

# Measurement of overland flow water in Queensland

Information for water users and water  
entitlement holders

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## Table of contents

|   |          |
|---|----------|
| <b>Introduction</b> .....   | <b>2</b> |
| <b>Consultation</b> .....   | <b>2</b> |
| <b>Queensland’s commitment to improving measurement</b> .....       | <b>3</b> |
| <b>Proposed overland flow measurement framework</b> .....           | <b>3</b> |
| What is a measurement system?.....                                  | 3        |
| Types of measurement .....  | 4        |
| What type of measurement system will apply to my entitlement? ..... | 4        |
| Measurement plans.....  | 5        |
| Certification and approval .....                                    | 6        |
| Amendment of measurement plans .....                                | 6        |
| <b>Who will the policy and standard apply to?</b> .....             | <b>7</b> |
| <b>More information</b> .....                                       | <b>7</b> |

## Introduction

The Queensland Government, in collaboration with the Australian Government and other Basin state governments, is working to improve compliance and enforcement practices across the Murray-Darling Basin.

Improving how we measure the take of overland flow water in the Queensland Murray-Darling Basin (QMDB) is a key component of the work we are doing.

Overland flow is water that runs across the land after rainfall or flooding, or after it rises to the surface naturally from underground.

The Department of Regional Development, Manufacturing and Water (department) has developed a proposed overland flow measurement framework for consultation with water users and water licence holders.

The proposed framework:

- sets out overland flow water measurement options to suit varying water infrastructure and licence requirements
- allows flexible and sustainable management of overland flow water
- enables the volume of water removed from the floodplain to be measured
- supports compliance of overland flow water entitlements.

Learnings from the current overland flow measurement trials in the Lower Balonne catchment along with feedback provided through initial stakeholder consultation in 2019 have informed the development of the proposed measurement framework.

## Consultation

Overland flow water users and stakeholders in the QMDB will be consulted by the department on the proposed overland flow measurement framework during September and October 2021.

Input from overland flow water users is critical to ensure the implementation of a practical, repeatable, and credible measurement framework for Queensland.

This paper provides information about the proposed measurement framework to support consultation with stakeholders.

A draft Overland Flow Measurement Policy (draft policy) and draft Overland Flow Measurement Standard (draft standard) are also available. These documents detail measurement options, technical requirements and water entitlement holder obligations under the proposed measurement framework.

You can contact the department at: [RWFP@rdmw.qld.gov.au](mailto:RWFP@rdmw.qld.gov.au) to request copies of the draft policy and draft standard.

## Queensland's commitment to improving measurement

Queensland is obliged under Murray-Darling Basin commitments to report on the volume taken for each type of water, to track diversions and identify any growth in the take of water.

Robust and repeatable measurement is critical to accurate reporting of water take, including overland flow water. It enables protection of water rights, environmental watering, effective water markets and compliance.

Queensland has committed to improving the measurement of overland flow water throughout the Murray-Darling Basin by 2025.

To give effect to this, the Border Rivers and Moonie water plan states that overland flow water will be measured by 31 December 2022.

The development of an overland flow measurement policy and standard and risk-based overland flow measurement program is an important part of the work we are doing through the Rural Water Futures Program.

### Proposed overland flow measurement framework

The proposed measurement framework sets out the requirements for the measurement of overland flow water taken in Queensland under a water entitlement.

Under the measurement framework the holder of an overland flow water entitlement or entitlements (which are prescribed as metered entitlements under the Water Regulation 2016) will be responsible for the:

- submission and renewal of a **measurement plan** as required
- development of a **measurement system** to be outlined in the measurement plan
- **certification** of the measurement system by an approved person.

### What is a measurement system?

The process of measuring using a combination of measurement devices and other inputs is called a measurement system. More information is required for overland flow water measurement compared to situations where a traditional closed-pipe meter is used.

The measurement system must:

- be capable of demonstrating and reporting compliance of the take of water under a water entitlement
- use at least one of the measurement types outlined in the overland flow measurement standard
- be validated by an approved person
- be outlined in a measurement plan.

#### Why measure overland flow?

Overland flows are an important contributor to the flow of river systems. In the Queensland part of the Murray–Darling Basin approximately 40 per cent of all surface water taken is overland flow.

Overland flow measurement has been based on water level heights in privately owned on-farm storages.

Having only storage water level measurements makes it difficult to assess compliance against an overland flow water licence as there are multiple other variables that require consideration (on-farm operation, take under other entitlements and climate).

The proposed framework will capture these variables and enable the continuation of water level measurement of storages as an alternative to conventional metering at the point of take. This is because additional conventional metering would incur significant additional

## Types of measurement

To suit different overland flow entitlement types, the proposed measurement framework provides measurement approaches to collect information about the volume of overland flow water that:

- a) can be stored on-farm at any time
- b) is currently stored on-farm, or
- c) is diverted in a period

The proposed measurement framework allows four measurement system types to suit different overland flow entitlements:

| Measurement needs                                | Description   | Measurement system type          |
|--|---|----------------------------------|
| Information about the volume of water in storage | Continuous measurement of volume of water in storage. Shows that no more is held in storage than allowed under the water entitlement.                       | <b>Measured storage volume</b>   |
|  | Verified information showing that water storage works are not physically capable of storing more than that allowed for under the water entitlement.         | <b>Calibrated storage volume</b> |
| Information about the volume of water taken      | Measurement of changes in the volume of water stored and reconciliation against on-farm losses or gains to determine the volume of water taken in a period. | <b>Derived volume of take</b>    |
|  | Controlled infrastructure allows for measurement of water take without the need to reconcile losses or gains.   | <b>Direct volume of take</b>     |

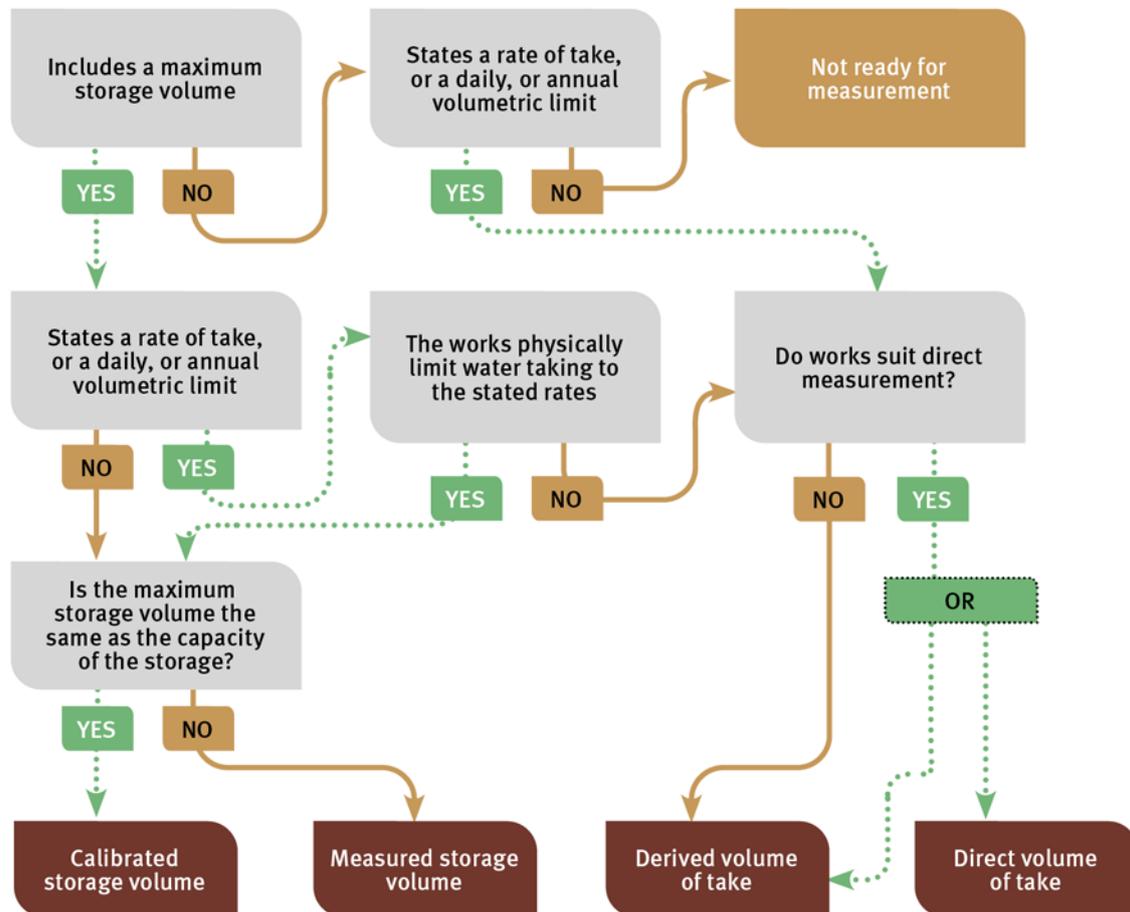
## What type of measurement system will apply to my entitlement?

The conditions on your water entitlement will determine whether the volume of water held in storage or the volume of water taken over a period needs to be measured.

The different types of measurement systems cater to different types of water entitlement specification, and variations in on-farm infrastructure.

The draft policy will specify the measurement type applying for a water entitlement based on its conditions and the on-farm infrastructure.

### Flow chart to determine measurement type for a water entitlement



## Measurement plans

A measurement plan will be required for all overland flow entitlements prescribed as a metered entitlement under the Water Regulation 2016. The measurement plan must provide sufficient information to enable expert certification of a property's measurement system including details relating to:

- water taken on property (water entitlements and general authorisations)
- water storage and transfer infrastructure (storages, pumps, pipes, channels)
- capture and transfer of overland flow water (including tailwater recapture)
- environmental losses and gains (evaporation rates and seepage estimations).

Some of the information required for a measurement plan may have already been collected by the department for water entitlements, overland flow certification reports or administrative plans.

Current accurate information already supplied to the department can be used in the measurement plan. Otherwise details of the measurement system must be collected and reported in accordance with the overland flow measurement standard.

Guidelines will be made available upon the finalisation of the policy to assist water users to prepare their measurement plans.

### Measurement plan content required for each measurement type

| Measurement system type          | Measurement plan content   |
|----------------------------------|--|
| <b>Calibrated storage volume</b> | <ul style="list-style-type: none"> <li>• For all storage works for overland flow the measurement plan must include— <ul style="list-style-type: none"> <li>○ volume and height information</li> <li>○ physical storage capacity and surveyed spill height.</li> </ul> </li> </ul>  |
| <b>Measured storage volume</b>   | <ul style="list-style-type: none"> <li>• All information required for 'calibrated storage volume', and</li> <li>• Details of all water storage works on property</li> <li>• Identification of storage works used to store overland flow water</li> <li>• Details of water measurement, and data storage device(s).</li> </ul>  |
| <b>Derived volume of take</b>    | <ul style="list-style-type: none"> <li>• All information required for— <ul style="list-style-type: none"> <li>○ 'calibrated storage volume', and</li> <li>○ 'measured storage volume', and</li> </ul> </li> <li>• Environmental loss and gain considerations</li> <li>• Water accounting methodology</li> <li>• Information on other water products (waterharvesting, groundwater) stored conjunctively with overland flow water.</li> </ul> |
| <b>Direct volume of take</b>     | <ul style="list-style-type: none"> <li>• Details of on-farm water storage infrastructure</li> <li>• Details of validation certificate(s) for measurement devices</li> <li>• Information on losses between the point of take and the location of measurement</li> <li>• Details of water measurement device(s).</li> </ul>  |

### Certification and approval

All measurement plans must be certified by a Registered Professional Engineer of Queensland or similar suitably qualified person. Entitlement holders will be responsible for organising the certification of their plan and any related costs.

The signing expert must verify that the measurement plan accurately documents the entitlement holder's on-farm infrastructure.

Following expert certification, the measurement plan must be submitted to the department for approval.

### Amendment of measurement plans

Measurement plans must continue to provide a current statement of an overland flow measurement system. As changes are made to on-farm infrastructure or other measurement system aspects, the plan must be updated by the water entitlement holder to remain current.

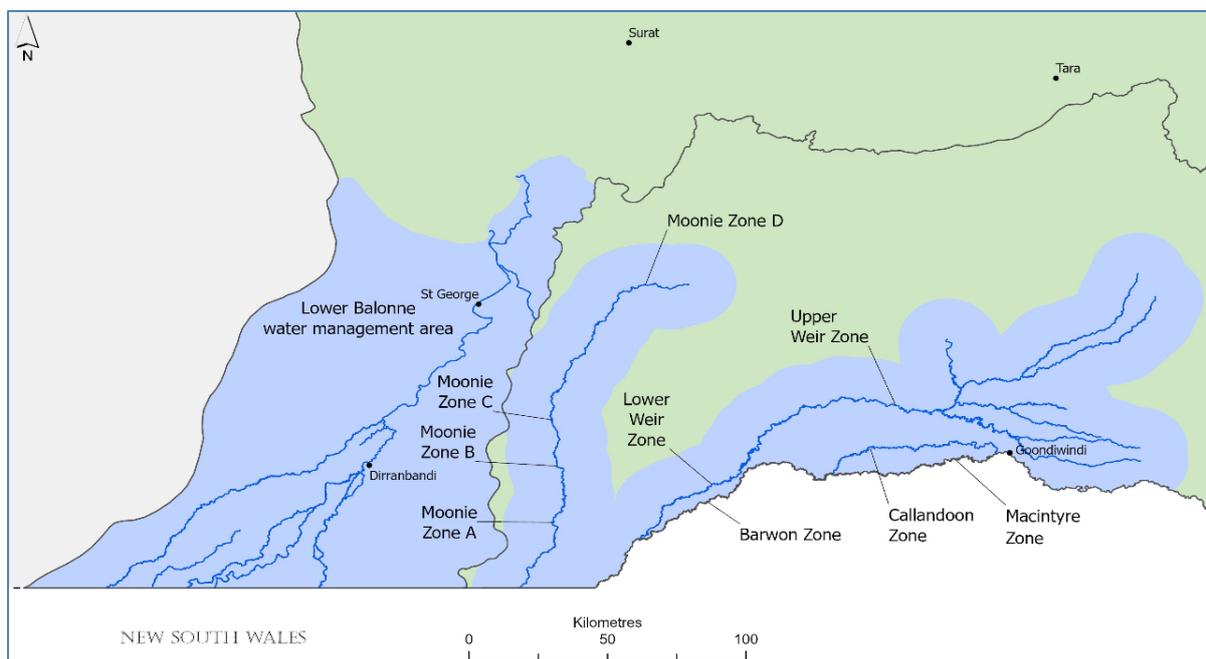
A measurement plan should also be amended when more accurate data about overland flow take becomes available.

## Who will the policy and standard apply to?

When finalised, the Overland Flow Measurement Policy and Overland Flow Measurement Standard will apply to any water user taking overland flow water under an authorisation that has been prescribed a metered entitlement under schedule 11 of the Water Regulation 2016 (the Water Regulation).

Currently overland flow water licences in the Lower Balonne water management area are prescribed metered entitlements.

### ***Areas where overland flow water licences are prescribed (or subject to commitment to be prescribed) metered entitlements***



In line with Queensland's commitments under the Murray–Darling Basin Compliance Compact, overland flow water licences in certain parts of the Border Rivers and Moonie water plan area will soon be declared metered entitlements.

The future prescription of additional metered entitlements under the Water Regulation will be undertaken in consultation with entitlement holders.

Note that taking overland flow water under a general authorisation (for example stock or domestic take) is exempt from measurement.

### **More information**

Contact the department at: [RWFP@rdmw.qld.gov.au](mailto:RWFP@rdmw.qld.gov.au) to request a copy of the draft Overland Flow Measurement Policy and draft Overland Flow Measurement Standard.

To learn more about the Rural Water Futures Program go to: <http://www.rdmw.qld.gov.au> and search Rural Water Futures.