



**Queensland  
Government**

Department of Regional Development,  
Manufacturing and Water



# Queensland Non-Urban Water Measurement Policy

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[rdmw.qld.gov.au](http://rdmw.qld.gov.au)

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# Preliminary

The sustainable management of Queensland's water resources is vital for supporting social, cultural, economic, and environmental outcomes. Access to water is a key driver for economic growth and job opportunities for regional communities. As the regulator of Queensland's non-urban water resources, the Department of Regional Development, Manufacturing and Water (the department) is responsible for managing these resources to ensure water users can access their fair share, today and into the future.

At the commencement of the policy, the department manages approximately 42,000 water entitlements, authorising the take of over 4,640 gigalitres of water each year from river systems and underground water resources.

Accurate and timely measuring, recording, and reporting of water taken is essential for effective water resource management so that sustainable diversions can be made from water resources, and to ensure all water users receive their fair share in accordance with entitlement conditions and legislative requirements. This also provides transparency and assurance that water is being managed sustainably for the benefit of all Queenslanders.

Water measurement benefits water users, communities, industry, and government by:

- providing the data to support transparency and assurance that water is being appropriately managed and shared
- providing confidence that water take complies with water plan requirements, including those to protect environmental flows
- enabling water users to demonstrate that they are meeting their regulatory requirements and consistent with water entitlements
- providing water take data to better inform water resource management decisions
- providing timely information about available water to support water markets and water trading.

Measuring the take of surface and underground water extractions has occurred throughout most of Queensland for a significant period. The *Independent Audit of Queensland's Non-urban Water Management and Compliance 2018* and the *Murray-Darling Basin Compliance Review 2018* identified several areas for improving the way non-urban water take is measured. The Queensland Government committed to address these findings and strengthen its water measurement policy to improve the coverage and standard of measurement for non-urban water.

From 2019 through to 2021, the department consulted extensively with peak and regional water industry groups and water entitlement holders to develop the strengthened water measurement policy. The feedback and advice received was invaluable in strengthening the policy to be practical, achievable and to deliver on the Queensland Government's national commitments.

Queensland along with other Murray-Darling Basin Governments agreed to implement the *Metrological Assurance Framework 2: rules and guidance for the use and regulation of non-urban water meters* (MAF2 2021) where it applies, providing agreed pathways to:

- an acceptable level of confidence in non-urban water meter performance
- greater coverage of patent-approved non-urban water meters which comply with AS4747
- a nationally-consistent approach for regulating and managing non-urban water meters
- transition to greater use of risk management to prioritise metering implementation and management requirements.

## Queensland's non-urban water measurement framework

The framework (Figure 1) contains all the elements needed to effectively measure non-urban water extraction in Queensland. The framework is based on key policy principles of public benefit outcomes, risk management, transparency, equity, accountability, and good decision making.

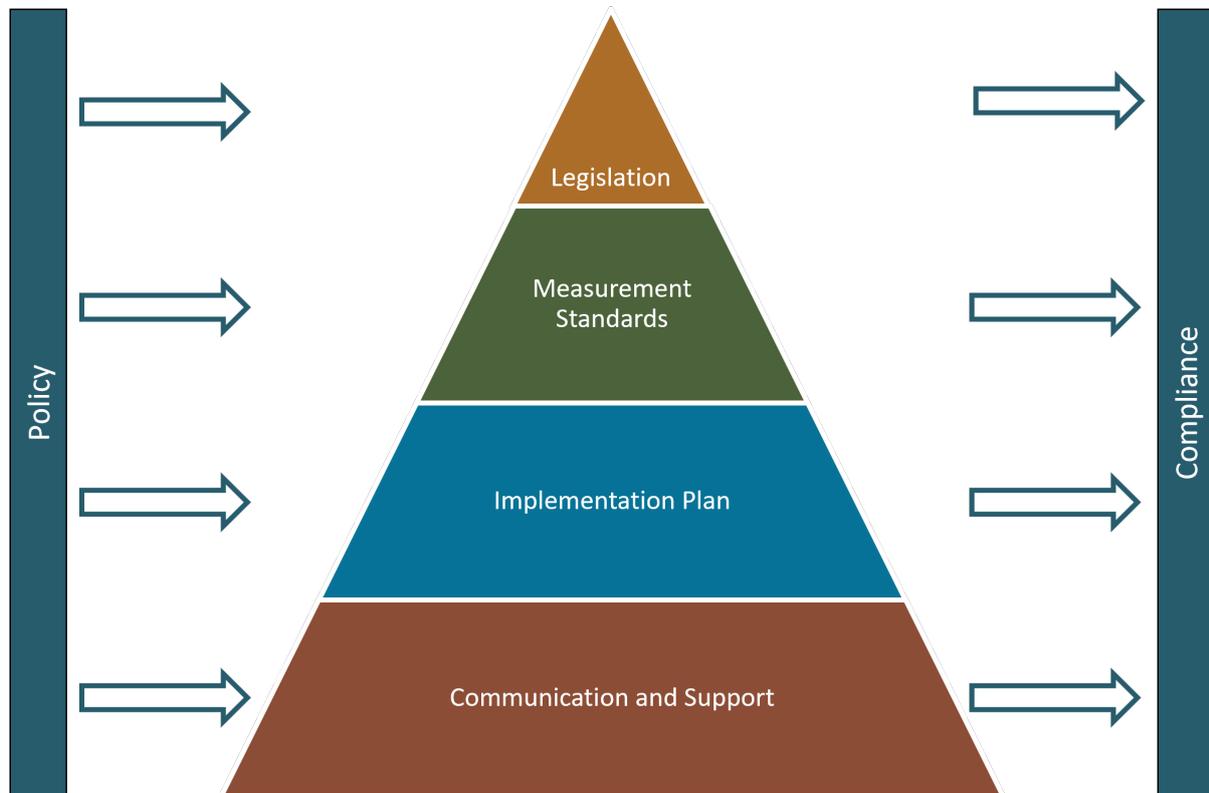


Figure 1. Queensland's non-urban water measurement framework

The framework elements are:

**Legislation** –the non-urban water measurement provisions of the *Water Act 2000* and *Water Regulation 2016* state the requirements water users and other relevant persons must comply with (and the penalties for non-compliance).

**Measurement Standards** – Queensland's non-urban water meter standard and meter read data standard, set out clear technical requirements that must be met.

**Implementation Plan** – Queensland's implementation plan for non-urban water measurement outlines how the water measurement policy will be implemented including timeframes by which water users must demonstrate compliance with measurement requirements.

**Communication and Support Strategy** – the communication and support strategy enables the department to effectively communicate measurement requirements. It supports water users and other relevant persons to understand and meet their measurement responsibilities, and where required, to support other entities to effectively perform their role.

# Purpose

This document outlines the Queensland Government's strengthened non-urban water measurement policy. This policy replaces *Queensland's Non-urban Water Metering Policy for Unsupplemented Water Extractions (2019)*.

## Objectives

- Increase the coverage and standard of metering for the direct measurement of non-urban water take.
- Provide for farm scale measurement of overland flow water take.
- Receive timely and accurate data on water take.
- Ensure fit for purpose compliance and enforcement for measurement of water take.
- Support Queensland's delivery of national commitments for the Murray-Darling Basin.

## Application of risk

This policy will be applied and implemented using a risk-based approach that primarily considers water resource pressure. Water resource pressure is a representation of the level of development and use in a particular water management area, e.g., an area of high-water resource pressure has a high level of development and use.

Queensland will maintain a state-wide, catchment-based risk assessment of water resource pressure and will rate the risk for each catchment as either very high, high, medium, or low. The measurement policy will be implemented across the state on this basis. This means that new measurement requirements will be implemented first in areas where the resource is at highest risk, for example, where water resources are fully, or near fully allocated in the Queensland Murray-Darling Basin. These areas will also be subject to stricter requirements to ensure measurement practices suit the level of risk. Queensland's catchment-based risk assessment will also guide measurement policy implementation over the short to medium term.

The level of risk may change over time and new risks may emerge. The department may review its risk assessment periodically and, if necessary, update the approach in the framework to address any identified changes.

## Application

This policy applies to the take of surface water and underground water under an entitlement authorised by the *Water Act 2000 (Water Act)* which states a specified limit on the volume of water that can be taken., This is known as a volumetric entitlement.

## Entitlements to take surface water and underground water

Volumetric entitlements to take surface water (excluding overland flow) and underground water under the *Water Act 2000* are subject to the provisions outlined in Section 3 of this policy. This includes existing metered entitlements.

Metered entitlements authorising the take of overland flow water are subject to the provisions outlined in Section 4 of this policy.

## Supplemented water

All water supplied to customers of a water supply or distribution scheme must be metered.

Meter arrangements are established by the scheme operator. This responsibility will not change under this policy.

Customers' water metering must be in accordance with Queensland's non-urban metering standard, including periodic validation (maximum 5-year interval) of meters in-service. Scheme operators can do this by adopting the standards or showing how the approach to metering meets or exceeds the standards with an explanation on their website.

Bulk water offtakes for water supply and distribution schemes must be measured, and where applicable the measurement should be in accordance with Queensland's non-urban metering standard. Where measurement occurs that is outside the scope of the standard, the scheme operator must explain on their website the industry best practice standard for use and operation of the measurement approach by considering similar elements to the non-urban water metering standard.

Where this is not already occurring, the department will negotiate with scheme operators to establish a timetable for implementation.

## Surface water (excluding overland flow) and underground water

This section describes:

- the entitlements to be metered, including minimum thresholds and exemptions, and
- the standard of metering, including the use of pattern approved meters and the transition of other acceptable meters.

### Entitlements to be metered

Any entitlement that was a metered entitlement at the commencement of this policy will continue to be metered.

Volumetric entitlements to take 5ML or less, as specified on the entitlement, will not require metering. Any water allocations or water licences that state a volume greater than this threshold must be metered.

However, where a water plan states a different minimum measurement threshold for a water plan area or part of a plan area, the threshold stated in the water plan will apply.

Metering will not be required (exemptions) for:

- Entitlements to take water for the following low-risk activities:
  - stock and domestic
  - public amenities
  - educational facilities

Where a volumetric entitlement is inactive, i.e. water has not been or is not currently being taken under the entitlement, metering will not be required to be in place for that entitlement. An entitlement becomes inactive if water is not taken for over 12 months.

If a decision is made to start or re-start taking water under the previously inactive entitlement, the department must be notified before water starts to be taken. Metering that meets the requirements of Queensland's interim non-urban water meter standard must also be in place before water is taken.

## Standard of Metering

Metered entitlements must have compliant metering measuring the take of water. To confirm compliant metering:

- Existing metering will undergo periodic inspection with a validation certificate issued.
- New and replacement metering will undergo inspection with a validation certificate issued before water is taken against the water entitlement.
- Faulty existing metering will be notified and repaired within a consistent period defined in the framework and inspection with a validation certificate issued before the metering is put back into service.
- An authorised meter validator will undertake an inspection and issue a validation certificate.

Queensland's interim non-urban water meter standard describes compliant metering and the minimum actions to be undertaken or confirmed by a validator for a validation certificate to be issued. A validation certificate will expire after 5 years, and a new certificate must be issued on or before the expiration date for the metering to remain compliant.

For metering within scope, the standard will implement the requirements of the MAF2 2021, assuring an acceptable level of confidence in non-urban water meter performance as defined under this national framework.

The standard will also provide specifications for measurement which is outside the scope of MAF2 2021 e.g., water level stations in storages. For these limited instances the intent of MAF2 2021 will be followed as far as is possible.

### Pattern approved meters

All new and replacement non-urban water meters will be pattern approved. Noting the practical challenges with non-urban water metering in Queensland, implementation of this requirement will be staged, taking into consideration evidence of the cost and appropriateness of available pattern approved meters for measuring water take. Queensland has a highly variable range of works used for the extraction of non-urban water, and the same type of water meter will not suit all situations.

Queensland's non-urban water meter standard will specify which new and replacement meters can be used. Any non-pattern approved meters used will satisfy the intent of MAF2 2021. The standard will be amended as meters that are suited to Queensland's challenging operating conditions obtain pattern approval certification.

### Existing non-pattern approved meters

Queensland will transition non-pattern approved water meters that are currently in service, and which satisfy the intent of MAF2 2021. These meters can remain in service until they are shown not to meet the intent of this national framework, or they no longer meet the requirements of Queensland's non-urban water metering standard.

A transitioning meter was one selected, installed, and commissioned under arrangements before this policy commenced. These earlier arrangements align with the intent of MAF2 2021. Each transitioning meter was:

- selected because it was fit-for-purpose,
- certified as accurate by the manufacturer prior to being placed into service, and
- installed in accordance with manufacturer requirements.

Queensland will have an acceptable level of confidence that the performance of any transitioned meter meets the intent of MAF2 2021.

## Performance testing

Periodic performance testing will occur on a small appropriate sample of water meters in service (transitioned and pattern approved meters), to confirm Queensland's interim non-urban water meter standard is delivering the performance outcomes of MAF2 2021. Results of this performance testing may be used to undertake evidence-based refinement of the standard, where unacceptable performance is shown.

## Overland flow water

The take of overland flow water (OLF) will be measured at the farm scale. OLF entitlements stipulate the volume of water that can be taken over time (ML per year) or the volume of water that can be stored.

## Measurement approach

The holder of an OLF entitlement will be required to use a farm scale measurement plan to document how water take is determined under their entitlement. The framework will specify how a measurement plan is to be developed, and the plan will need to be certified by a registered professional engineer under the *Registered Professional Engineers Act 2002*. A plan will expire after 5 years, and a new plan must be certified on or before the expiration date for it to remain current.

A measurement plan will need to define the system of measurement (measurement system) that is used to determine the volume of OLF taken under the entitlement. A measurement system may involve:

- direct measurement using metering described under Section 3
- derived measurement using measurement devices (e.g., meters) or other required equipment or inputs, or using a combination of both.

The measurement system will be tailored to the OLF entitlement, identify all measurement devices needed in the system, and describe any additional considerations required to determine the volume of OLF taken.

Measurement plans will remain current, providing a statement of the measurement system in use. If changes are made to on-farm infrastructure or measurement system elements, the plan will be updated by the water entitlement holder, so it remains current. A plan will also need to be amended when more accurate data about OLF take becomes available.

## Measurement devices

For a measurement system to be compliant, all devices in the measurement system will have a validation certificate. A compliant measurement system could be regarded as the equivalent of a compliant water meter under Section 3, with both providing the volume of water that has been extracted at a point in time. The requirements for validation of a device, and who can complete the validation will be specified in the framework.

## Meter read data

Metered entitlement holders will provide meter reads at a frequency specified in the framework. A minimum of two meter reads per year will be required. Mechanisms to support entitlement holders provide meter reads electronically will be implemented, including a scannable asset tag for each water meter.

## Telemetry

Metered surface water entitlement holders in the Queensland Murray-Darling Basin must install telemetry to transmit meter read data, in near real-time, to the department. The requirements for telemetry and who can install it will be specified in the framework.

Further consultation will occur with other metered entitlement holders on the requirement to transmit meter read data. Holders of metered entitlements with conditions authorising take by announcement, or in accordance with flow thresholds, will be encouraged to adopt telemetry. It is in the water entitlement holder's best interests to assure they receive the water that they are entitled to. The near real-time provision of data provides the department with greater opportunity to respond where others may not be complying with threshold or event conditions on an entitlement.

Any water entitlement holder will be able to install telemetry. With transmission of meter read data in near real time to the department, manual meter reads will only be required when there is a fault with the telemetry equipment connected to the water meter. The framework will specify the timeframes for the repair of equipment and the frequency of manual meter reads while repairs are completed.

## Responsibility for measurement

Surface water (including overland flow) and underground water entitlement holders will be responsible for metering or measurement of take (including all costs) against their entitlement, unless metering arrangements by a scheme operator apply.

For overland flow water entitlements this will include certification of measurement plans and include the development of associated measurement systems.

## Compliance

Measurement under the framework allows metered entitlement holders to show they are doing the right thing with the extraction of water. As measurement is fundamental to show that the requirements of an entitlement are being satisfied, non-conforming measurement or no measurement is a serious matter.

The framework encourages voluntary compliance by ensuring the requirements are practical, clear and supported by information and education. The department considers the severity of any non-compliance based on risk and behaviours, and uses a range of actions, or a combination of actions, to respond to a non-compliance and to achieve compliant outcomes within the regulated community. Verbal directions, and advisory and warning notices are used where it is appropriate to provide entitlement holders the opportunity to change measurement behaviours to achieve compliance with the requirements of the measurement framework.

However, in circumstances where non-compliance puts Queensland's water resources at risk or where there is evidence of wilful or negligent behaviour or repetitive non-compliance, stronger enforcement action will be used, such as administrative and court sanctions. Non-compliance likely to result in enforcement action include:

- Authorised meter validator's issuing validation certificates for non-compliant metering.
- Metered entitlement holders actively taking water:
  - with non-compliant metering
  - without completing meter maintenance
  - without notifying metering is faulty, repeatedly
  - with metering frequently faulty (unreliable metering)
  - without maintaining a current measurement plan (overland flow water).

## Monitoring

Confirming compliant measurement is being used where water take is occurring will be a priority for the department. Details of auditing programs will be published on the department's website, but audits may be undertaken at any time and at any frequency deemed necessary.

Audits may take many forms and may include the use of remote sensing and imagery, information requests, desktop assessments and field inspections.

More detail on the department's approach to compliance monitoring can be found on the department's website.

## Implementation

The department's implementation plan provides clarity on how this policy will be implemented. The plan outlines the metering and related requirements for specific areas and when these will take effect. The plan identifies key actions the department will undertake to support water users and industry to understand and meet measurement requirements. The plan will be available on the department's website.

## Review

To ensure this policy remains fit-for-purpose and responsive to changing water resource management drivers, the policy may be reviewed after five years. If needed, the policy will be updated to take account of new information, such as changing water resource risks, measurement innovation, and costs of metering and measurement.

# Glossary

<b>Authorised meter validator</b>	<p>A person who is accredited by Irrigation Australia Limited as a ‘certified meter installer and validator’.</p> <p>Alternatively, this person can be appointed by the department, where they have the necessary expertise or experience to perform this function.</p>
<b>Existing metering</b>	<p>Metering which was installed and commissioned prior to the commencement of the latest version of Queensland’s non-urban water metering standard.</p>
<b>Flow threshold / by announcement</b>	<p><b>Flow threshold</b>—This refers to water entitlements with a condition(s) identifying when extraction can start and when extraction must stop. A typical condition specifies a water level or flow rate and a reference location on the watercourse. Taking water is permitted when the specified flow threshold is met (water level or flow rate is exceeded).</p> <p><b>By announcement</b>—This refers to water entitlements with a condition(s) stating that taking water is permitted by announcement. For these entitlements, one or more announcements are made detailing when pumping can start, and when it must stop.</p> <p>For entitlements with the types of condition mentioned above, information about when pumping commences, and ceases, is critical to confirming compliance against the conditions of the water entitlement.</p>
<b>Metered entitlement</b>	<p>A metered entitlement is a water entitlement prescribed as a metered entitlement in the Water Regulation 2016. Once an entitlement is prescribed a metered entitlement, it is an offence to take water without an approved meter.</p>
<b>New or replacement metering</b>	<p>Metering which was installed and commissioned after the commencement of the latest version of Queensland’s non-urban water metering standard.</p>
<b>Overland flow</b>	<p>Water, including floodwater, that is urban stormwater or is other water flowing over land, otherwise than in a watercourse or lake:</p> <p>(a) after having fallen as rain or in any other way; or</p> <p>(b) after rising to the surface naturally from underground.</p> <p>For the full definition, see schedule 4 of the <i>Water Act 2000</i>.</p>
<b>Pattern approved</b>	<p>A water meter that has passed the relevant non-urban water meter pattern approval process and has a pattern approval certificate issued by the National Measurement Institute.</p>
<b>Performance testing</b>	<p>When in-service metering is tested against a known reference volume to determine the meter’s relative accuracy.</p>
<b>Surface water</b>	<p>(a) Water in a watercourse or lake; or</p> <p>(b) Water in a spring; or</p> <p>(c) Overland flow water.</p> <p>For b) and c) the water is not connected to the Great Artesian Basin or another regional aquifer.</p>
<b>Tamper-evident</b>	<p>Typically, a stainless-steel wire is threaded through attachment bolts and the ends of the wire are ‘sealed’ (metal or plastic ferrule) together so that the seal or wire must be broken if a nut is removed from the bolt by an unauthorised person. It only indicates tampering (as the seal or wire are broken) and does not prevent tampering.</p>
<b>Telemetry</b>	<p>The transmission of meter read data from the water meter. Some water meters have this functionality built in while others would require the attachment of a third-party device to transmit the readings.</p>
<b>Underground water</b>	<p>Water that occurs naturally in, or is introduced artificially into, an aquifer.</p>
<b>Works</b>	<p>The infrastructure that is used to transfer water from the resource onto the entitlement holders land for use or storage. Gravity diversions, pumps, and controlled artesian bores are all types of works used to control when extraction (take) from the resource starts and when it stops.</p>

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