BOILER BLOWDOWN / CONDENSING BOILER

Background

As detailed in the Icon Water publication *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements*, activities that generate liquid trade waste for discharge into Icon Water's Sewerage Network ***must*** comply with specific requirements.

Any capitalised terms used and not defined in this guide note has the same meaning as in Icon Water publication *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements*.

Purpose

The purpose of this guide note is to provide detail on the specific requirements for liquid trade waste generated from boilers so that compliant waste can be approved for ongoing acceptance into Icon Water's Sewerage Network.

Compliance

The Trade Waste Customer remains responsible and liable for ensuring compliance with this guide note even if the occupier of the premises is another party or entity.

In the event the Trade Waste Customer or the occupier of the premises fails to comply with this guide note, Icon Water may take any and all corrective actions as specified in the Icon Water publication *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements* and the Liquid Trade Waste Negotiated Contract.

Guidance

Boiler blowdown (aka "bleed-off") is the water discharged from a boiler during the routine boiler blowdown process. Water is discharged from the boiler to avoid the negative impacts of dissolved solids (i.e. impurities) on boiler efficiency and maintenance. Typical blowdown volume ranges from 3% to 15% of a boiler's steam-generating capacity. The boiler blowdown water is often very hot and can cause damage to sewerage infrastructure.

Boiler wastewater associated with periodic maintenance/cleaning activities is usually of a high volume. Customers must include all details of such activities (e.g. volume, temperature, dissolved solids, chemical additives and proposed discharge rate) when they apply to discharge to the Sewerage Network.

High efficiency condensing boilers achieve higher efficiency than conventional boilers by extracting more energy from exhaust gases and then they use this energy to heat the water in the boiler. The process involves the condensing of water vapour in the exhaust gas. The produced condensate is acidic with a pH between 2.0 to 4.0 and this requires treatment prior to discharge to the Sewerage Network in order to avoid damage to drainage pipes and sewerage infrastructure. Condensing boilers may produce up to 3.5 L of condensate per hour for every 30 kW of input.

All applications to discharge wastewater from boilers must include information related to routine daily operations as well as regular or ad hoc maintenance activities.

Category A discharges must meet the following criteria:

- the discharge volume does not exceed 5 kL/day, and
- the required pre-treatment equipment is installed in-conjunction with good housekeeping practices, as well as
- excluded substances are not discharged, and
- no more than four Category A discharges from a single premises or complex (excluding those listed and complying with the requirements in Table A.1 of *STD-SPE-P-003*).

Category B discharges must not exceed a maximum daily discharge volume of 20 kL.

Category C discharges include all others including those associated with industrial processes.

Excluded substances

The following are prohibited from discharging to the Icon Water Sewerage Network:

- Chromium-bearing wastewater.
- Wastewater containing chemicals or substances above our acceptance criteria (or not listed) in Icon Water publication *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements.*

Pre-treatment requirements

The following pre-treatment equipment is required to be installed for boiler blowdown wastewater and condensate wastewater where it is discharged to the Icon Water Sewerage Network:

Table 1. Pre-treatment devices.

Pre-treatment Device	Details
Cooling pit[1]	Must be installed to receive and provide cooling to all wastewater from the boilers, that exceed 38 °C. It must be installed, sized and vented so as to reduce the temperature of the wastewater to less than 38 °C prior to discharge to the Sewerage Network.
Condensate neutraliser	Must treat the condensate produced by a condensing boiler. A neutraliser typically consists of a plastic tank which contains media such as marbles, limestone aggregates or chips. Over time, the media will dissolve and will require replacing. It is typical for manufacturers of such equipment to require that the media be replaced on an annual basis

[1]*The discharger must provide supporting information in regard to sizing of equipment and the manufacturer's recommended maintenance schedule.*

[2]*All pre-treatment devices must be maintained and cleaned as per a set schedule.*

Cooling pit

Installation requirements

Location: Installation of the pre-treatment device(s) must allow safe access for maintenance and inspection. They must be installed to meet Australian Standards with respect to, but not limited to, working at heights and confined spaces. The installed location must be accessible by maintenance vehicles to allow safe access to thoroughly clean its interior.

Sampling: An inspection point suitable for taking representative samples shall be provided immediately prior to the point where the liquid trade waste leaves the premises and enters the Sewerage Network and/or mixes with domestic sewage from the premises.

Cooling pit: Install the appropriately sized pit to ensure correct working capacity. That is, the pit will need to be larger than the stated working capacity. They must be designed to encourage cooling of the incoming wastewater by mixing with cool wastewater already in the pit. The temperature of the wastewater must be below 38 °C prior to discharge to the Sewerage Network. They must be constructed and installed to allow ease of inspection and cleaning. The lids/grates should be easily removed and the pit wide enough so that accumulated solids can be easily removed. The pit must have a high-level alarm switch fitted (audible and visible), with remote alarm signal to an area on the site that is able to be monitored.

Pump: If required, use the correct pump to manage the wastewater generated. It must have a low level stop switch.

Vertical clearance: Ensure there is adequate vertical clearance above the pre-treatment system to allow safe inspection and cleaning.

Compliance plate: Check that there is a compliance plate with a compliance number clearly visible on the system. This ensures the equipment is authorised for the full range of conditions and wastewater on-site.

Roofing: The liquid trade waste generating process area and pre-treatment must be roofed to prevent ingress of rainwater. A ten degree, from the vertical, overhang is the minimum acceptable roof cover. to ensure rainwater does not get in**.**

Backflow prevention: A cold water tap must be installed within 5 metres of the device(s). A backflow prevention device must be installed on the inlet side of the tap. The backflow device(s) must be tested every 12 months by a licensed plumber who is accredited in backflow prevention to ensure it is operating correctly and to identify if the valve requires servicing/repair. After testing a valve, the Licensed plumber must lodge a test certificate with Access Canberra, the plumbing regulator.

Note: The pre-treatment installation's pipe work and the surrounding area must be arranged to ensure that any spillage or overflow of sludge, separated oil or untreated oily waste is prevented from bypassing the separator and entering the Sewerage Network.

Commissioning requirements

Each pre-treatment device/system shall be commissioned by a person or company accredited for this purpose by the manufacturer or supplier of the equipment. As part of the commissioning, the following documents shall be provided:

- a certificate of commissioning to be to be forwarded to Icon Water, and
- a schedule of recommended cleaning and maintenance to be given to the owner and kept at the premises for reference and available for inspection by Icon Water on request. The schedule shall provide:
  - a description of activities to be undertaken (e.g. for coalescing plate separators the removal and cleaning of plates, sludge withdrawal from hopper, etc.)
  - minimum frequencies for these activities; and
  - any special observations to be made which would affect the frequency of this maintenance schedule or which may indicate conditions when qualified service personnel may need to be engaged.

Maintenance requirements

The pre-treatment device(s) must be maintained as per the schedules provided during the commissioning of the system. The maintenance regime must include all aspects as indicated above in *Commissioning requirements.*

Chemical handling and storage

Chemical additives

Safety data sheets for chemical additives proposed to be used within the boiler system and associated maintenance must be forwarded to Icon Water as an attachment with the liquid trade waste application form.

These chemicals may be added to the boiler water to inhibit corrosion or reduce scale build-up. In the past, corrosion and scale inhibitors contained chromium. Such products are no longer used and are not permitted in Icon Water's Sewerage Network.

Note: There are some treatment systems that do not rely on chemicals. Icon Water recommends that liquid trade waste dischargers should consider such chemical-free water treatment systems where suitable for their circumstances.

All chemicals

Safety data sheets for any chemicals stored in bulk on-site and may be present in the wastewater, must be provided to Icon Water as an attachment with the Icon Water liquid trade waste application form.

Chemicals should be stored in an area where any spillage cannot drain to Icon Water's Sewerage Network or stormwater system. Concentrated chemicals e.g. acids, caustic and other corrosive chemicals must not be discharged to Icon Water's Sewerage Network. Chemical solutions containing small quantities of these substances should be neutralised before discharging to the Sewerage Network.

Compliance management

Record keeping

Trade Waste Customers must:

- keep documentation relating to inspection and servicing of all pre-treatment systems at the premises for at least two (2) years and make this documentation available to Icon Water upon request.
- maintain appropriate records to demonstrate compliance with the Liquid Trade Waste Negotiated Contract at all times.

Site inspection

Icon Water's personnel may attend the premises to conduct site inspections to verify compliance with the Liquid Trade Waste Negotiated Customer Contract. The indicative frequency of site inspections is detailed in Section 9.12 of Icon Water publication *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements.*

References

- *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements*

Issue	Date	Reason for Revision	By
A	10/06/2025	Issue for public consultation	S. Chappell