

# Water Meter Installation, Maintenance and Replacement Guideline

Environment Protection Authority

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Environment Protection Authority, ACT Government, GPO Box 158, Canberra, ACT 2601

Telephone: 13 22 81

Website: [www.environment.act.gov.au](http://www.environment.act.gov.au)

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## 1 Background

The Environment Protection Authority (the EPA) regulates the abstraction of water resources in the ACT through the *Water Resources Act 2007*. Since the introduction of the legislation in 1998, approximately 200 licences to take water have been issued by the EPA to abstract volumes of groundwater and surface water.

Each licence to take water requires the licensee to install and maintain water meters to measure the volume of water abstracted. Licensed water users have been required to install water meters to account for surface water use and groundwater use since 1998.

To ensure continued confidence with water metering requirements and water use data, the EPA has prepared a Water Meter Installation, Maintenance and Replacement Guideline (the Guideline). The driver for the Guideline was to ensure a consistent approach to licence conditions for water meters. The Guideline is in harmony with regulatory activities of other interstate jurisdictions that are improving licensed requirements of water meters.

The Guideline was modelled on elements of the National Framework for Non-urban water metering<sup>1</sup> and the Australian Standard: Meters for non-urban water supply (AS4747).

The National framework for non-urban water metering was developed from the National Water Initiative to improve water resource management across Australia. This framework addressed the need to provide an acceptable level of confidence with water metering to measure licensed water use. The framework provided guidance and pathways to ensure a suitable level of water meter accuracy would be attained across Australia, in particular, by developing National Water Meter Standards (NWMS).

The NWMS will require that a meter design is pattern approved and installed in accordance with Australian Standard: Meters for non-urban water supply (AS4747). AS4747 provides information such as minimum technical requirements, installation and commissioning requirements, and in-service compliance, for closed conduit and open channel water meters.

In the ACT it has not been mandatory, through the licence conditions, for water meters to be pattern approved and installed as per AS4747. This Guideline will apply to new meters and replacement meters installed in the ACT, but will not apply retrospectively. In the interim, the Guideline reflects the scope and intent of the NWMS prior to effective future implementation of NWMS.

The following sections of the Guideline describe requirements for meter installation (including new or replacement water meters), meter maintenance and inspections of meter installations. The Guideline will ensure the ACT is in line with National policy to regulate water meters for non-urban water supply.

## 2. Objectives

The objectives of the Guideline are to:

- ensure a consistent regulatory approach to installation, maintenance and replacement of water meters; and
- adopt national metering policy and standards where applicable to regulatory arrangements in the ACT.

## 3. Scope

The scope of the Guideline is limited to water metering systems that are required by an ACT licence to take water under the *Water Resources Act 2007*. The Guideline does not apply to individual water meters that measure treated water delivered through water mains.

1 <http://www.environment.gov.au/resource/national-framework-non-urban-water-metering-policy-paper>



## 4. Implementation and compliance

This section identifies the Guideline implementation date and describes the meters that are required to comply.

### 4.1 Effective implementation date

The effective implementation date of the Guideline is 1 July 2015.

### 4.2 Meters required to comply with the Guideline

All new meter installations, from 1 July 2015, must comply with requirements of this Guideline.

For an existing meter that is replaced after 1 July 2015, the new meter installation must comply with requirements of the Guideline.

It is the licensee's and/or licence applicant's responsibility to ensure that the meter installation complies with the Guideline.

## 5. Meter installation

This section covers the requirements for installation of new and replacement water meters.

### 5.1 Measurement of licensed water use

A meter(s) must be installed to measure all licensed water use. The licensee must clearly demonstrate to the EPA how the meter arrangement measures water use.

### 5.2 Measurement of groundwater and surface water

The licensee must have separate metering systems to measure groundwater and surface water components.

### 5.3 Priority water meters

A priority water meter is one with a capacity of 5,000 ML/year or greater. A new or replacement priority water meter must be installed in such a manner to confirm that the water meter complies with AS4747 and the manufacturer's recommendations.

The licensee must ensure a new or replacement priority meter installation is certified by a certified meter installation validator. Irrigation Australia Limited provides meter validator training and accreditation throughout Australia and provides a listing of current certified meter validators at [www.irrigation.org.au](http://www.irrigation.org.au).

All other water meters must comply with the Guideline.

### 5.4 General installation

There must be a length of straight unobstructed pipe on the inlet side of the meter which is at least ten times the pipe diameter and a length of straight unobstructed pipe on the outlet side of the meter which is at least five times the pipe diameter. The water meter must be installed upstream of any valves (except air valves), tees, take-offs, diversions or branches.



## 5.5 Location and orientation

A water meter(s) must be fitted in the correct direction of flow. The meter must not be able to be made to record in reverse.

The water meter must be located as close as possible to the water extraction point, subject to:

- reasonable and practical plumbing factors;
- safe location to physically read a meter (e.g. avoid steep river embankments);
- required minimum pipe length (ratio derived from pipe diameter); and
- meter manufacturer's specification/requirement.

The section of pipe between the water extraction point and the water meter water must be visible.

The meter must be in a position that can easily be read by an authorised officer<sup>2</sup>.

The meter must be installed in a horizontal pipe only. The meter must not be installed in a vertical pipe or a pipe with falling slope.

## 5.6 Meter reading display

The meter reading display must be clearly visible and easily read. The meter reading display must be free from visual obstruction at all times.

## 5.7 Meter readings

Meter readings are necessary to determine volumes of licensed water use. A licensee must arrange for an authorised officer to take a water meter reading:

- when a new or replacement meter is installed;
- for a meter that has been replaced, malfunctioned or ceased to operate; and
- on or within seven days of the date of property settlement when a property is sold.

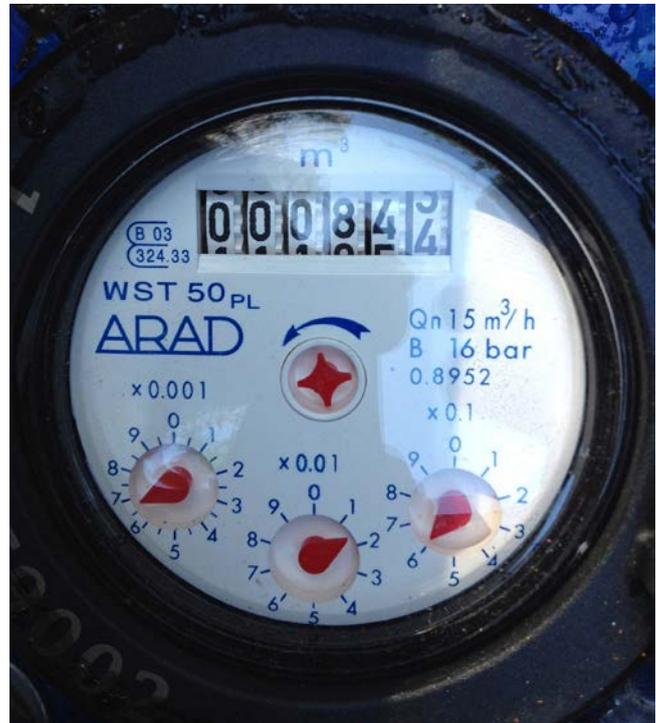
## 5.8 Meter serial numbers and labels

The meter manufacturer's serial number must be clearly visible on a meter. In addition, a licensee with multiple water meters must have each meter clearly identified with a label to assist communication

with the EPA or authorised officers. The label must be made of durable material. The colloquial name of the meter and the unique ACT Government identifying number must be indelibly marked on the label. The meter serial number is not required to be on the label.

## 5.9 Scale of meter

A water meter must be able to accurately read volumes of water extracted under a licence. The size of the meter must be compatible with flow rates described in the meter specification certificate. The meter must be able to record water volumes to a level that far exceeds expected use in any one year (10 times average annual use is appropriate) with no reset facility for total water volume. The meter's unit of measurement must be sensitive enough to identify two percent of the licensee's expected annual water use (for example, for annual use of 1 ML the meter should record use in units no greater than 0.02 ML).



A meter display, reading 843.616 m<sup>3</sup>

<sup>2</sup> An authorised officer means an authorised officer under S.14(3) *Environment Protection Act 1997*



## 5.10 Accuracy of meter

Before water is taken via a new or replacement water meter, the licensee must provide certification from the meter manufacturer or manufacturer's agent that the meter installation is within  $\pm 5\%$  of permissible error allowable for in-situ conditions.

If the accuracy of a water meter installation is in doubt, the EPA may require the person responsible for the meter to produce a certificate of meter accuracy (i.e. a flow test) from a suitably qualified person. Furthermore, the EPA may require a person responsible for the meter to have their existing meter installation accredited by a certified meter installation validator.

## 5.11 Electronic data storage

For water meters with electronic data storage, data must be retained in the event of power failure.

## 5.12 Tamper proof devices

A water meter must not be tampered with. Each meter must be fitted with tamper proof devices. The tamper proof devices must be fitted in a manner to demonstrate if any sealed component of a meter has been unsealed or attempted to be unsealed.

Tamper with a water meter means to interfere with, damage or destroy a water meter. Tamper with a water meter includes unsealing any sealed components; blocking any part of the meter; attaching to the meter any device that is likely to affect the operation of the meter; or disconnect a meter from its power source for digital meters.

## 5.13 Buried meter installation – inspection

The AS4747 allows a person to bury the body of a meter that has been appropriately designed and specified. For new meters, however, a person must demonstrate to the EPA that the meter installation complies with AS4747 and the manufacturer's requirements before the meter body is buried.

## 5.14 Surface water for stock/domestic use

It is a person's responsibility to separately identify stock/domestic surface water use in surface water irrigation systems that have uses in addition to stock/domestic which require a licence.

For example, a property with riparian frontage<sup>3</sup> may have an irrigation system that shares a common pump to distribute water for stock/domestic purposes and also for irrigated commercial orchards. The irrigated commercial orchards require a licence to take water. This property must have metering in place to separately identify the amount of water used for the irrigated commercial orchard.

## 5.15 Groundwater for stock/domestic use

All groundwater use in the ACT requires a licence to take water. All licensees must have a metering system in place to measure the amount of groundwater, including for stock/domestic purposes and all other purposes.

## 5.16 Advice of meter installation to the EPA

For a newly installed water meter, the following information must be provided to the EPA within 28 days of installation (this also includes where a meter is moved from one location to another).

- Name and contact details of the meter installer
- Exact location of the meter (GPS coordinates)
- Date the meter was installed
- Size, type, serial number of the meter

<sup>3</sup> For the purpose of the *Water Resources Act 2007*, land on or immediately adjacent to which there is a waterway



- Certificate of accuracy of the meter
- Meter reading at the time of installation
- Length and diameter of lead-in pipe and lead-out pipe

Where a water meter is replaced, the following additional information is to be provided.

- Type, size and location of the removed water meter
- Date the water meter was removed
- Meter reading of removed water meter at time of removal
- Reason why the meter was removed

### 5.17 Meter installation - inspection

A new meter, including replacement meter, must be inspected by an authorised officer. The inspection must occur before water may be taken<sup>4</sup>. The meter inspection is to confirm compliance with the Guideline and where relevant with AS4747 (priority meters).

## 6. Meter maintenance

This section covers the maintenance requirements for a new water meter.

### 6.1 Safe access

The meter site and access to it must be maintained in a safe manner and be kept clear of:

- grease, oil, noxious fumes and hazardous materials;
- long grass and overgrown vegetation; and
- dangerous machinery or equipment.

### 6.2 Meter reading display

Maintenance of meters must ensure that the meter display can be read clearly.

### 6.3 Meter malfunction

The licensee must notify the EPA within two working days of detecting a meter malfunction in which the meter is unable to accurately record water use. The EPA can determine an interim means of water measurement if the licensee needs to continue water use while the meter malfunction is rectified.

### 6.4 Meter accuracy and specific

A meter must be maintained with an acceptable level of confidence to demonstrate that the meter is accurate. Meter maintenance must follow recommendations of the meter manufacturer. The meter must continue to operate within the maximum permissible error (i.e.  $\pm 5\%$ ) for in situ conditions of meter specifications.

If the EPA requires, the licensee must produce a certificate from the metering system's manufacturer or other qualified person concerning a metering system's accuracy.

<sup>4</sup> This does not include water used in preliminary testing of a newly installed meter to ensure correct functioning of the meter.



## 7. Inspections

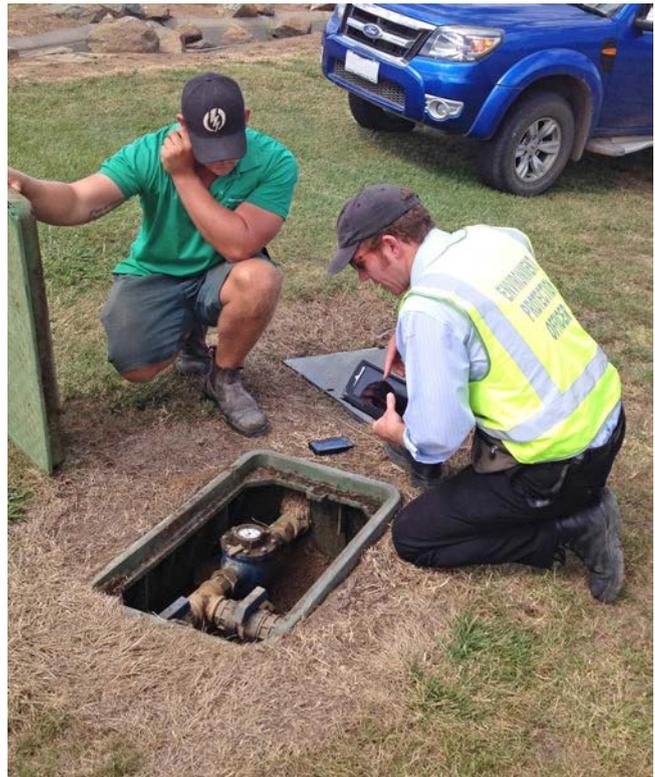
This section covers the inspection requirements for new and replacement water meters.

### 7.1 Inspection of new and replacement meters

A water meter can be inspected by an authorised officer to confirm compliance with this Guideline and with the *Water Resources Act 2007*. Enforcement action may be taken by the EPA to ensure licensee compliance.

All new and replaced meters may be inspected for the following features.

- General location/access
- Coordinates of meter location (eastings/northings)
- Meter orientation
- Meter reading
- Units of meter reading displayed adjacent to meter reading.
- Sufficient meter reading capacity to record at least 10 times annual water use
- Serial number of meter
- Sealed meter display face
- Tamper proof devices
- Pipe lead-in length
- Pipe lead-out length
- Meter labelling (if multiple water meters)
- Any evidence of meter tampering
- Evidence that the meter accurately measures water use
- Evidence that the meter is not able to be reset



*An authorised officer inspects a water meter*

### 7.2 Inspection of existing meters

An inspection of existing meters will be required to determine general compliance with the *Water Resources Act 2007* and licence conditions. If a visual inspection of the metering equipment and pipes is not possible, the licensee may be required to have a flow test of the meter performed in the presence of an authorised officer, or, a suitably qualified person perform a flow test of the meter to ascertain the accuracy of the meter and provide a certificate of the flow test to the EPA. Enforcement action may be taken by the EPA to ensure licensee compliance.

## For more information

Contact Environment Protection and Water Regulation by calling Canberra Connect on 13 22 81 or email [environment.protection@act.gov.au](mailto:environment.protection@act.gov.au).

Go to [www.environment.act.gov.au](http://www.environment.act.gov.au) for other information relating to water resources.

