



Water Meters

Why Have a Meter?

Anyone with a valid water extraction licence issued under the NT Water Act is required to have a water meter installed on their bore and to send in Pumpage data on a monthly basis. This is a condition mandatory under the NT *Water Act* for all licenses. The meter is purchased, installed and maintained by the licence holder to the satisfaction of the Controller of Water Resources.

Water meters are the primary means for water accounting which in turn supports management decisions with regards to water resources. It is important to accurately measure total extraction, from a particular source, in order to effectively share water where there is competition among users, including the environment.

Metering & Monitoring

NRETAS has developed guidelines for bore configuration in relation to metering. Meters that have been installed are to be maintained to a manufacturer's specifications and ensure they meet the Departments guidelines. If these specifications are not met, the meter must be replaced at the cost of the licensee. NT Water Resources Officers are required to be given written notification of installation of the meter for inspection, and will continue to inspect meters on an annual basis.

Meter Requirements

Water meters require laminar (smooth) flow and a full pipe in order to read accurately. Incorrect installation alone can result in a measurement error exceeding 20%. Some water meters already installed have been done so in accordance with the specifications of the meter's manufacturer. In cases where this can be substantiated, please submit these details to the Water Resources Branch in your region. If this claim is unable to be substantiated, the meter and its installation must be reconfigured.



Fittings & Specifications

All fittings must be able to sustain permanent exposure to the environment and may need to operate under pressures greater than 400kPa. The NT standard for installation of rural water meters as at August 2007; requires:

- a fully immersed inline meter to be installed, that has,
- a minimum of 10 times the pipe diameter of straight pipe upstream of the meter with no intrusions, and
- a minimum of 5 times the pipe diameter of straight pipe downstream of the meter with no intrusions, and
- that the installation must be horizontal and appropriately supported.

The benefits of Water Meters for Irrigators?

- If properly selected, installed and maintained, water meters provide an accurate measurement of flow rates and volumes being pumped to irrigate your crops;
- Accurate measurements can help producers improve their irrigation efficiency and reduce both energy usage and other on-farm costs.
- By being able to better match water extraction with crop water requirements, considerable savings can be achieved through: Reduced Pumpage costs required to irrigate crops.

- Reduced fertiliser costs by preventing excess leaching and surface runoff;
- Increased irrigated crop productivity by preventing water logging and stressing of crops as well as improving fertiliser distribution and nutrient availability.

The benefits of water meters for Resource Management

- Provides the Water Authorities with planning information required for more effective management of our water resources. Information can be gathered includes the patterns of water use and the total volume extracted from a given area. This can help refine the Licensing and Trade in Water Entitlements processes.
- Ensures that extraction is in accordance with the terms of a licence to extract water.
- Better protects all licence holders from other users taking more water than they are allocated.
- Encourages more efficient use of water.

Things to consider when choosing a Meter

- Type depends on individual pump installation.
- Size and configuration of the water meter must match the flow rate, temperature and pressure range of the pump.
- In general, the more precise and longer lasting meters will cost you more initially, but end up saving you money in the long term.
- Meters with moving parts are susceptible to damage from sand and other abrasive or corrosive substances, and deposition by calcium or lime.
- Excessive vibration can also affect the accuracy and life span of a meter.
- Consider cost of ongoing maintenance and accessibility, delivery time and cost of replacement parts as well as availability of technical support.

Quality Assurance - Manufacturers should have test data for their water meters providing information on meter accuracy and operational capacity over varying flow ranges. Ask for the manufacturer's specifications and whether independently derived test data to support their claims can be provided.

Installation - Incorrect installation or not following manufacturer's specifications can lead to inaccurate readings and a shorter lifespan. Locate meter as close as practical to the point of extraction. Provide adequate lengths of straight pipe before (upstream)

and after (downstream) the meter to reduce turbulence and thus improve the accuracy of the meter reading. The straight length should be free of any tee pieces or other obstructions such as valves, filters or flow switches. A standard installation is a minimum of 10 diameters before and 5 diameters after the meter. Ensure the pipe remains full of water whenever the pump is operating. Meters may be installed vertically, horizontally or inclined, as long as the pipe remains full whilst pumping and meets the manufacturer's specifications.

The meter must be able to record through the entire range of flows expected from the irrigation pump within +/- 2% accuracy. Installation of a meter smaller than the pipe diameter is conditional on the use of a 6 to 1 ratio taper followed by a straight length of pipe the same diameter as the meter and equivalent in length to at least 10 times the diameter before the meter. After the meter, a straight length of pipe equivalent to 5 times the meter diameter is required, followed by a 6 to 1 ratio taper back out to the existing pipe-work. Entrapped air in the system can cause a meter to over-read, not function at all, or cause excessive wear in mechanical parts. Air should be removed through an air release valve placed on the highest point in the pipe-work.

Maintenance and repairs - Meter installation and maintenance must be undertaken by the licence holder or a competent person employed to do the work, and the work must be done in accordance with the manufacturer's specifications and to the satisfaction of the Controller of Water Resources.

Regular licence inspections will be undertaken to monitor compliance with licence regulations.

Meter maintenance requirements will depend on the type of meter installed, the water quality, and type of pump system. In general maintenance will usually include lubrication of moving parts, flushing and cleaning devices to remove any debris or deposits, and identification and replacement of damaged parts.

Further Information:

Water Resources - Department of Natural Resources, Environment, the Arts and Sport

Palmerston - 3rd Floor Goyder Building, PO Box 496 Palmerston NT 0831 **Ph:** 8999 3678

Katherine - 32 Giles Street, PMB123, Katherine NT 0852, **Ph:** 8973 8831

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