

Queensland interim water meter standard for non-urban metering

(WSS/2014/1170)

Introduction

This interim standard applies to non-urban water meters installed from 1 January 2013.

It is designed to reflect the scope and intention of the National Framework for Non-urban Water Metering, Policy Paper (Final draft) 2009, and enable the purchase and installation of compliant meters under the Australian Standards.

This interim standard applies to the specification and installation of mechanical and electronic type water meters used to monitor water extraction by water entitlement holders as required by the Department of Natural Resources and Mines (DNRM). It should be read in conjunction with the Australian Standard AS 4747 which provides detailed specifications for meters, installation, maintenance and validation.

All meters installed, maintained and validated in accordance with AS 4747 and this guide will be exempt from the pattern approval requirement until pattern approved meters suitable for the take of unsupplemented water are widely available. This interim standard enables new meters to be installed with confidence that they will not need to be removed at a later stage.

When there is a sufficient supply of pattern approved meters, the intention is to update this interim standard.

Requirements

Meter body

1. Meters shall be marked with the correct verification stamp and, where available, pattern approved prior to installation, unless the condition in requirement 3 below is met.
2. Meters shall comply with the Australian Standard 4747 applying to non-urban water supply in fully-charged closed conduits and open channels.
3. If a suitable pattern approved meter is not available at the time of installation, then a non-pattern approved meter that is certified to measure volumetric flow within the maximum permissible limit of error (plus or minus 5%) must be installed.

To meet this requirement, information about the meter being able to measure volumetric flow within the maximum permissible limit of error (plus or minus 5%) may be:

 - published on the manufacturer's website, or
 - published in the manufacturer's installation manual, or
 - obtained from a reputable testing facility.
4. The meter must be installed so that it operates within the maximum permissible limit of error of plus or minus 5%. In the absence of other recommendations by the meter manufacturer, the meter must be installed as described below:
 - Between sections of similar straight rigid pipe with uniform and circular cross section equal to the meter bore diameter.
 - The length of the straight upstream pipe section must be at least 10 times the pipe diameter and the straight downstream pipe section must be at least five times the pipe diameter.
 - Where the meter is installed close to the discharge side of a pump, the straight upstream pipe section from the meter must be increased to at least 20 times the pipe diameter, as prescribed by AS 4747.5.

Diagrams illustrating a range of meter installation scenarios are shown at the end of this document.

5. Isolation valves and control valves must be located outside the specified lengths of pipe, preferably downstream of the meter wherever possible.
6. All threaded and flanged connections and other connections must comply with the relevant Australian Standards or manufacturers specifications.
7. Associated fittings such as flow straightening devices, pipe reducers and expanders, strainers, bends and drain valves must be located outside the specified lengths of pipe. All fittings and connections must be free of air and water leakage.
8. The completed meter installation must be validated by a meter validator as authorised under the Water Regulation 2002. The validator must complete a water meter validation certificate to declare that the meter:
 - is suited to the site conditions
 - is operating within the maximum permissible limit of error
 - has been installed in accordance with AS 4747, the manufacturer's directions and this interim standard.
9. Tamper seals are to be applied by a validator at the time the meter installation is validated and shall be applied in such a way to ensure there is no possibility of dismantling or altering the water meter without damaging or breaking the tamper seals.
10. Meters must display cumulative totals and rate of flow in metric units (e.g. megalitres, kilolitres, megalitres/day, litres/second).
11. Meters must be labelled so as to show the direction of flow, orientation or any other necessary installation information to achieve the required accuracy.
12. The primary element, flow display unit and other ancillary equipment associated with the meter must be protected to at least IP65 in accordance with AS1939 (IP Code).
13. The meter manufacturer's installation manual must be available at the installation site at the time of validation by a validator. The manual must include sufficient instructions and recommendations to ensure

the meter can be installed and attain the required metrological performance at the site.

14. The meter must have the capability to produce a meter reading as an electronic output and must be capable of being fitted with an electronic data logger and automatic reading device that will allow remote reading of the meter.
15. Meters must have a clearly identifiable manufacturer's serial number securely attached or imprinted.

Meter site

16. Under the *Work Health and Safety Act 2011* the meter site must comply with specifications and standards to ensure safety and eliminate or minimise hazards and risks.
17. Wherever possible, the meter should be installed above ground. Where that is not practical, the meter may be installed in a pit or box provided it complies with the relevant Australian Standards for construction and where applicable the relevant Australian Standards for confined spaces. The meter must be installed so that it can be opened or removed from the installation to allow inspection of the internal components by a validator.
18. The meter can be installed in a horizontal pipe, vertical downpipe or pipe with a falling slope on the condition that the pipe is not subject to partial pipe flow.
19. Where a meter is installed downstream of a rising pressurised main pipe, an isolation valve is required upstream of the meter to enable safe meter removal.
20. The meter must be installed so that its register can be read visually from a position above the centre of the pipe.
21. Where the meter or any ancillary equipment is connected to an electrical supply, the electrical works must be carried out by a qualified electrician and comply with the relevant Australian Standards.
22. Handrails, ladders and platforms must be fixed, and be constructed to comply with the Australian Standards.

23. The meter site and access to it must, at all times, be safe and be kept clear of:
- oil, grease, noxious fumes and hazardous materials
 - overgrown vegetation and loose soil
 - dangerous machinery or equipment.
24. Vehicular access must be provided from the nearest public road to the meter site. Keys to locked gates must be provided to the department or its contractors upon request.

Meter maintenance

25. The meter must be maintained over its working life in accordance with AS 4747 and the manufacturer's requirements and this guide. Maintenance must be undertaken at least every five years by a validator or more frequently if the metrological performance of the meter is in doubt or due to local water conditions. Evidence of re-validation of the meter is to be provided to the department, using the water meter validation certificate.
26. When work that might affect the metrological performance of the meter is undertaken (including installation and maintenance), the meter must be validated by an authorised validator. This work includes, but is not limited to, meter removal, replacement and re-calibration, as well as replacement of internal parts, sensors and transducers. Minor maintenance such as battery replacement and cleaning of external parts of the meter does not require validation if the tamper seals remain in place.
27. A meter must be re-validated if its tamper seals are broken by maintenance works.
28. If required by the department, the meter installation must provide for in-situ testing of the accuracy of the meter. This provision might include flow diversion devices, a standard access valve or standard pipe sections.
29. Where the works are used to take both supplemented and unsupplemented water, the meter must be installed to meet the requirements as specified in the contract between the Service Provider and the customer.
30. A water meter validation certificate is required to be completed by an authorised

meter validator and submitted to DNRM by the water entitlement holder. This certificate validates the meter in accordance with the interim standard. The lodgement of a completed certificate enables the holder to have a metered water entitlement (or approved meter).

Meter reading

31. Water entitlement holders are required to provide a meter reading to DNRM in accordance with a meter reading notice given under the Water Regulation 2002 and the Queensland non-urban water metering policy for unsupplemented water extractions 2014.

References and useful links

The National Framework for Non-urban Water Metering Policy Paper: 7 December 2009
www.environment.gov.au.

Australian Standard AS 4747
www.saiglobal.com.

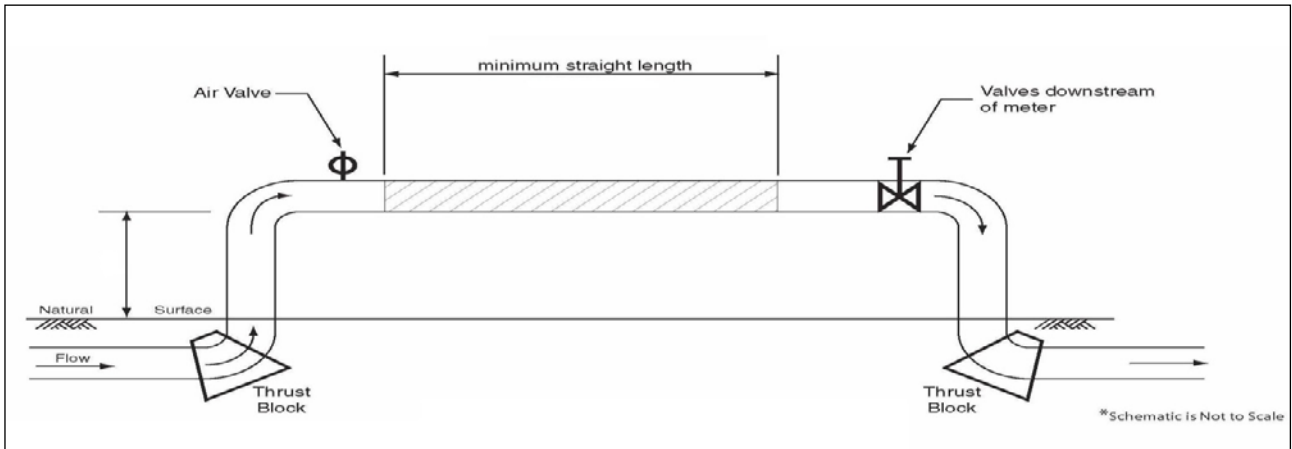
Irrigation Australia. Certified meter installer and validators <http://irrigation.org.au>.

Further information

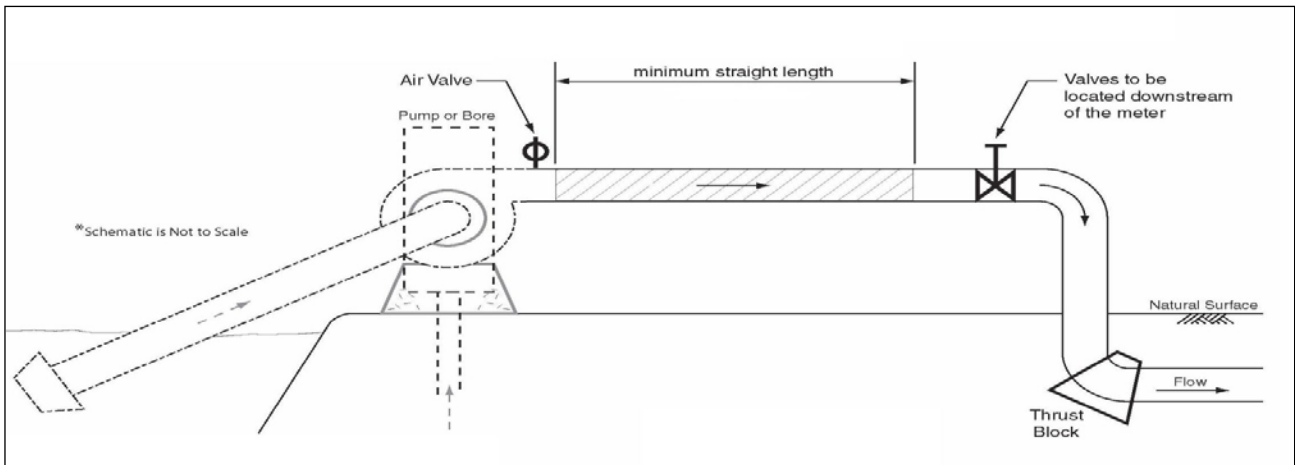
Further information on water metering is available on the Queensland Government business and industry portal www.business.qld.gov.au or call 13 QGOV (13 74 68).

Meter installation scenarios

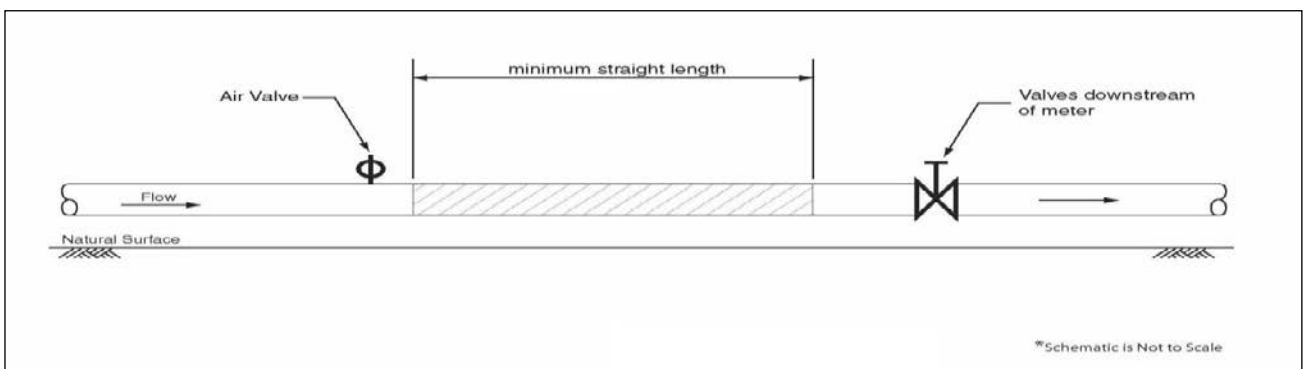
Underground pipe brought to surface*



Exposed delivery pipe*



Exposed pipe on surface*



*Meter is to be installed within the 'minimum straight length' section of pipe. In the absence of other recommendations by the meter manufacturer, the length of upstream pipe section must be at least ten times the pipe diameter and the downstream pipe section must be at least five times the pipe diameter.