensure satisfactory performance of the oil separator as using a 'quick break' detergent does not guarantee effluent quality compliance.

Petroleum based products are not suitable for discharge to the sewer. For example, some tar and spot removers are almost 100% hydrocarbon. If these products are an essential part of a process, alternative application and disposal options will need to be considered to keep them separate from the trade waste stream.

Material Safety Data Sheets (MSDS) for any chemical used in a trade waste process are required to be submitted to Hunter Water on request or with a Trade Waste Application.

Oil Separator Maintenance

All trade waste dischargers whose operations incorporate an oil separator are required to engage a qualified contractor to conduct scheduled servicing and maintenance on the pre-treatment system. Servicing and maintenance is generally conducted on an annual basis, however demand on the facility may increase the required frequency. Maintenance and servicing documentation must be kept on-site for review by Hunter Water's Compliance Officer during trade waste inspection.

11.8 Plumbing and Drainage of Trade Wastewater Facilities

All trade wastewater facilities must be installed in accordance with the relevant Australian and Hunter Water Standards.

You must also install a tap within five metres of any pre-treatment equipment (eg grease trap) and a backflow prevention device on the inlet side of the tap.

Oil Separators

Discharge from an oil separator (hydrocyclone separation systems, corrugated plate interceptors and vertical gravity separators) shall connect to sewer via an inlet riser to a disconnector gully as shown in Figure 3 below. The method of connection to the gully will depend on whether the gully is an overflow gully or not. This point will be used for sampling the quality of the effluent from the pre-treatment equipment.

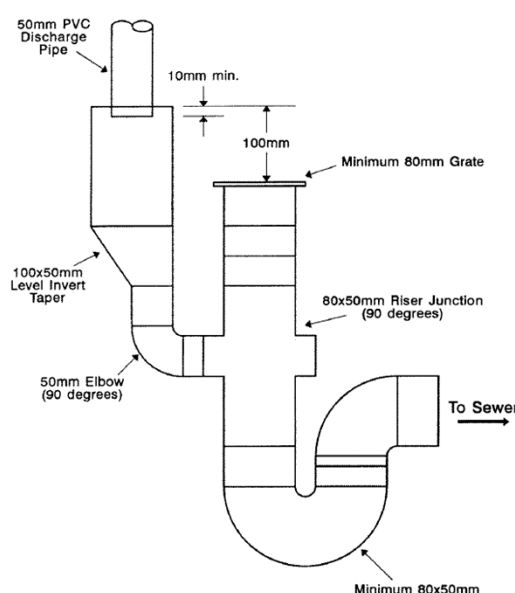


Figure 3 Connection to sewer from pre-treatment device

In the case of an overflow gully the discharge should connect into a junction in the riser of the gully through a tundish. The top of the tundish should be at least 100mm above the top of the overflow gully or if the tundish is located within the wash bay bund the top of the tundish should be 100mm minimum higher than the top of the bund.

For disconnecter traps other than overflow gullies, the connection can be as for overflow gullies or directly over the gully top maintaining a 100mm air gap between the discharge pipe and the top of the gully

If the gully is located in the bunded area the top of the gully should terminate a minimum of 100mm above the top of the bunding.

The oil separator connection to sewer should include a sampling point which may be provided by the required air gaps or couplings in the drainage line from the separator that allow temporary disconnection to allow placement of sampling equipment. An alternative sampling point may consist of a tee on the pump discharge pipe with a downwards facing valve that allows samples to be drawn off whilst the oil separator pump is operating.

Backflow Prevention

The installation of a trade waste pre-treatment facility will generally require the installation of backflow prevention. You must engage a backflow accredited licenced plumber to install and certify a site containment backflow prevention device/s at the property boundary downstream of the water meter/s servicing your property (site containment). There is also the requirement to install and certify a backflow prevention device/s on your internal water supply (zone/individual).

For confirmation of backflow requirements please refer to Australian Standards AS/NZS3500, AS/NZS2845 and Hunter Waters Site Containment Backflow Prevention Standard.

Venting

Consideration should be given to venting to ensure that the requirements of the relevant Plumbing Codes & Standards are met. Additionally the following points should be noted.

- Where pre-treatment (grease arrestors, cooling pits etc) aerially disconnects downstream drainage from upstream drainage additional venting may be required on the downstream drainage.
- Grease arrestor and cooling pit induct and educt vents shall be 100mm high level vents.
- Retention pit vents (oily water installations) shall be 100mm high level vents.
- Induct and educt vents cannot be joined.
- The potential for odours should be considered when siting a vent.
- Air admittance valves cannot replace induct vents on pre-treatment facilities such as grease arrestors.

Boundary Trap and Inspection Shaft

All new commercial properties with trade wastewater facilities require a 150mm boundary trap installed at the point of connection to Hunter Water's sewerage system. This enables inspection and sampling.

11.9 Cooling Pits and Lint Screens

A cooling pit is required to be installed where a trade waste discharge is likely to exceed 38°C, eg. laundry, boiler blow down, autoclave units, etc. Incoming hot waste is cooled down by mixing with cool wastewater already in the pit and retained there until the temperature reaches the acceptable level.

Laundry processes will require the installation of lint screens with a mesh aperture size of 1mm. These screens are normally incorporated as a component of the cooling pit.

Cooling pits shall be fitted with gatic type covers of a weight suitable for its location ie; heavy duty for heavy vehicular traffic, light duty for pedestrian only traffic. If the cooling pit incorporates a lint screen, the cooling pit must be located and configured to allow easy access for inspection and maintenance by on-site employees/maintenance staff. Heavy lids are not suitable in these instances.

The cooling pit shall be vented with a 100mm vent to allow cross ventilation for cooling from the chamber vent to the upstream vent. As the outlet assembly of the cooling pit aerially disconnects the pit from downstream drainage additional venting may be required for the downstream drainage if unvented branch distances are exceeded.

A separate sampling point is not required after the cooling pit as the outlet riser is suitable for the collection of samples.

11.10 Roofing of Trade Wastewater Generating Areas

When a trade waste generating process does not fully occur 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 are open to the weather, 10 degrees from the vertical of overhang of the roof is the minimum acceptable cover over the bund.

To ensure that no surface stormwater can flow onto the trade waste generating process area, bunding of a step or speed hump type with a minimum height of 150 mm high around the area will be necessary. A stormwater drain solely on the upper side of the area is inadequate; stormwater flow will often bridge over the grate and enter the area. The overall surface water flow across the site must be considered and the height of the bund/speed hump may have to be increased to prevent stormwater flow onto the process area.

All surfaces external to the bund must fall away from the bund.

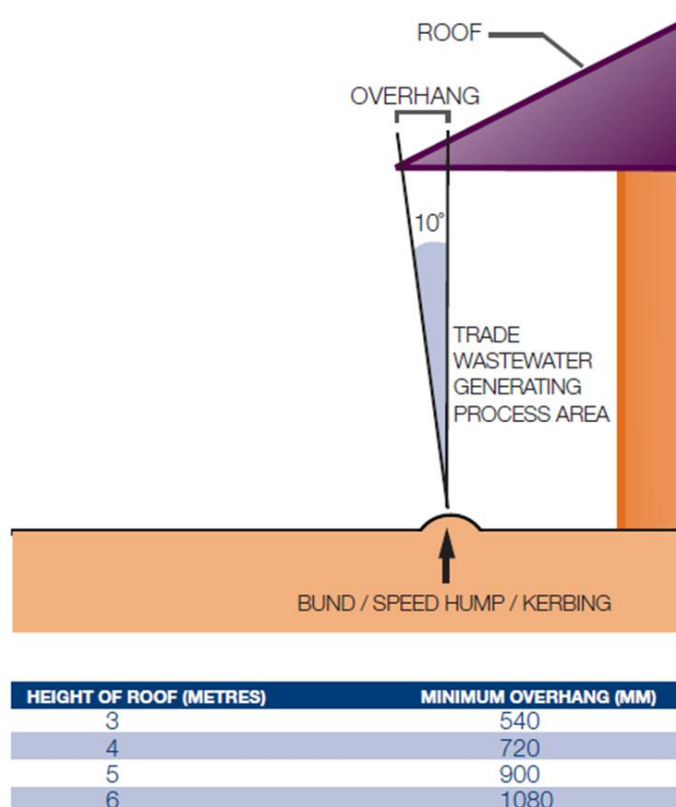


Figure 5 – Roofing of Trade Wastewater Generating Areas

First Flush System

It is Hunter Water's preferred option to have all trade waste generating areas roofed to prevent rainwater ingress to the sewer system. In exceptional circumstances Hunter Water may permit an unroofed area to discharge to sewer after all other alternatives have been fully investigated. This scenario must incorporate a "first flush system" which directs up to 10 mm of "first-flush" trade wastewater into the sewer and the subsequent flow to an approved stormwater discharge point. This diversion of water flow is generally initiated by a rain sensor.

The "first flush system" requires approval from Hunter Water, Local Council and EPA.

Hunter Water requires any “first flush system” to be inspected and certified as operational on an annual basis (minimum) by an accredited contractor with certifying documentation forwarded to Hunter Water.

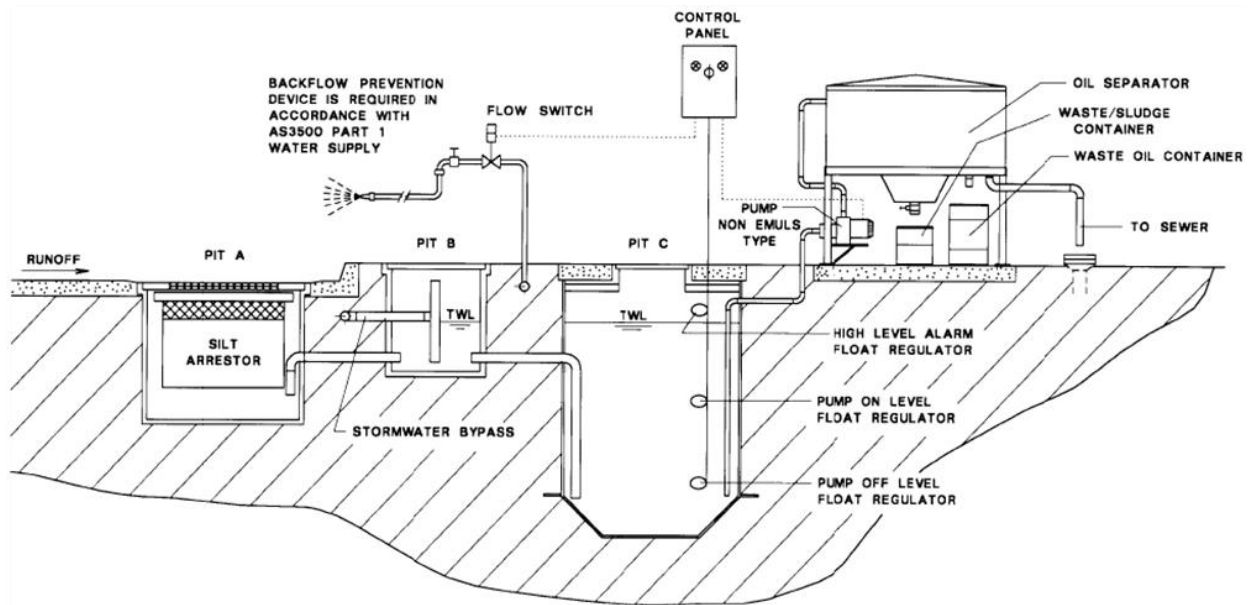


Figure 6 – First Flush System Schematic

12 DEFINITIONS, ACRONYMS & ABBREVIATIONS

CODE	DEFINITIONS
Act	The Hunter Water Act 1991
Applicant	A person applying for a trade wastewater agreement to discharge trade wastewater to Hunter Water's sewer
Application	Trade Wastewater Application Form is required to be lodged with Hunter Water for approval to discharge prohibited substances to Hunter Water's sewer
Biological Treatment	This involves bacteria consuming the organic parts of an effluent within a controlled system, eg activated sludge or trickling filters
Biological Oxygen Demand (BOD)	A measure of the amount of oxygen consumed by micro-organisms in a given sample at a given temperature (See 'Oxygen Demand').
Hunter Water	Means Hunter Water having its Head Office at 36 Honeysuckle Drive Newcastle
Customer	In relation to Hunter Water, means a person who is taken to have entered into a customer contract or a person who has made a contract with Hunter Water of a kind referred to in Section 37 of the Act.
Customer Contract	Means a contract of a kind referred to in Section 36 (1); of the Act as set out in Schedule Two of the Operating Licence.
Discharger	A business/company discharging trade wastewater to Hunter Water's works.
EPA	Department of Environmental Protection Authority
Operating Licence	Means the Operating Licence issued pursuant to Section 12 of the Act.
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)
Agreement	Also referred to as a Trade Wastewater Agreement. This is a legally binding document setting out the conditions that the applicant, owner or occupier as appropriate, must comply with before it may discharge any substance other than normal domestic wastewater to a sewer or stormwater channel operated by Hunter Water.
Prohibited Substances	Prohibited Substances, in accordance with the Act and this Standard, are substances which may not be discharged to a sewer or stormwater channel operated by Hunter Water without the prior written permission of Hunter Water.
Pre-Treatment Facilities	Means any apparatus or equipment used to modify the characteristics of an effluent prior to its discharge into Hunter Water's works, and can include grease traps, oil separators, dilution pits, etc.
Service Provider	The Company managing Hunter Water's WWTW
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.
Trade Wastewater	Trade wastewater is defined as the liquid waste generated from any non-residential property (commercial or industrial, business, trade, or manufacturing process). It does not include domestic wastewater.
Trade Wastewater Pre-treatment device	An apparatus or equipment which modifies the characteristics of wastewater to align with allowed sewer discharge levels. Examples: <ul style="list-style-type: none"> • Grease Arrestor • Oil Separator • Dilation Pit
Treatment Facilities	Hunter Water's Wastewater Treatment Works whose operations include the treatment of sewage and trade wastewater prior to discharge to the environment.
WWTW	Wastewater Treatment Works
Works	Means water mains, sewer mains, wastewater treatment works, drainage channels and any works ancillary to those works.