

Discharge flow meters

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Businesses may need to install a suitable flow meter for measuring their trade waste discharge as a condition in their trade waste discharge permit. This provides accurate information about the rate and volume of discharges to sewer. Also, the meter(s) must have outputs that can activate a flow-paced sampling device. The following information sets out specific requirements and recommendations for these installations.

Meter type

While we might consider other methods in certain circumstances (such as partially filled pipes or channels) the preferred option is measurement of full-pipe flow with an electromagnetic flow meter. They are most easily installed in pumped discharge lines. These meters may also be used in gravity discharge pipes, if suitable bends are used upstream and downstream of the meter to give an 'invert' section that remains full at all times, with a minimum length each side of meter of five times the diameter of the pipe to prevent flow disturbance.

Electromagnetic flow meters must be sized, so that the meter maximum flow rate is equal to twice the flow rate allowable. This meter maximum flow rate must be equal to a minimum linear flow through the meter, of 3 meters per second. This is to ensure acceptable accuracy at near zero flow conditions. A line sized meter is not to be used unless the linear flow rate through the meter at meter maximum flow (full scale) is equal to a minimum linear velocity of 3 meters per second. Where flows are extremely low, a pumping system must be employed to ensure a steady measurable flow.

Meters with mechanical devices driven by the flow, and electromagnetic flow probes are generally not acceptable for measuring trade waste.

Meter specifications

Accuracy: Plus or minus 2% across the range of actual flow rate at the lowest typical flows when measuring trade waste. Where the meter measures combined trade waste and sewage flows, an accuracy of plus or minus 5% is acceptable.

Power supply: Dedicated uninterruptible power supply (UPS).

Totaliser: A flow volume totalising function, with a visual display in kilolitres (minimum six digits). **No** external reset. The totaliser must be able to retain its reading in the event of a power failure.

Flow rate: Instantaneous flow rate function, with a visual display in litres per second (to one decimal place).

Output pulse signal: Voltage free (isolated) contact closure of minimum 50 millisecond duration. Set to give one pulse every 100 litres of flow, unless otherwise directed by us.

Output analogue signal: 0 - 5 volts DC or 4 – 20 milliamps output, which is directly proportional to flow rate. This is reserved for SA Water's ad-hoc logging of flow data.

External output connector: "Amphenol" 6-pin socket type (part number MS 3102E14S-6P) with dust cap (part number MS 25043-14).

Wiring to external output connector:

Pin A + Pulse output

Pin C - Pulse output

Pin E + Analogue output

Pin F - Analogue output

Installation

Meter location: The meter is located downstream of the trade waste discharge, or pre-treatment system outlet, but upstream of domestic waste water inflows. Actual location of the meter must conform to the manufacturer's installation requirements.

Accessibility: In addition to the manufacturer's requirements, the installation should accommodate servicing of the flow meter, as required during its service life. For example;

- providing risers in pipework upstream and downstream of the meter, to give access for in-situ cleaning
- using easily removed backfill for buried meter installations.

Isolating valves: Isolating valves must be installed (for maintenance purposes) unless the discharge is pumped.

No bypass: Pipework that allows the flow meter to be bypassed is not permitted.

Location of other components: The meter display/control instrumentation should be conveniently and safely located for routine checks and recording of readings. It should be suitably protected from weather and accidental damage.

The output connector must be located within two metres of the trade waste sampling point, to enable connection to an automatic sampling device. The output connector is permanently mounted above ground level to a weatherproof junction box or similar fixture. Flying leads are not acceptable.

Commissioning, calibration and maintenance

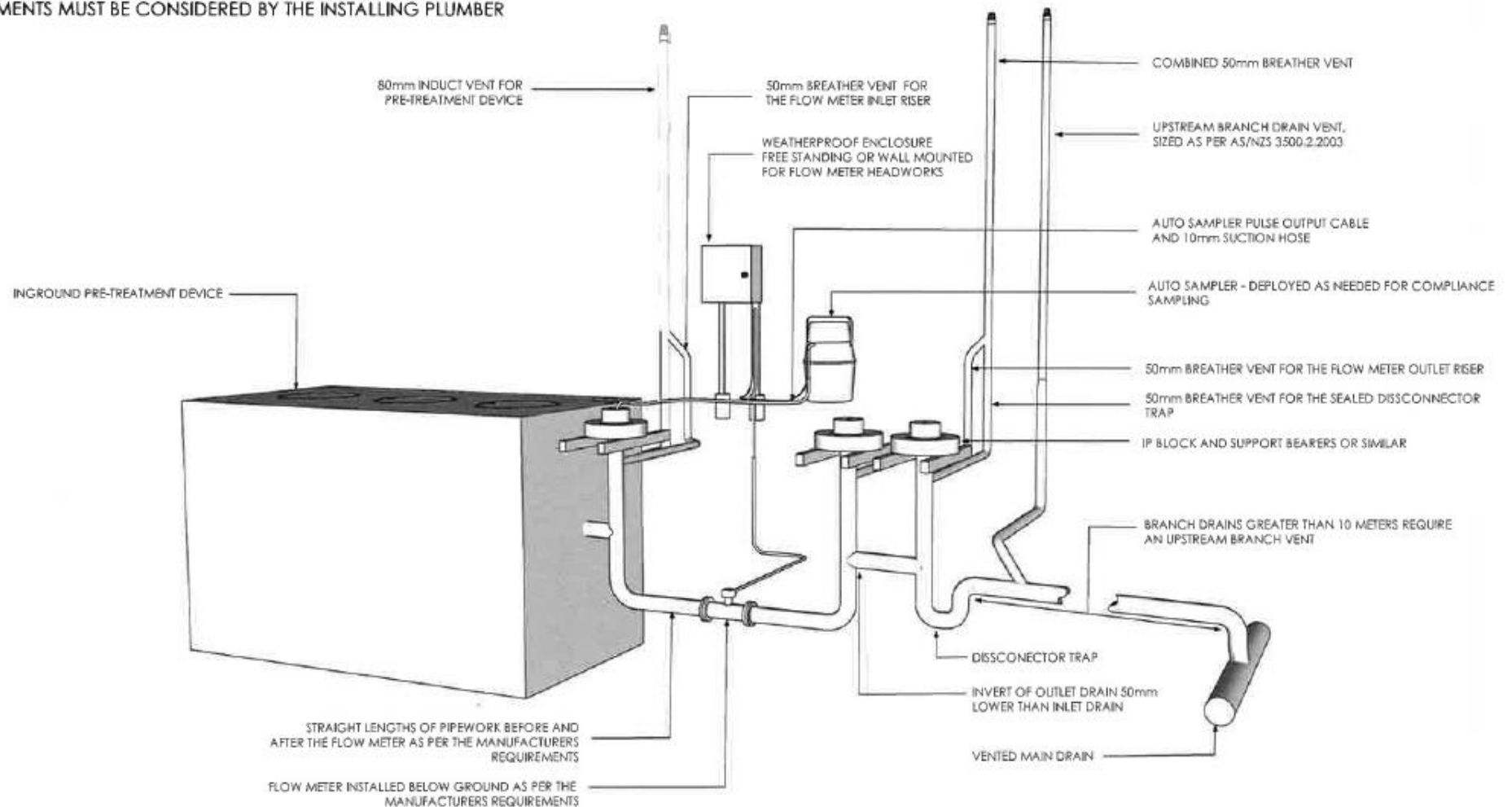
The meter must be commissioned at the time of installation by a manufacturer/vendor or their accredited agent. Individual trade waste discharge permits specify the frequency of ongoing verification checks. If the meter's accuracy is in doubt, it shall be calibrated by a NATA registered laboratory. The meter is to be maintained in accordance with the manufacturer's requirements, although individual site conditions might require more frequent attention.

Data logging

As well as the standard totaliser display, electronic logging of flow data will be required in certain circumstances. The [Electronic Monitoring and Data Collection Guideline](#) has more information.

Flow meter installation in-ground with no electronic monitoring

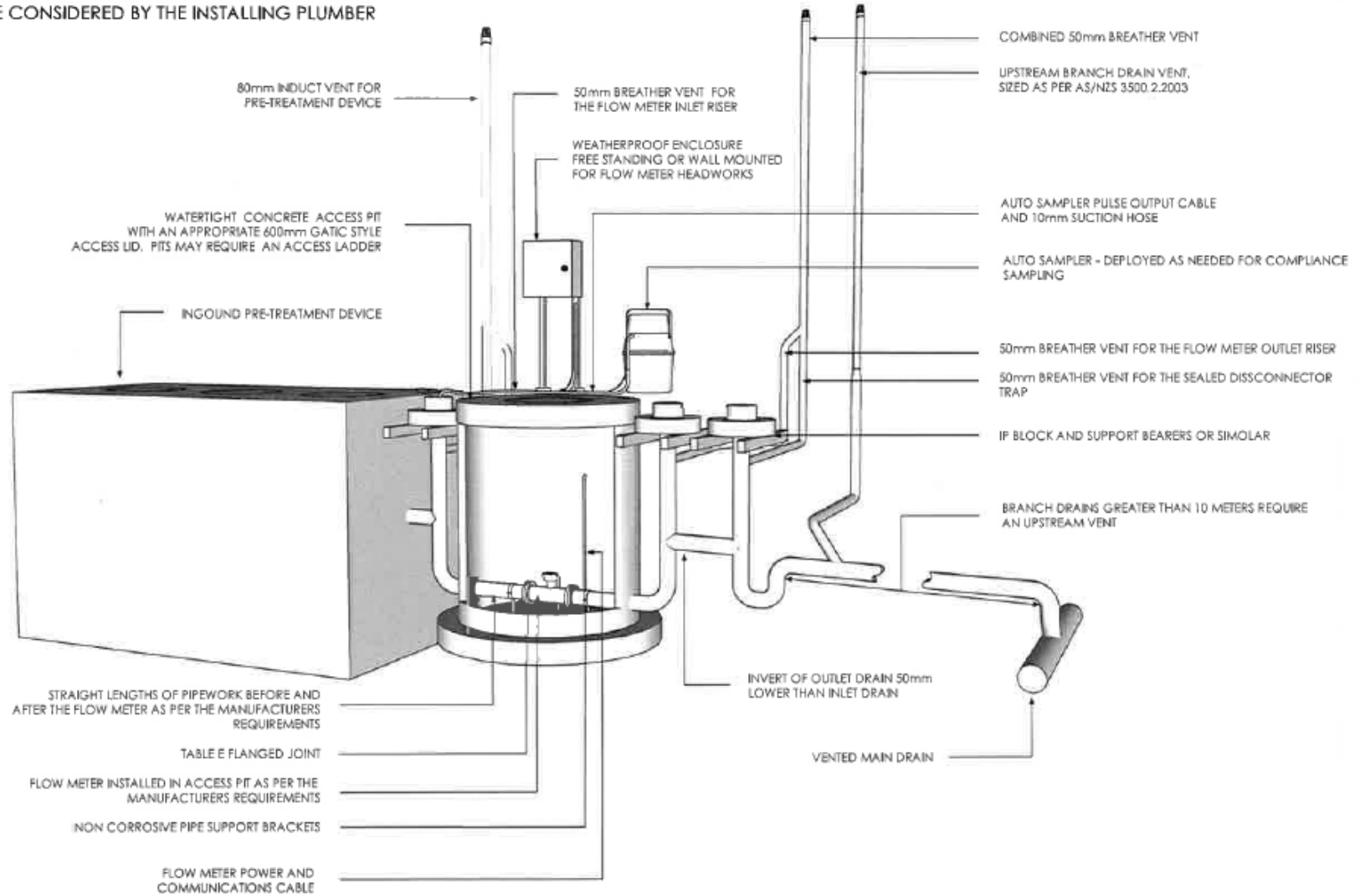
DRAWING NOTES:
 MODEL IS FOR VISUALISATION PURPOSES ONLY
 AS/NZS 3500, MATERIALS AND SPECIFIC SITE INSTALLATION
 REQUIREMENTS MUST BE CONSIDERED BY THE INSTALLING PLUMBER



Flow meter installed in access pit with no electronic monitoring

DRAWING NOTES:

MODEL IS FOR VISUALISATION PURPOSES ONLY
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