

# **COOLING TOWERS**

# 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 cooling towers so that compliant waste can be approved for ongoing acceptance into the Icon Water 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

For the purposes of this guide note, cooling towers fall into one of three groups:

- <u>Commercial air-conditioning cooling towers</u> are defined as cooling towers dedicated exclusively to (and are an integral part of) heating, ventilation, air-conditioning, or refrigeration systems associated with commercial living space air-conditioning, or commercial process air-conditioning such as computer rooms. This classification includes cooling towers with a discharge rate not exceeding 500 L/h. Such cooling towers require an Icon Water trade waste approval for discharge from the cooling tower to the Sewerage Network. These cooling towers are pre-determined to produce Category A discharges to the Sewerage Network.
- Large non-industrial cooling towers exceeding 500 L/h or 0.14 L/s are pre-determined by Icon Water to produce Category B discharges to the Sewerage Network on the condition that the maximum daily discharge volume does not exceed 20 kL. If the daily discharge volume of 20 kL is exceeded, the discharge is automatically determined by Icon Water to be a Category C discharge and will be treated in exactly the same manner as an industrial cooling tower.
- <u>Industrial cooling towers</u> that facilitate and heat exchange in some manufacturing processes are categorised by Icon Water as Category C discharges. The requirements stipulated in the associated negotiated customer contract may be much more stringent than the two previously mentioned groups depending upon the circumstances.

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



### **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 *may* be required to be installed for cooling tower wastewater where it is discharged to Icon Water's Sewerage Network:

#### Table 1. Pre-treatment devices.

Pre-treatment Device	Details	
Balancing pit <sup>1</sup>	These <i>may</i> need to be installed, so as to reduce the composition of the wastewater to less than the acceptance criteria (e.g. pH, chemicals). Icon Water can further advise following assessment of the trade waste application. If required, the pit must be sized to accommodate the maximum flow from the process and have a flow retention of one hour.	
pH correction	the wastewater is outside the range of 6.5 – 10, then pH correction will need occur before discharge to the Sewerage Network.	

<sup>1</sup>The discharger must provide supporting information in regard to sizing of equipment and the manufacturer's recommended maintenance schedule.

<sup>2</sup>All pre-treatment devices must be maintained and cleaned as per a set schedule.

#### **Balancing 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:** A nominal 25 mm "full flow" sampling valve shall be provided in the effluent pipe leading to the tundish. The valve shall be located near the separator in a manner such that effluent would pass through the valve (when it is open) rather than discharging to the tundish.

**Balancing 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. The inlet and outlet pipe should be 100 mm diameter. The design of the pit should be with the inlet and outlet at right angles to each other providing a swirling effect, in the flow of the wastewater. This will assist in the mixing of inflowing acidic or alkaline waste with the water held in the pit. The pit should be sized to accommodate the maximum flow from the process and have a flow retention of one hour. They must be constructed and installed to allow ease of inspection and cleaning. Lids should be easily removed and the pit wide enough so that any accumulated solids can be easily removed. The pit must be raised 75 mm above surrounding ground level or have gatic airtight covers. The internal coating of the pits should be acid resistant e.g. tar epoxy paint.

**Pump:** Use the correct pump to manage the wastewater generated. The pump shall be a non-emulsifying feed pump. It must have a manual start switch with a low level stop switch.

**Vertical clearance:** Ensure there is adequate vertical clearance above the pre-treatment system to allow safe inspection, cleaning and replacement of the plate pack(s).

**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.)
- o 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 cooling towers and associated maintenance must be forwarded to Icon Water as an attachment with the liquid trade waste application form.

Wastewater generated by cooling towers may contain various pollutants, depending on the type of water treatment used.

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 <u>in bulk on-site</u> 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 Icon Water's 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 *STD-SPE-P-003 Trade Waste Approval and Compliance Requirements*.

### References

- STD-SPE-P-003 Trade Waste Approval and Compliance Requirements
- TW-GN-301 Liquid trade waste Category C

Issue	Date	Reason for Revision	Ву
А	10/06/2025	Issue for public consultation	S. Chappell