

Queensland interim water meter standard for non-urban metering

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Version History

Version	Date	Comments
1.00	20/11/2014	Minor edits & name change
1.01	18/04/2016	Minor edits
1.02	18/11/2016	Minor edits that include those associated with the Water Regulation and Other Legislation Amendments (i.e. insert Water Regulation 2016 in replace of Water Regulation 2012).
1.03	21/04/2017	Minor edit – insert 'In the absence of other specifications by the meter manufacturer' in section 2.3.

Approval

Position	Name	Date
Director, Operations Support	Ian Gordon	21/04/2017

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1 Introduction

This interim standard (standard) applies to the specification and installation of mechanical and electronic water meters used to monitor unsupplemented water extraction by water entitlement holders as required by the Department of Natural Resources and Mines (the Department).

This standard is to be followed in conjunction with the Australian Standard AS 4747 (AS 4747) which provides detailed specifications for meters, installation and maintenance and validation.

This standard enables the purchase and installation of compliant meters under the AS 4747 for all meters installed from 1 January 2013 until further notice by the Department. The declaration and accounting of non-urban water extraction by holders of metered entitlements is in accordance with the Water Regulation 2016 (Water Regulation).

This standard is intended as a guide for the purchase and installation of compliant meters under AS 4747 and delivers the primary objective of the National Framework for Non-urban Water Metering, Policy Paper (7 December 2009) that on site meter measure performance is within maximum permissible limits of error of +/-5%.

2 Requirements

The following paragraphs set out guidelines for meter purchase, specifications, installation, maintenance and validation and which provides detailed specifications for meters, installation and maintenance and validation.

2.1 Meter body

Water meters for metered entitlements (non-urban) as prescribed under the Water Regulation include those for water supply in fully-charged closed conduits and open channels must comply with AS 4747 and this Standard.

Subject to exceptions set out in the following paragraph (3), meters must be pattern approved prior to installation (including the correct verification stamp).

If a suitable pattern approved meter is:

- not available at the time of installation; or
- not cost effective taking into account and giving due and reasonable evidence of the user's water demands and operating conditions,

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.

2.2 Meter (volumetric flow) information

Information about meter volumetric measurement flow capability 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 calibration certificate; or
- obtained from a reputable testing facility.

2.3 Meter installation

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

The following meter installation specifications are required for validation certification. In the absence of other specifications by the meter manufacturer, a meter must be installed:

- between sections of similar straight rigid pipe with uniform and circular cross section equal to the meter bore diameter;
- so that the length of the straight **upstream** pipe section is at least ten (10) times the pipe diameter; the length of the straight **downstream** pipe section is at least five (5) times the pipe diameter;
- where installation is in close proximity to the discharge side of a pump, the straight upstream pipe section from the meter is increased to at least twenty (20) times the pipe diameter, as prescribed by AS 4747.

Isolation valves and control valves must be located outside the specified lengths of pipe, preferably downstream of the meter wherever possible.

All threaded and flanged connections and other connections must comply with the relevant Australian Standards and/or manufacturers specifications.

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.

Meters must be labelled so as to show the direction of flow, orientation or any other necessary installation information to achieve the required accuracy.

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).

Meters must display cumulative totals or rate of flow in metric units (e.g. megalitres, kilolitres, megalitres/day, and litres/second).

Meters must have a clearly identifiable manufacturer's serial number securely attached or imprinted.

2.4 Meter validation

Meter validation from an authorised meter validator (validator) following meter installation is required under the Water Regulation.

The validator must complete a water meter validation certificate to declare that the meter installation complies with:

- this standard;
- AS 4747;
- product-manufacturer specifications and directions relevant to validation requirements (subject to following requirements as identified below);
- complies with site requirements and is suitable (fit for purpose) taking into account site conditions and meter performance including as assessed in accordance with this standard;
- is operating within the maximum permissible limit of error.

The meter manufacturer's installation manual must be available at the installation site at the time of the validator undertaking validation to ensure the required metrological performance for the onsite meter is met.

Nothing in this standard is intended to contradict the manufacturer's operating and installation directions that would void manufacturer's warranty or that would indirectly or directly result in loss or liability for which the Department expressly disclaims responsibility.

In the event of a conflict, the entitlement holder:

- should only apply AS4747 and this standard to the extent of the conflict and seek further directions from an authorised meter validator;
- acknowledges that a meter, the subject of such a conflict, may not be capable of validation.

Tamper (resistant-evident) seals are to be applied by a validator at the time the meter installation is validated to safeguard against meter by providing visible, identifiable evidence of meter tampering, dismantling or post - validation alterations.

A meter must be re-validated if its tamper seals are broken.

2.5 Meter site

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.

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 (Australian Standards).

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.

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.

The meter must be installed so that its register can be easily read.

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.

Handrails, ladders and platforms must be fixed, and be constructed to comply with the Australian Standards.

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.

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.

2.6 Meter maintenance

The meter must be maintained over its working life in accordance with AS 4747 and the manufacturer's requirements and this Standard.

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.

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 meter 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.

A meter must be re-validated if its tamper seals are broken by maintenance works. 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.

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.

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.

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.

2.7 Meter reading

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

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/or automatic reading device that will allow remote reading of the meter (i.e. telemetry).

3 Meter installation scenarios

Figure 1 - Underground pipe brought to surface

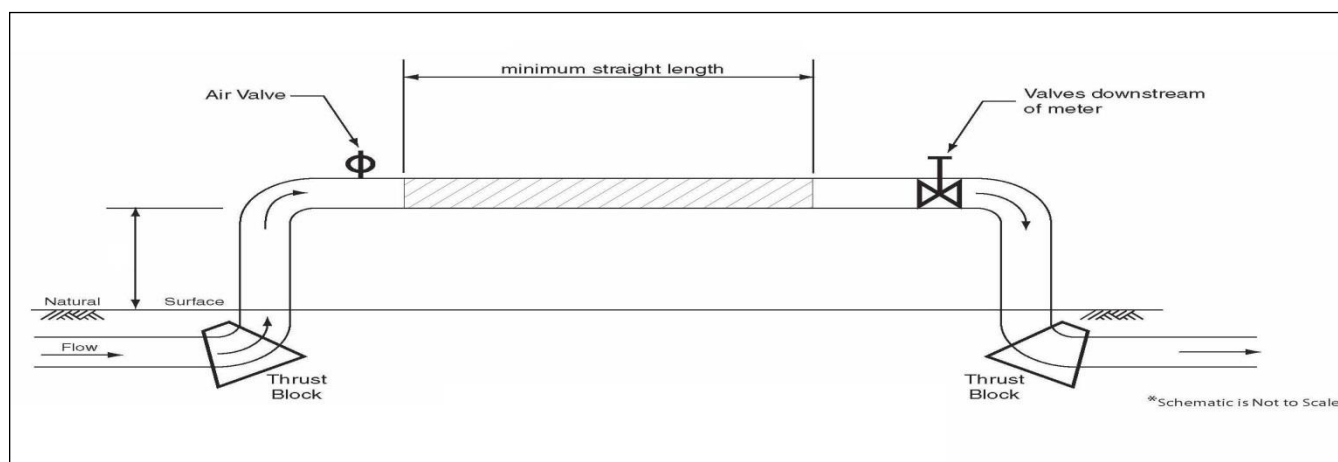
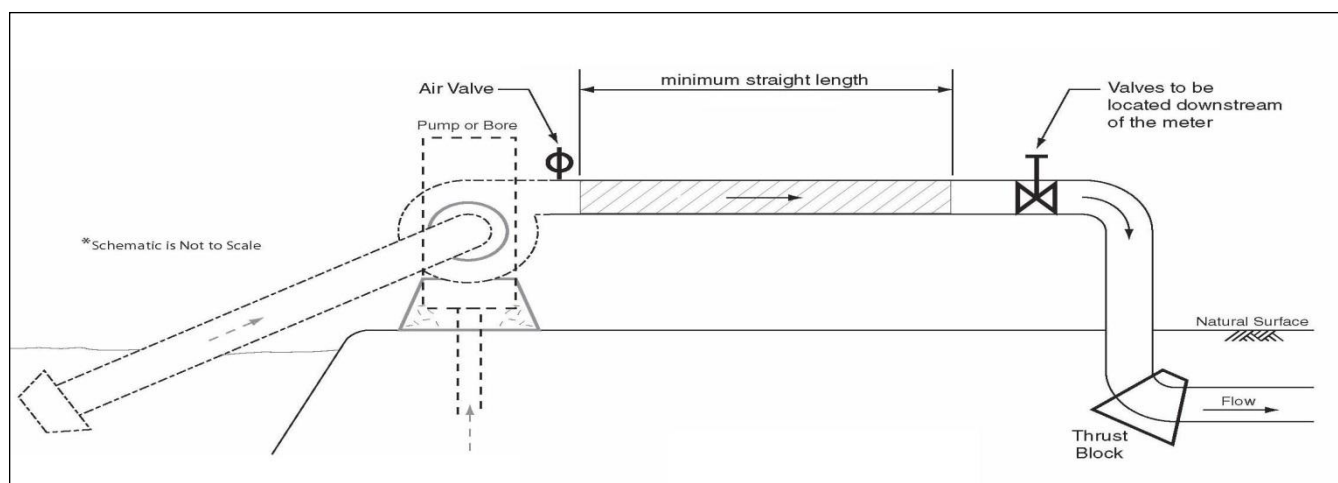


Figure 2 – Exposed delivery pipe



Notes: Figure 1 and Figure 2:

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.

4 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>

5 Further information

Further information on water metering is available on the Queensland Government website at <http://www.business.qld.gov.au> or call 13 QGOV (13 74 68).