

South Australian Licensed Water Use Meter Specification

July 2012

Introduction

The following specification applies to meters that are required to be installed in accordance with a written directive issued pursuant to the *Natural Resources Management Act 2004*.

Where a person is required to supply and install a meter, or service, repair, replace or adjust a meter, the work must be undertaken by a competent person¹ and must be done in accordance with this specification.

1. Meter selection

- 1.1. The meter must be an irrigation type meter supplied from a manufacturer compliant with Australian Standard/New Zealand Standard (AS/NZS) 9001 (Quality management systems).
- 1.2. The meter must have a permanent and unique identifying number.
- 1.3. The meter must function within an accuracy range of +/-2% as indicated by a National Association of Testing Authorities (NATA) accredited (or equivalent) certificate of accuracy from the manufacturer. The test must have been conducted on each individual meter.
- 1.4. The meter shall be selected with consideration to the diameter of the pipe work and the expected operating flow rates i.e. maximum continuous flow rate and the minimum flow rate.
- 1.5. All meter components, including castings, shall be sound, clean and free of imperfections and the meter body coated internally and externally with high quality coating to resist the effects of corrosion and mechanical damage.
- 1.6. Where the meter is an in-line type and is connected using flanges, then these flanges shall meet the requirements of AS 2129 (Flanges for pipes, valves and fittings).



¹ A competent person is defined as one with experience in the installation, maintenance, and repair of irrigation equipment and/or is certified by the water industry to install, maintain and repair irrigation equipment.

- 1.7. The meter register unit and meter body must be able to be sealed with security devices consistent with Clause 2.5 of AS 3565.1 - 2004.
- 1.8. The meter register must be resistant to condensation and fogging.
- 1.9. Units displayed in the meter register must be metric and clearly specified.
- 1.10. The meter shall be capable of being fitted with an electronic output device (EOD) to allow for transmission of information to distant points. This may be by way of an EOD included on/in the supplied meter or by the availability of an optional and fully compatible EOD device that can easily be retrofitted to each meter at a future date.
- 1.11. If the meter relies in any way on an electrical power source, then it shall have a non-volatile memory to ensure that recorded data is not lost in the event of a power or battery failure.

In this instance, the meter must retain the last meter reading at the time of the failure. Data must be able to be retrieved at all times.
- 1.12. If the meter relies on a mains power source it must be hard wired to ensure that the power source cannot be deliberately interrupted.
- 1.13. In addition to the above requirements, water meters associated with rehabilitation project inlet structures for volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone only, shall comply with the additional requirements identified in Appendix A, Section A1.

2. Location of the meter

- 2.1. It is recognised that some sites will require detailed consideration to determine the best method of metering. Further advice on where to locate meters is available by contacting the appropriate office of the Department of Environment, Water and Natural Resources. **However it is the responsibility of the licensee to ensure that the meter is installed in accordance with the manufacturer's specifications.**
- 2.2. The meter must be accessible at all times.

The licensee shall demonstrate, with the installation and housing of the meter, due diligence in meeting their responsibilities as defined in the *Occupational Health, Safety and Welfare Act 1986* and *Occupational Health, Safety and Welfare Regulations 2010* in relation to persons, who may in their work install, repair, maintain, replace, dispose of, read or adjust the meter. In particular, they shall ensure compliance with those requirements of the Regulations and associated Codes of Practice that may apply to the location of the meter including:

- Part 2 Division 1 Access and Egress
- Part 2 Division 4 Confined Spaces
- Part 2 Division 5 Electrical
- Part 2 Division 8 Lighting
- Part 2 Division 9 Manual Handling
- Part 2 Division 10 Noise
- Part 2 Division 13 Prevention of Falls
- Part 3 Divisions 2 and 3 Plant
- Part 5 Hazardous substances

- 2.3. Meters located on riverbanks or steep slopes shall be provided with suitable access ways with handrails and kick plates and complies with the *Occupational Health, Safety and Welfare Act 1986* and *Occupational Health, Safety and Welfare Regulations 2010*.
- 2.4. No meter shall be installed deeper than 1.5 metres below ground level.
- 2.5. Where a meter is installed below ground, sufficient space shall be provided to facilitate easy access for maintenance and reading.
- 2.6. Clear access to meters housed indoors shall be provided at all times.
- 2.7. All extraction points are to be metered as close as practical to the point of extraction.
Wherever possible, there are to be no extraction points prior to the meter.
- 2.8. All meters shall be located on the discharge side of the pump.
- 2.9. Where a dam collects water from the surface or a watercourse, a meter must be installed to determine the volume of water extracted from the dam even if the dam is also filled from other sources. Additional meters must be installed to measure the volume(s) of water delivered from any other source(s).
- 2.10. The location of water meters for the volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone shall also comply with the requirements of Appendix A, Section A2.

3. Installation of the meter

Flow meters and associated devices (such as EOD, earthing leads etc) are to be installed in accordance with the manufacturer's specification, however installation is governed by the following minimum standards.

- 3.1. Meters are designed to measure straight flowing water free of disturbances. Disturbances that can cause measurement error include pumps, filters, sieves, elbow bends, valves, changes in pipe size, etc. A minimum of ten diameters of straight pipe¹ must be fitted immediately upstream of the meter, and a minimum of five diameters of straight pipe¹ immediately downstream of the meter to minimise this flow disturbance.
- 3.2. Where meters are being installed into existing installations, and the above straight pipe¹ requirement cannot be met, it may be acceptable for the meter to be installed with a minimum of five diameters of straight pipe¹ upstream of the meter, and a minimum of two diameters¹ immediately downstream. However, Department of Environment, Water and Natural Resources approval must be specifically granted in these instances.
- 3.3. In instances where it is not practical to install a meter with a diameter matching the associated pipe work, (eg. an 80mm meter into 80mm pipe work), it is acceptable to install a smaller meter (eg. a 50 mm meter into 80 mm pipe work). However, any couplings used to reduce or increase the pipe diameter for the purpose of installing a smaller or larger meter must not be fitted within ten diameters of straight pipe¹ upstream of the meter. Similarly, five diameters of straight pipe¹ are required downstream of the meter before increasing/reducing couplings can be fitted. In these instances, the resultant flow must still be within the specified flow parameters of the meter.

¹ All references to "x diameters of straight pipe" refer to a straight length of pipe that has the same internal diameter as the internal diameter of the meter and equivalent in length to at least x times this diameter.

- 3.4. Meters are to be installed free from leakage with the weight of the meter supported. It is recommended that a “loose” ring or expansion joint be installed into the pipe work following the minimum lengths of straight pipe downstream of the meter to provide for easy meter servicing.
- 3.5. In all cases the meter must be installed so that at all flow rates there is a full pipe of water immediately upstream and downstream of the meter.
- 3.6. Where it is possible for environmental factors (eg. wind or waves) to cause the meter to register when the pump is not operating, the pipe-work must be fitted with a flap valve or some other permanent mechanism to prevent this occurring.
- 3.7. It is the responsibility of the Licensee to ensure that the meter is working within the manufacturer’s specifications at all times and is kept free from interference eg. debris, damage due to livestock or vandalism, etc. Experience has shown that meters are less prone to jamming if installed downstream of a filter.
- 3.8. The Department of Environment, Water and Natural Resources shall retain the right to test the accuracy of any meter.
- 3.9. All meters requiring onsite configuration, as specified by the manufacturer, are to be installed by an installer certified by the manufacturer as having undergone training by the manufacturer in the installation of the particular meter and that the installer is competent to perform such installations.
- 3.10. The installation of water meters associated with funding for the Lower Murray rehabilitation project for the volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone shall also comply with the requirements of Appendix A, Section A3.

4. Advice to the Department of Environment, Water and Natural Resources

- 4.1. For all meters, the following information must be provided in writing to the Department of Environment, Water and Natural Resources within 7 days of installation (this includes where a meter is moved from one location to another):
 - 4.1.1. Name and contact details of the meter installer
 - 4.1.2. Exact location of the meter (GPS coordinates, if available)
 - 4.1.3. Date the meter was installed
 - 4.1.4. Size, type, serial number and certificate of accuracy of the meter
 - 4.1.5. Meter reading at the time of installation.

- 4.2. Where a meter is repaired or replaced, the following additional details are to be provided:
 - 4.2.1. Type, size and identification number of old meter
 - 4.2.2. Date of removal and reading on old meter at time of removal
 - 4.2.3. Reason for removal of the old meter.



- 4.3. This information must be sent to the appropriate Department of Environment, Water and Natural Resources office:

River Murray, Angas Bremer, Mallee, Peake Roby Sherlock, Marne-Saunders, Southern Basins, Musgrave, Barossa, Clare and Baroota areas:

Assessment and Compliance Officer
Department of Environment, Water and Natural Resources
PO Box 240
BERRI SA 5343

Central Adelaide, Eastern and Western Mount Lofty Ranges, Northern Adelaide Plains and

McLaren Vale areas:

Assessment and Compliance Officer
Department of Environment, Water and Natural Resources
PO Box 1047
ADELAIDE SA 5001

South East and Far North areas:

Assessment and Compliance Officer
Department of Environment, Water and Natural Resources
PO Box 1046
MOUNT GAMBIER SA 5290



5. Service, repair, replacement or adjustment of the meter

- 5.1. All meters must be serviced at least every five years to ensure they continue to operate within acceptable accuracy limits.
- 5.2. The Department of Environment, Water and Natural Resources will fit security seals to all meter installations. Removal of meters for any purpose (eg. undertaking work on a well) will necessitate the breaking of these seals.
- 5.3. The Department of Environment, Water and Natural Resources must be notified at least 48 hours prior to commencement of any proposed work to arrange for the removal of security seals. The appropriate Department of Environment, Water and Natural Resources office, as detailed below, must be contacted to arrange for the removal of security seals. If an urgent situation arises where 48 hours notice cannot be given, the appropriate Department of Environment, Water and Natural Resources must still at least be contacted to be informed of the intention to remove the security seals and the meter reading recorded.

South East	8735 1134
Eastern Mount Lofty Ranges	8463 6876
Western Mount Lofty Ranges	8463 6876
Central Adelaide	8463 6876
Barossa	8595 2053
Clare	8463 6876
Northern Adelaide Plains	8463 6876
Riverland and/or Lower Murray	8595 2053
Mallee, Marne-Saunders, Angas-Bremer	8595 2053
General	8463 6876

6. Meter reading

- 6.1. The Department of Environment, Water and Natural Resources will arrange for meters to be read at least once a year. The Department of Environment, Water and Natural Resources may also undertake additional readings and/or spot audits of meter installations. In cases where the meter is installed in a locked compound the key must be available on request.
- 6.2. In some areas, licensees are also required to provide meter reading data to the Department of Environment, Water and Natural Resources. In these cases, licensees are required to maintain precise and accurate record keeping procedures for each meter.

7. Additional information

- 7.1. Additional information and advice regarding meter installations is available by contacting an Assessment and Compliance Officer from the appropriate Department of Environment, Water and Natural Resources office as detailed above.



APPENDIX A

Additional Requirements for Meters in the Lower Murray Reclaimed Areas Irrigation Management Zone

A1. Meter Selection

In addition to the requirements detailed in Section 1, water meters associated with funding for the Lower Murray Rehabilitation project for the volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone shall also comply with the following additional requirements:

A1.1. Water Meters shall be of the following types:

A1.1.1. Ultrasonic Flow Meter

A1.1.2. Point Source Magnetic Flow Meter

A1.1.3. Full Bore Magnetic Flow Meter

A1.2. EOD shall provide for the storage of digital data and the downloading of this data to data loggers.

A1.3. Cabling from the meter to the EOD will have a degree of protection of IP68 or better and will comply with AS1939.

A2. Location of the meter

In addition to the Location of Meter requirements detailed in Section 2, water meters for the volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone shall also comply with the following requirements:

A2.1. Where a pump is used, the meter may be located on the suction side of the pump, should it not be feasible to place the meter on the delivery side of the pump.

A3. Installation of the meter

In addition to the requirements detailed in Section 3, water meters for the volumetric measuring of water use in the Lower Murray Reclaimed Areas Irrigation Management Zone shall also comply with the following requirements,

A3.1. The meter and associated works shall be installed in accordance with the document entitled "Lower Murray Reclaimed Irrigation Area Technical Specification for Inlet Structures" (2004).