



NSW Non-Urban Water Metering Policy

November 2020



Published by NSW Department of Planning, Industry and Environment

dpie.nsw.gov.au

Title: NSW Non-Urban Water Metering Policy

First published: November 2018 (INT18/194863). Updated November 2020.

Department reference number: PUB20/447

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Introduction

New metering framework

The NSW Government is implementing a robust new metering framework to measure and meter non-urban water take in NSW. The new framework is a commitment under the NSW Government's Water Reform Action Plan (WRAP), released in December 2017 in response to the *Independent investigation into NSW water management and compliance*, conducted by Ken Matthews, AO (the Matthews Report) and the *Murray–Darling Basin Water Compliance Review* (the MDB Compliance Review).

The purpose of the new metering framework is to improve the standard and coverage of non-urban water meters in NSW. It has been informed by broad community consultation, economic analysis and technical expertise.

The new metering framework includes this document, the NSW Non-Urban Water Metering Policy (the policy), the metering-related provisions of the *Water Management (General) Regulation 2018* (the Regulation) and the metering-related provisions of the *Water Management Act 2000* (the Act).

The Act provides for and strengthens the legal basis for the new metering framework. It imposes a metering condition requiring metering equipment to be installed, used and properly maintained on all water supply work approvals.

The Regulation sets out the requirements that must be complied with by all holders of approvals, licences and entitlements who are subject to the metering condition. It also prescribes which holders are exempted from the metering condition, based on thresholds. The Regulation also contains new requirements for duly qualified persons (DQP), telemetry, record-keeping and reporting rules, and a new process for faulty meters.

The Act and the Regulation give the Minister the powers to administer the framework. In practice, the Department will administer the new metering framework under delegation from the Minister.

The policy and the metering-related provisions of the Act and Regulation commenced on 1 December 2018. Some parts of the Regulation relating to new and replacement meters, faulty meters and inactive works commenced on 1 April 2019. The remainder of the framework is being rolled out in stages between 1 December 2020 and 1 December 2023.

Objectives of the metering framework

The objectives of the new metering framework are to ensure that:

- the vast majority of licensed water take is accurately metered
- meters are accurate, tamper proof and auditable
- undue costs on smaller water users are minimised
- metering requirements are practical and can be implemented effectively.

This Policy

The purpose of this policy is to explain the requirements of the new framework. In this policy:

- **Part 1** outlines which works need to have a meter
- **Part 2** outlines the standards that metering equipment will need to meet, including arrangements for existing meters and how telemetry works
- **Part 3** describes the staged roll-out of metering requirements
- **Part 4** describes other requirements for duly qualified persons
- **Part 5** describes requirements for record-keeping and reporting
- **Part 6** describes requirements that apply when metering equipment is faulty
- **Part 7** describes the review of the Regulation and policy that will occur after five years.

Part 1: Which works need a meter?

This section outlines the types of water take the policy and regulation apply to, and the works that require a meter.

Types of water take covered

The metering requirements apply to works taking water from regulated rivers, unregulated rivers and groundwater systems under a licence, where the take can be measured with a meter. This includes:

- water supply works authorised by a water supply work approval under the Act
- works taking water for state significant development, state significant infrastructure under the *Environmental Planning and Assessment Act 1979*, or prospecting or fossicking for minerals or petroleum under the *Mining Act 1992* or the *Petroleum (Onshore) Act 1991*
- works of irrigation corporations, local water utilities and major water utilities at the point of extraction from a water source (the metering requirements will not apply to individual users taking water within an irrigation corporation's area of operations unless they are directly taking water from a water source)
- works authorised to take water under the *Water Act 1912*.

There are exemptions to the metering requirements, which are listed later in the document.

See section 101A in the *Water Management Act 2000* and the following clauses in the Regulation: 229 and 231

Which works need a meter

A work will **need a meter if it meets any of the meter thresholds**:

1. already required to meter or measure
2. infrastructure size
3. multiple pumps or multiple bores on the same licence, approval or landholding, except pumps and bores below the capacity threshold
4. at-risk groundwater sources.

Each of these thresholds are listed in Table 1 and explained in the following sections.

The Department has developed an **interactive metering tool** to help water users understand if the metering requirements apply to their works and what they need to do to comply with the rules. The tool is available at: <https://www.industry.nsw.gov.au/water/metering/>

Table 1: Metering thresholds

| Already required to meter or measure | Infrastructure size | | Multiple pumps or multiple bores | At-risk groundwater |
|--------------------------------------|--|--|--|---------------------|
| | surface water | groundwater | | |
| All works | All works EXCEPT pumps less than 100 mm as authorised by the authority | All works EXCEPT bores less than 200 mm as authorised by the authority, or | All pumps or bores EXCEPT multiple pumps or multiple bores on the same licence, approval or landholding if they fall below the | All works |

| Already required to meter or measure | Infrastructure size | | Multiple pumps or multiple bores | At-risk groundwater |
|--------------------------------------|---------------------|--|--|---------------------|
| | surface water | groundwater | | |
| | | if the authority does not specify the diameter then the constructed bore has a diameter that is less than 200 mm | capacity threshold for multiple pumps or bores | |

See clause 231 in the Regulation.

In this document, an **authority** means a water supply work approval, an access licence (in the case of state significant infrastructure, state significant development, prospecting or fossicking), or a licence or entitlement under the Water Act 1912.

Already required to meter or measure

Some works are already legally required to have metering or measuring equipment installed as a condition of the authority. These works must have a meter, regardless of the infrastructure size.

The following works meet this threshold and will need to have a meter:

- the conditions of the water supply work approval require the work to have metering equipment, a flow measurement device, or an extraction measurement device installed
- the conditions of a water access licence authorising the take of water for state significant infrastructure, state significant development, prospecting or fossicking require water taken under the licence to be measured by metering equipment, a flow measurement device, or an extraction measurement device
- the conditions of the *Water Act 1912* licence or other entitlement require the holder to have metering equipment, a flow measurement device, or an extraction measurement device to take water.

Water users should refer to the conditions of their authority to identify whether their work meets this threshold. Users can check conditions on the NSW Water Register available at:

<https://www.waternsw.com.au/nswwaterregister>.

Infrastructure size

An infrastructure size threshold links the requirement to have a meter to the risks of individual works and their physical ability to take water.

There are separate infrastructure size thresholds for surface water and for groundwater works and they cover open channels as well as closed pipes, as listed in Table 2.

Table 2: Infrastructure size thresholds

| Type of water source | Infrastructure size threshold |
|----------------------|---|
| Surface water | All works that take or may be used to take water (including open channels, gravity fed pipes, channels and closed pipes) are required to have a meter, EXCEPT pumps less than 100 mm as authorised by the authority. |

| Type of water source | Infrastructure size threshold |
|----------------------|---|
| Groundwater | All works that takes or may be used to take water (including wells, individual spear points and batteries of spears) are required to have a meter, EXCEPT water bores with a diameter* less than 200 mm as authorised by the authority, or if the authority does not specify a diameter and the constructed water bore has a diameter that is less than 200mm. |

* **Diameter** refers to the external diameter of the bore casing.

What if the size of the work installed does not match the authority?

If the size of the work installed does not match what is on the authority, you can amend the authority to specify the correct work size before your roll-out date.

Multiple pumps or multiple bores

Users with multiple pumps or multiple bores permitted by the same authority, situated on the same landholding, or nominated on the same access licence, meet the threshold and are required to have meters on **all their pumps or bores**, unless they fall within an exception below:

- Surface water pumps where there are:
 - no more than 2 pumps, each of which is less than 75 mm
 - no more than 3 pumps, each of which is less than 50 mm, or
 - no more than 4 pumps, each of which is less than 40 mm.
- Groundwater bores where there are:
 - no more than 2 bores, each of which has a diameter less than 160 mm
 - no more than 3 bores, each of which has a diameter less than 130 mm, or
 - no more than 4 bores, each of which has a diameter less than 120 mm.

The multiple pumps or multiple bores threshold does not apply to back-up surface water pumps, where a user is authorised to have a secondary pump that can only be used if the primary pump fails because of a mechanical or electrical failure.

The threshold takes into account the cumulative capacity of the works being equivalent to the infrastructure size threshold, based on assumptions about average flow rates. It should be noted that the multiple works threshold may need to change over time as pumps become more efficient.

All individual spear points as well as batteries of spear points must be metered. Although individual spear points are small in diameter, they have the capacity to take significant volumes of water.

See the following clauses in the Regulation: 231 (2), (3) and (5)

At-risk groundwater sources

There are at-risk groundwater sources where additional metering is needed to manage the risk of over-extraction. These water sources have been categorised as at-risk because:

- they are over-allocated, or
- the entitlement and account rules combined can result in extraction exceeding the Long Term Average Annual Extraction Limit (LTAAEL).

All water users taking licensed water from the 32 identified at-risk groundwater sources listed in Attachment B will be required to have a meter, regardless of infrastructure size.

Over time, additional groundwater sources may be added to the at-risk groundwater sources list if they meet one of the criteria. In addition, further criteria may be considered for the purpose of determining whether a groundwater source is at-risk.

See the following clauses in the Regulation: 231 (4) (b) and Schedule 9

What if I have a government-owned meter

The NSW Government recognises that there are different views about who should own existing government-owned meters. Consultation on this issue has highlighted that the vast majority of water users with government owned meters would prefer that WaterNSW retains these meters.

The NSW Government has listened to this feedback and has decided that WaterNSW will retain ownership of these meters. This will affect around 3,000 meters which were installed in the Southern Basin, Hawkesbury Nepean and Bega regions, largely through Commonwealth-funded programs.

WaterNSW will directly contact affected water users ahead of the rollout dates for the new non-urban metering rules to explain what this means for them and the steps it is taking to ensure these meters comply with the standards under the non-urban metering rules.

Exceptions to the metering requirement

A meter is not required for:

- works solely used to take water under basic landholder rights¹
- works where the take of water cannot be measured using a meter and the Minister has granted an exemption
- only taking exempt water (i.e. where the holder of the approval is exempt from the requirement for a water access licence for the take of that water)
- multiples pumps and bores below the thresholds
- works solely used to take water under a floodplain harvesting access licence
- works marked as inactive on the water supply work approval
- works not nominated by an access licence.

Works taking water under basic landholder rights

A work used to take water pursuant to a basic landholder right will not require a meter. However, if a work is used to take *both* basic landholder rights water and licensed water, a meter will be required if the work meets one of the metering thresholds previously stated. Recording and reporting requirements will also apply (see Part 5).

Works taking exempt water

Works taking water that is exempt from the requirement for a water access licence² do not need a meter. However, a work that is used to take *both* exempt water and licensed water will need a

¹ Basic landholder rights mean domestic and stock rights, harvestable rights or native title rights, as set out in sections 52-55 of the *Water Management Act 2000*. Domestic and stock basic landholder rights are a statutory right, which is different to the take of water for domestic and stock purposes under a licence.

² Exemptions from the requirement for a water access licence apply where water is taken for specific purposes and in specific circumstances. The exemptions are contained in clause 21 and Part 1 of Schedule 4 to the *Water Management (General) Regulation 2018*.

meter if the work meets one of the metering thresholds previously stated. Recording and reporting requirements will also apply (see Part 4).

Minister's exemption

A work may be granted an exemption from the metering requirement if it is not possible for its water take to be measured by metering equipment. The water user will need to demonstrate that the work they want exempted can't be measured by metering equipment.

The Minister can grant these exemptions but in practice they will be granted by the Department under delegation.

An exemption can only be granted if the decision-maker is satisfied that it is not possible for the water take to be measured by metering equipment. All relevant considerations must be taken into account. The exemption can be cancelled at any time, but any cancellation must be reasonable.

Floodplain harvesting

Works solely taking water under a floodplain harvesting access licence do not need a meter.

Measurement of floodplain harvesting water is being addressed as part of the Healthy Floodplains Project. For more information, refer to: www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project

Inactive works

Inactive works do not need a meter if:

- the work is marked as inactive on the authority
- the authority contains a condition that prohibits the work from being used to take water and from being capable of taking water from a water source while the work is inactive, and
- all conditions applying to the inactive work are complied with.

This exception applies to both surface water and groundwater works.

Before a work will be tagged as inactive, a water user will need to demonstrate the work is physically incapable of taking water. For example:

- pipes removed and pump disabled, or
- pipes are sealed shut and connected to a tamper proof device.

See the following clause in the Regulation: 232

Examples

Some examples of situations where a meter is, and is not, required are set out in Table 3.

Table 3: Examples of when a meter is, and is not, required

| Situation | Do you need a meter? |
|--|---|
| The size of the work specified on your authority meets the infrastructure size threshold. | Yes |
| The work is taking groundwater from one of the identified at-risk groundwater sources. | Yes |
| The work does not meet one of the metering thresholds, but you have voluntarily installed a meter. | <p>No – but note the thresholds will be reviewed after five years and they could change. You may still continue to use your meter.</p> <p>If the meter fails you will not be required to meet the metering requirements if you choose to install a new meter, i.e. do not have to install a pattern approved meter.</p> <p>You will need to contract a DQP for any maintenance in accordance with the Maintenance Specifications 2019 and for removal of the existing meter</p> |
| The size of the work specified on your approval is below the infrastructure size threshold but your licence or work approval conditions specify that you are currently required to meter or measure your water take. | Yes |
| The size of the work specified on your approval is above the infrastructure size threshold, but the work on the ground is below the threshold. | Yes – or the approval/licence could be amended to reflect the size of the work. |
| Your work approval/licence does not specify the size of your work. | <p>Yes – or the approval/licence could be amended to reflect the size of the surface work.</p> <p>No - for water bores if the diameter of the constructed bore is less than 200 mm.</p> |
| Your current authority requires you to have a meter, flow measurement device or extraction measurement device installed. | Yes |

Part 2: Standards for metering equipment

This part describes the metering standards that apply to works that need to have a meter, as described in Part 1 of this document. It covers the requirements for new and replacement meters as well as the transitional arrangements for existing meters.

Standards for new and replacement meters

Table 4 summarises the standards for all new and replacement meters installed on new or existing works, and each standard is explained in the following sections.

The standards in this section apply to all new and replacement meters installed on new or existing works on or after **1 April 2019**.

- A **new work** means a work authorised by an authority that is granted on or after 1 April 2019.

A **new or replacement meter** means a meter that is installed or replaced on or after 1 April 2019.

Table 4: Standards for new and replacement meters

| Pattern approved | Installation to AS4747 and validated by DQP | Tamper-evident seals | Telemetry ready LID * | Telemetry | Maintenance & ongoing validation |
|--|---|----------------------|-----------------------|--|----------------------------------|
| Yes except for open channels | Yes | Yes | Yes | Yes except <ul style="list-style-type: none"> • surface water pumps less than 200 mm as authorised by the authority, and • groundwater works | Yes |

* A LID is a combined data logger and telemetry unit that complies with the Data Logging and Telemetry Specifications 2020. A list of devices that have been tested by DPIE / WaterNSW / NRAR is published on the NSW DPIE non-urban metering website.

In summary, a water user who installs a new or replacement meter needs to:

- ensure the meter is **pattern approved** (except for open channel works). Water users wishing to install an open channel meter must have the design certified by a duly qualified person
- have the meter installed and validated by a duly qualified person,
- have the meter fitted with a **LID, tamper-evident seals**, and where required, connected via **telemetry** to the NSW Government's data acquisition service, and
- submit the completed validation certificate to the Minister within 28 days of receiving it from the duly qualified person.
- Water users installing a new open channel meter also submit the completed design certificate.

Pattern approved

All new and replacement meters must be pattern approved. An alternative to pattern approval is available for open channel meters only (see below).

Pattern approval is the process of testing the pattern (design) of an instrument against an established standard by an independent body. Pattern approval determines the accuracy of a meter and is granted by the National Measurement Institute (NMI) in the Commonwealth Department of Industry, Science, Energy and Resources .

Water meters for non-urban areas are assessed for pattern approval in accordance with:

- NMI M 10 – meters intended for large scale, non-potable applications
- NMI M 11 – meters intended for open channel flow measurement.

Further information about pattern approval is available from the National Measurement Institute website: www.measurement.gov.au/Industry/business/Pages/Water-Meters.aspx.

Which meters are pattern approved?

The Murray-Darling Basin Authority maintains a current list of pattern approved meters on its website: <https://www.mdba.gov.au/publications/mdba-reports/compliance-enforcement-documents>

A summary of this list, dated April 2020, is in Attachment C.

However the Murray-Darling Basin Authority will update this list from time to time as more meters receive pattern approval, so you should refer to the Authority's website for the current list.

Alternative to pattern approval for open channels

An open channel means a channel or conduit used for conveying water that is not enclosed. Open channel meters do not need to be pattern approved if:

- before the metering equipment is installed, the proposed design of the installation is certified by a duly qualified person as compliant with the International or Australian Standard that is applicable to the metering equipment to be used or type of channel where it is to be installed, and
- the metering equipment is validated at least every 12 months.

Installed to Australian Standard 4747 and validated by a duly qualified person

Metering equipment must be installed and validated by a duly qualified person in accordance with the requirements of *Australian Standard 4747: Meters for non-urban water supply (AS4747)*.

Installation includes both initial installation of the metering equipment and any re-installation if it is removed for maintenance.

Telemetry equipment must also be installed by a duly qualified person in accordance with the Data Logging and Telemetry Specifications 2020 published in the Gazette and on the Department's website: <https://www.industry.nsw.gov.au/water/metering/>

Water users will need to arrange for a duly qualified person to **install** and **validate** their new or replacement metering equipment.

DQPs must issue a completed validation certificate within 7 days of completing the work. They may also directly complete the certificate in the DQP Portal on behalf of the water user.

The water user needs to submit this certificate to the Minister within 28 days of receiving it, unless the DQP has filled and submitted the form or certificate in the DQP Portal.

Part 4 contains more information about duly qualified persons and certificates.

Tamper-evident seals

Metering equipment must have tamper-evident seals, locks, controls or other devices to limit access to, and prevent tampering with, the equipment. The metering equipment includes the meter itself and any ancillary wiring, pipework, telemetry equipment or apparatus and any supporting structure.

NSW Government has appointed Irrigation Australia Limited (IAL) as the approved provider of all tamper-evident seals. Duly qualified persons must purchase seals from IAL and install them on metering equipment following installation, validation, maintenance or data reading activities.

Only duly qualified persons, authorised officers, or staff of WaterNSW may install or break seals.

Tamper-evident seals on metering equipment must:

- be capable of clearly showing whether the metering equipment has been interfered with
- not prevent the reading of the meter or affect the operation of the telemetry system (where there is one), and
- comply with AS4747, if applicable.

Telemetry

Under NSW's metering rules, all surface and groundwater works captured by the rules need to be fitted with an accurate meter and a telemetry-capable data logger (a Local Intelligence Device or 'LID').

All LIDs must be able to connect to a meter, be capable of transmitting metering data to the government via telemetry and meet certain minimum physical and functional requirements specified in the Regulation, the Data Logging and Telemetry Specifications 2020 and the associated Data Logging Format Guidelines.

Although all LIDs need to be equipped with the capability to transmit data via telemetry to the DAS, only water users with surface water works, except pumps less than 200mm, need to utilise this capability.

Telemetry is not required for groundwater works. In cases where the authority does not specify a pump size, the holder of the approval will be required to have telemetry.

Other water users can choose not to utilise this capability and instead operate the LID as a data logger only. However additional record keeping and reporting requirements will apply to these water users. These water users will also need to have the data from their data loggers downloaded every 12 months by an authorised person. These water users can avoid these additional requirements by voluntarily utilising the telemetry capability in their LIDs.

To enable the secure transmission of telemetered data, the department procured a cloud-based data acquisition service (DAS) that collects and stores data transmitted, via telemetry, from LIDs.

Data collected by the DAS, and through manual recording and reporting, will assist NRAR, WaterNSW and DPIE to undertake compliance and enforcement, billing and other water management activities. The data collected by the DAS also supports water users to manage their water use and access their information via a private online dashboard.

See clause 6 of Schedule 8 to the Regulation

Water users may also be directed to install telemetry by order of the Minister made under section 326 of the Act.

Data and telemetry specifications

All works that are required to have telemetry must comply with the Data Logging and Telemetry Specifications 2020 published on the Department's website at <https://www.industry.nsw.gov.au/water/metering/>

The specifications define the minimum requirements for ensuring a satisfactory level of functionality, data integrity and security across the NSW Government's data acquisition service (DAS).

In particular, these requirements ensure that:

- devices have features to detect and prevent tampering
- devices can log and transmit data to the DAS at appropriate intervals to support compliance and enforcement and other government functions
- devices are technically capable of being connected to water meters and transmitting data to the DAS
- devices transmit data in a way that manages security and data integrity risks.

This is key to ensuring that the storage and transmission of data has sufficient integrity and functionality to support NRAR's compliance and enforcement functions.

Ownership of data

The NSW Government will own the data that it receives from water users.

Individual water users will have access to data transmitted from their works to the DAS via a private online dashboard.

What is the data acquisition service (DAS)?

The DAS is a cloud-based platform that collects and stores consumption data from non-urban water meters. The LID transmits meter data over a secure network to the DAS. Eagle.io provides the DAS on behalf of DPIE. The DAS makes data available to stakeholders such as NRAR, WaterNSW, DPIE and water users.

Figure 1 illustrates the DAS system.

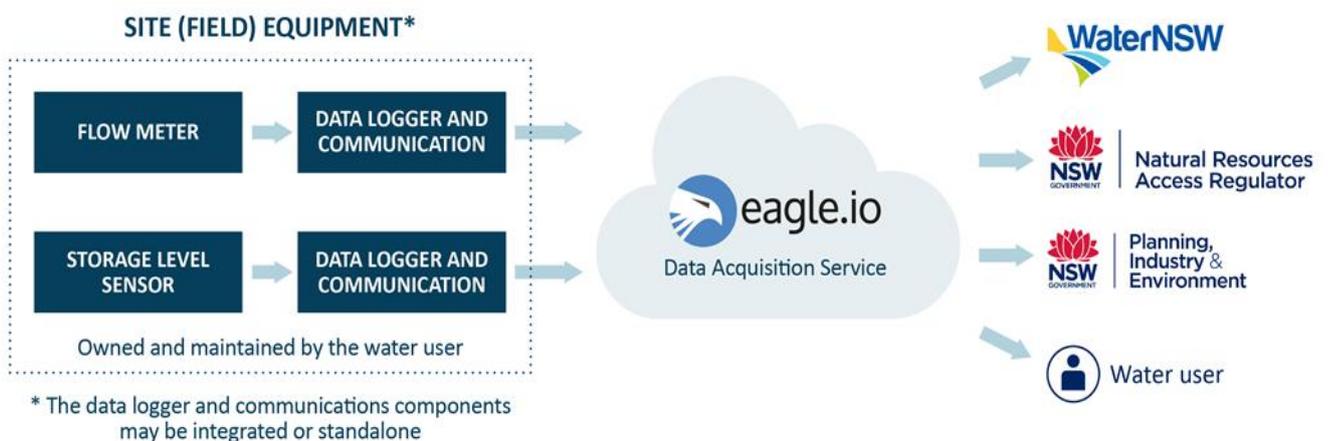


Figure 1: DAS transmission of data

What type of LID can I install?

The Regulation and the Data Logging and Telemetry Specifications 2020 set out the minimum technical specifications that LIDs must meet. If a LID does not meet these specifications, it is not compliant with the metering rules.

DPIE publishes a list of LIDs that have been tested against these specifications and shown to meet them. The list of 'compatible LIDs' specifies the compatible LIDs make, model, firmware etc. The list also contains general information about LIDs that are currently undergoing testing.

A list of compatible devices is available on the Department's website:

<https://www.industry.nsw.gov.au/water/metering/>

See clause 4 of Schedule 8 to the Regulation

Who can install LIDs?

Under the Regulation, only DQPs can install LIDs. A DQP is someone with the qualifications, skills or experience to carry out certain work in relation to metering equipment, as defined by the Regulation.

Different types of DQPs are required to carry out different work in relation to metering equipment. DQPs include certified meter installers, certified practising hydrographers and telemetry technicians. Refer to clause 236 of the Regulation for the current list.

Standards for existing meters

The standards in this section apply to existing meters.

An **existing meter** means a meter that was installed on an authorised work **before 1 April 2019**. Any meter installed on or after 1 April 2019 must meet the new meter standards set out above (see page 8).

Table 5 summarises the standards. Standards that *only* apply to existing meters are explained in the following sections. All other standards are explained above (see pages 8 to 11).

Table 5: Standards for existing meters

| Comply with existing requirements | Submit report and supporting documents | Pattern approved | Tamper-evident seals | Telemetry ready data logger | Telemetry | Maintenance & ongoing validation or accuracy confirmation |
|--------------------------------------|--|------------------|----------------------------------|----------------------------------|--|---|
| Yes up until roll-out date | Yes by roll-out date | No | Yes from roll-out date | Yes from roll-out date | Yes from roll-out date, EXCEPT surface water pumps less than 200mm as authorised by the authority, and groundwater works | Yes from roll-out date |

Comply with existing requirements

Many authorities already contain a condition requiring the work to have metering or measurement equipment installed, or requiring the holder to keep a logbook of water take.

Water users **must** continue to comply with any existing authority conditions, including conditions relating to metering, measurement of water take, or logbooks up until the roll-out date.

Water users should refer to the conditions of their authority to identify what conditions apply to their works. Users can check conditions on the NSW Water Register available at:

<https://www.waternsw.com.au/nswwaterregister>.

If existing meter is pattern approved

A water user who wishes to keep an existing **pattern approved** meter will need to do the following by the roll-out date:

- ensure the meter has been validated by a duly qualified person no more than five years before the roll-out date,
- submit a report together with supporting documentation confirming that the meter is pattern approved and has been validated as required
- install a compatible LID and tamper-evident seals
- connect to the DAS telemetry (unless the work is a surface water pump less than 200 mm as authorised by the authority or a groundwater work).

Water users may arrange for a new validation, or rely on an existing validation provided it was done no more than five years before the roll-out date, or no more than 12 months before the roll-out date for open channels, by a person who meets the criteria of a duly qualified person.

The reports and certificates that need to be submitted are available on the Department's website: <https://www.industry.nsw.gov.au/water/metering/>.

Existing meters that are not pattern approved

A water user who wishes to keep an existing meter that is **not pattern approved** will need to do the following by the roll-out date:

- submit a report and supporting documentation to the Minister to confirm either:
 - **option 1:** the manufacturer of the meter has confirmed the meter was ± 2.5 % accuracy in laboratory conditions, and the meter has been validated by a duly qualified person, or
 - **option 2:** a duly qualified person has checked the accuracy of the meter and confirmed the meter is within ± 5 % accuracy in the field.
- install a LID and tamper-evident seals
- connect to the DAS (unless the work is a surface water pump authorised to be less than 200 mm or a groundwater work).

More detail about options 1 and 2 is provided below.

The reports and certificates that need to be submitted are available on the Department's website: <https://www.industry.nsw.gov.au/water/metering/>

Option 1: manufacturer's certificate and validation

Under this option the water user will need to submit a copy of:

- the manufacturer's certificate confirming the meter was within ± 2.5 % accuracy after manufacture, and
- the completed validation certificate provided by a duly qualified person.

Water users may arrange for a new validation, or rely on an existing validation provided it was done no more than five years before the roll-out date, or no more than 12 months before the roll-out date for open channels, by a person who meets the criteria of a duly qualified person.

Option 2: accuracy confirmed in the field by a DQP

Under this option the water user will need to submit a certificate of accuracy completed by a duly qualified person which confirms:

- the duly qualified person has checked the accuracy of the meter within the last five years, or within the last 12 months for open channels, and
- the maximum permissible error of the metering equipment does not exceed $\pm 5\%$ in the field.

Ways that a duly qualified person may confirm that the maximum permissible error of the meter does not exceed $\pm 5\%$ in the field include in-situ volumetric measurement, or in-series metering with another temporary pattern approved meter.

Maintenance, ongoing validation or accuracy confirmation

All metering equipment must be:

- maintained in accordance with the Maintenance Specifications 2019 published on the Department's website: <https://www.industry.nsw.gov.au/water/metering/>, and
- validated by a duly qualified person every five years, or every 12 months for open channels, and in any other circumstances in which metering equipment is required by AS4747 to be validated (for example, when maintenance work affects the metrology of the meter). Note there is an exception to this requirement for existing meters only, provided a duly qualified person confirms the accuracy of the meter in the field is within $\pm 5\%$ at these same intervals.

The maintenance specifications set out the maintenance that needs to be carried out in relation to metering equipment, the frequency of maintenance and whether the maintenance needs to be carried out by a duly qualified person, or if it can be carried out by the authority holder.

The maintenance specifications apply to all works required to have a meter.

All water users who wish to keep an existing meter must ensure the meter is operating properly, and in compliance with any conditions of the authority, up until the relevant roll-out date.

See clause 2 of Schedule 8 to the Regulation:

Part 3: Meter roll-out dates

From **1 April 2019** all new and replacement meters are required to meet the new meter standards (except telemetry which commences on 1 December 2020).

The metering requirements will be rolled-out in a staged manner as shown in Table 6.

The staged roll-out takes a risk-based approach by ensuring that the largest water users in NSW are metered and telemetered first. The staged roll-out of the metering requirements will allow time for the market to adjust to meet demand (e.g. demand for pattern approved meters and certified installers).

The list of water sharing plans within each of the regions is provided in Attachment D.

Water users may choose to voluntarily comply with the new metering requirements before the roll-out date for their region.

Table 6: Roll-out dates for meters

| Stage | Works covered | Roll-out date |
|-------|---|-----------------|
| 1 | Large pumps: Surface water pumps where the authority authorises the use of a pump that is 500 mm or larger | 1 December 2020 |
| 2 | Inland northern region: <ul style="list-style-type: none"> All remaining works that meet the metering thresholds in the water sources in the listed water sharing plans, and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 80, 85 or 90 | 1 December 2021 |
| 3 | Inland southern region: <ul style="list-style-type: none"> All remaining works that meet the metering thresholds in the water sources in the listed water sharing plans, and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 40, 50, 57, 60 or 70 | 1 December 2022 |
| 4 | Coastal region: <ul style="list-style-type: none"> All remaining works that meet the metering thresholds in the water sources in the listed water sharing plans, and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 10, 20 or 30 | 1 December 2023 |

See clause 230 in the Regulation

Preparing for your roll-out date

The new metering requirements will be rolled out over a five-year period (this is discussed in the following part). Users will need to allow time to ensure their meters are compliant by the relevant

roll-out date. Table 7 summarises the steps that users will need to take to prepare for their roll-out date.

Table 7: Steps users will need to take to prepare for roll-out date

| Type of work | If you have a meter already before 1 April 2019 | If you don't have a meter |
|---|--|---|
| <p>Work meets the infrastructure size for multiple pumps or multiple bores threshold</p> | <p>Required to:</p> <ul style="list-style-type: none"> • confirm meter is pattern approved and validated or is accurate and submit report to Minister • install LID and tamper-evident seals • connect to the DAS (except for surface water pumps authorised to be less than 200 mm and groundwater works) <p>If meter does not meet the above requirements, replace it with a meter that meets the new meter standards.</p> | <p>Required to install a new meter that meets the new meter standards.</p> |
| <p>Work is below the infrastructure size or multiple pumps or multiple bores threshold, but:</p> <ul style="list-style-type: none"> • the work is already required to have a meter, or • is located in an at-risk groundwater source | <p>Must ensure the meter is operating properly.</p> <p>If meter is not operating properly, replace it with a meter that meets the new meter standards.</p> | <p>Required to install a new meter that meets the new meter standards.</p> |

Part 4: Requirements for Duly Qualified Persons

Who is a duly qualified person (DQP)?

A duly qualified person (DQP) is a person with the qualifications, skills or experience to carry out work in relation to metering equipment, as listed in clause 236 of the Regulation.

Attachment E contains a summary of the qualifications, skills or experience required by DQPs to carry out work on metering equipment. Only a DQP may:

- install or re-install metering equipment
- validate metering equipment
- certify the design of new open channel metering equipment before it is installed, and
- carry out maintenance required to be carried out by a duly qualified person under the maintenance specifications: <https://www.industry.nsw.gov.au/water/metering/>.

Installation of metering equipment includes both initial installation of the metering equipment and any re-installation if it is removed for maintenance. Metering equipment includes telemetry.

Note: trainee DQPs can provide metering related services under the supervision of a DQP (such as metering equipment installation, validation or maintenance), and work done by the trainee in these circumstances is compliant with the metering rules if the supervising DQP certifies that the activities were performed in accordance with the relevant standards.

Forms and certificates

From 1 April 2019, DQPs who carry out work on metering equipment in accordance with the Regulation must complete the approved certificates published on the Department's website: <https://www.industry.nsw.gov.au/water/metering/>.

Table 8 sets out the certificates available at the date of publication.

Table 8: Certificates to be used by duly qualified persons

| Type of work | Certificate name |
|---|--|
| Validate metering equipment | Validation certificate |
| Certify design of metering equipment for an open channel | Design certificate for open channel metering equipment |
| Certify existing meter is accurate to within $\pm 5\%$ in the field | Certificate of accuracy for existing meters (non-pattern approved) |

DQPs must give the completed certificate to the person for whom the work is done within **seven days** of completing the work. It is an offence if a duly qualified person fails to comply with this requirement.

Requirement to report meter tampering

A DQP must report if they **know or reasonably suspect** that metering equipment they are installing, or are carrying out work on, has been tampered with, within seven days.

It is an offence if a DQP fails to report known or suspected meter tampering.

See the following clauses in the Regulation: 236, 237 and Schedule 8

Part 5: Requirements to keep and provide records

General

New recording and reporting requirements will apply to all water users taking licensed water.

The new requirements take effect on the roll-out date applying to the relevant works. Water users with works that have different roll-out dates may therefore (temporarily) have different requirements applying to their works, until the relevant regional roll-out date.

Recording and reporting requirements vary depending whether the works are:

- not metered,
- metered, and
- metered and have telemetry.

Recording and reporting requirements apply to each work, so if the authority holder has metered and unmetered works the recording and reporting will be more cumbersome. Records include:

- provide certificates and reports about metering equipment if the work is metered
- licensed water take,
- take of water under a basic landholder right or licence exemption if the work is used to take both licensed water and water under a basic landholder right or under a licence exemption, and
- confirm water taken according to conditions.

All records must be kept for at least **five years**.

These new requirements will replace existing logbook requirements. However, water users must continue to comply with their current recording and reporting requirements up until the roll-out date, including keeping existing logbooks for five years post roll-out date.

Under section 91J of the Act it is an offence for a person to fail to keep metering records they are required to keep. It is also an offence to make a statement or furnish information that a person knows to be false or misleading in connection with a metering record they are required to keep.

The recording and reporting is likely to be via online portals, which will allow water users to keep and submit records online. Hard copy forms will also be made available to water users.

Works required to have meters

There are four requirements for authority holders with works required to have a meter:

- provide certificates and reports about metering equipment
- record and report on licensed water take (including nil take)
- record and report other take of water under basic landholder rights or other licence exemptions, and
- record method of confirmation that water is taken according to conditions.

Certificates and reports about metering equipment

Users with works that are required to have a meter (because the work meets one of the metering thresholds) must **keep** the following records relating to their metering equipment for **five years**:

- any certificate provided by a duly qualified person validating the metering equipment
- any certificate provided by a duly qualified person certifying why the metering equipment could not be validated and any modifications required for compliance, or that the equipment cannot be modified to enable compliance
- any report and supporting documentation provided to the Minister to keep existing metering equipment

- any certificates provided by a duly qualified person relating to the design of metering equipment for a new open channel.

Water users must provide a copy of the following certificates to the Minister within **28 days** of receiving the certificate:

- a validation certificate for metering equipment
- a certificate certifying the design of open channel metering equipment.

Records about licensed water take

Works required to have a meter will have at least hourly water take data **kept** automatically by the LID, as required under the data logging and telemetry specifications.

- A. If the meter **is not connected** to the NSW Government's data acquisition service via telemetry:
 - the water user will need to self-report their meter reading to the Minister in the approved form and manner³ **monthly**, not later than 14 days after the end of the month, and
 - WaterNSW will upload the water take data from each data logger annually, to be verified against self-reported meter readings.
- B. If the meter **is connected** to the NSW Government's data acquisition service via telemetry:
 - water take data will be transmitted automatically via telemetry every 24 hours. The water user will not need to do anything.

Water users who wish to reduce their manual recording and reporting may choose to voluntarily install telemetry on their works, so that reporting occurs automatically.

Other take of water under basic landholder rights or other licence exemptions

These requirements only apply to works required to have a meter, if the work is used to take **both** licensed water and water under a basic landholder right or under a licence exemption.

The record will need to be made within 24 hours after each day water is taken and in the approved form and manner³ and self-report these licence exemption water take **monthly**, not later than 14 days after the end of the month.

Confirm water taken according to conditions

This requirement only applies if the authority contains a condition requiring the holder to confirm certain matters before water is taken (for example, a commence to pump condition or cease to take condition).

Water users with these works must **keep** a record of how the user confirmed water was taken in compliance with any conditions of the authority (for example by visually confirming that flows at determined gauge were above the cease to take condition, as specified on the access licence).

This requirement does not apply to works in regulated rivers because they do not have cease to pump conditions.

The record will need to be made within 24 hours after each day water is taken and in the approved form and manner³. Users will not need to provide this information to the Minister, though the information may still be requested from users, if necessary, for compliance or other purposes.

Table 9 summarises the records to be kept by users with works required to have a meter.

³ The form and manner will be published on the Department website before 1 December 2020

Table 9: Records to be kept, and reporting frequency, by users with works required to have a meter

| Type of record | Requirement |
|---|---|
| Certificates and reports about metering equipment | <ul style="list-style-type: none"> The certificates will be compiled by the duly qualified person. The DQP can assist in completing the report to keep existing meters by the roll-out date, with associated documentation. The authority holder must keep the certificates for 5 years. |
| A. Water take | <ul style="list-style-type: none"> Licensed water taken using the work – done automatically with the LID The authority holder must keep the records for 5 years. |
| B. Take of water under a basic landholder right or licence exemption | <ul style="list-style-type: none"> When water is taken under a basic landholder right for works used to take both licensed water and basic landholder rights water When water is taken under a water access licence exemption for works used to take both licensed water and water under an exemption. The authority holder must keep the records for 5 years. |
| C. Confirm water taken according to conditions | <ul style="list-style-type: none"> How the user confirmed water was taken in compliance with any conditions of the approval, licence or entitlement limiting water take (for example, visually confirming that flows at determined gauge were above the cease to take condition, as specified on the access licence). This requirement only applies to works subject to a condition limiting when water may be taken (for example, cease to pump or commence to pump condition). The authority holder must keep the records for 5 years. |
| Reporting | Requirement |
| Certificates | The authority holder must submit the certificates within 28 days of receiving the certificates. |
| A. Water take | <p>If the meter is not connected to the NSW Government's data acquisition service via telemetry:</p> <ul style="list-style-type: none"> the water user will need to self-report their meter reading to the Minister in the approved form and manner monthly, not later than 14 days after the end of the month, and WaterNSW will upload the water take data from each data logger annually, to be verified against self-reported meter readings |
| B. Other exempt take | The water user will need to self-report their take under a basic landholder right or licence exemption to the Minister in the approved form and manner monthly, not later than 14 days after the end of the month, |
| C. Confirmation | Not required |

See the following clauses in the Regulation: 238, 244 and 244A

Works not required to have meters

There are three requirements for authority holders with works not required to have a meter:

- record and report on licensed water take
- record and report other take of water under basic landholder rights or other licence exemptions, and
- record confirmation water is taken according to conditions.

Users with works not required to have a meter will need to **keep** the records as listed in Table 10. The record must be made within **24 hours** after each day water is taken, and in the approved form and manner.

Water users will also need to **provide** this information to the Minister **annually, i.e. within 28 days after the 30 June each year**, in the approved form and manner⁴.

Water users who wish to reduce their manual recording and reporting may choose to voluntarily install a meter and also telemetry on their works, so reporting occurs automatically.

Table 10: Records to be kept by users, and reporting frequency, with works not required to have a meter

| Type of record | Requirement |
|---|---|
| A. Water take | <ul style="list-style-type: none"> • Licensed water taken using the work. This will include information about the time, date, estimated volume of water taken and the method used to calculate the estimated volume. • The authority holder must keep the records for 5 years. |
| B. Take of water under a basic landholder right or other licence exemption | <ul style="list-style-type: none"> • When water is taken under a basic landholder right (for works used to take both licensed water and basic landholder rights water) • When water is taken under a water access licence exemption (for works used to take both licensed water and water under an exemption). • This will include information about the time, date, estimated volume of water taken and the method used to calculate the estimated volume. • The authority holder must keep the records for 5 years. |
| C. Confirm water taken according to conditions | <ul style="list-style-type: none"> • How the user confirmed water was taken in compliance with any conditions of the approval, licence or entitlement limiting water take (for example, visually confirming that flows at determined gauge were above the cease to take condition, as specified on the access licence). • This requirement only applies to works subject to a condition limiting when water may be taken (for example, cease to pump or commence to pump condition). • The authority holder must keep the records for 5 years. |
| Reporting | Requirement |
| A. Water take | The authority holder must report within 28 days after the 30 June each year |
| B. Other exempt take | The authority holder must report within 28 days after the 30 June each year |
| C. Confirmation | Not required |

See clause 250 in the Regulation

⁴ The form and manner will be published on the Department's website before 1 December 2020

Part 6: Faulty metering equipment

New requirements for faulty meters commenced on 1 April 2019.

The NSW Government recognises that occasionally meters will break down or simply stop operating. In such cases, users will need to act swiftly. It is an offence under the Act to take water while a meter is not operating or not operating properly.

It is also an offence if the holder of a work approval fails to give notice that metering equipment is not working or not working properly within 24 hours of becoming aware of that fact.

Faulty metering equipment means metering equipment that is not operating properly, or is not operating. This includes where the data logger or telemetry (where required) is not working.

Users will need to report faulty metering equipment and will only be permitted to continue taking water if they comply with the requirements below.

Users must report faulty metering equipment

Within 24 hours of becoming aware that metering equipment is not operating, or is not operating properly, users must report the faulty equipment to WaterNSW through its website:

<https://www.waternsw.com.au/customer-service/service-and-help/forms/s91i-reporting-to-take-water-while-metering-equipment-is-not-operating-simplify>

- The website will direct water users to report the following their name and contact details
- the type and location of the metered work
- any relevant approval and/or access licence numbers
- the purposes for which water take from the metered work is used
- a description of the method that will be used to determine quantity of water taken while the metering equipment is faulty.

It is an offence if a water users fails to report faulty metering equipment within 24 hours of becoming aware.

See clause 241 in the Regulation

Taking water when metering equipment is faulty

Where metering equipment is faulty, a user will be able to continue taking water in accordance with section 91I (3) of the Act, if the user complies with the following requirements under the Regulations:

- make the records specified below
- use an alternative means to determine the quantity of water taken, and
- repair or arrange for the repair of the metering equipment.

Keeping records when meter is faulty

Users with faulty metering equipment must provide the following information about their metering equipment to WaterNSW through its website:

- the purposes for which the water taken from the metered work is used
- if a pump is being used to take water—the size of the pump, the maximum extraction rate of the pump and the dates and times during which the pump is operating
- if the water taken from the metered work is being used for irrigation—the area of land that is irrigated by the water
- the last available reading of the metering equipment before it became faulty and the first available reading once it is repaired
- any other information that WaterNSW directs the person to record.

The record must be made within 24 hours after water is taken and must be kept for five years. If directed to do so, the user must use an alternative means to determine the quantity of water taken and must also record that information.

See clause 242 of the Regulation

Repair of faulty meters

Users must repair, or cause metering equipment to be repaired, within 21 days of becoming aware it is faulty.

If they become aware the equipment cannot be repaired within that period, they must notify WaterNSW and apply for an extension, setting out the reasons why the repair is not able to be carried out in that timeframe and the date by which it is proposed to be completed. More than one extension application may be made.

Within 28 days after the faulty metering equipment has been repaired, the user must provide the following information to WaterNSW through its website:

- the date the metering equipment was repaired
- a description of any repairs
- evidence the metering equipment has been repaired (such as a statement from the person who repaired it), and
- the name of the duly qualified person(s) who carried out the repairs.

See clause 243 of the Regulation

Part 7: Review

The NSW Government will take an adaptive approach to water metering in NSW. The policy and regulation will be reviewed after five years to assess its performance against the objectives. The policy and regulation will be modified, if needed, to take account of new information about coverage, cost and water take.

Aspects of the policy and regulation that may be considered in the review include:

- the metering thresholds
- the telemetry threshold
- coverage of meters – works metered and water take
- costs of metering
- benefits realised from metering.

The review is a requirement of the Regulation and will be published on the Department's website.⁵

⁵ Section 115B (4) of the Act and clause 246 of the Regulation.

Attachment A—*Water Management Act 2000* metering-related provisions

Table A. *Water Management Act 2000* – metering provisions

| Amendment | Provision in the Act |
|--|-----------------------------|
| Mandatory conditions are imposed on all water supply work approvals that require metering equipment to be installed, used and properly maintained, and provides for exemptions to be prescribed in regulations. | Section 101A |
| Regulations may impose mandatory conditions on access licences and approvals in specified circumstances, including in relation to metering equipment and measurement of water flows and reporting of water take. | Section 115 |
| Regulations may prescribe the standards and requirements the metering equipment must meet, including in relation to installation and maintenance, the keeping of records and the specifications that must be followed in the event of a meter failure. | Sections 91I, 91IA and 115B |
| Offence provisions with respect to providing false or misleading information in connection with metering records or the metering requirements that will be set out in the regulations, and failing to notify when a meter is not working. | Section 91IA and 91J(2) |
| Offence provisions in relation to metering equipment. | Sections 91H, 91I and 91J |
| Direction power for the Minister to direct a person to install, replace, use or maintain metering equipment. | Section 326 |
| Regulations may be made to prescribe a scheme for the transfer of ownership of metering equipment. | Section 399A |

Attachment B—At-risk groundwater sources

Table B lists the at-risk groundwater sources where **all works** taking licensed water need meters.

Table B. List of at-risk groundwater sources

| Water source | Water sharing plan |
|--|--|
| Belubula Valley Alluvial Groundwater Source Upper Lachlan Alluvial Groundwater Source | <i>Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012</i> |
| Lower Darling Alluvial Groundwater Source | <i>Water Sharing Plan for the Lower Murray Darling Unregulated and Alluvial Water Sources 2011</i> |
| Lower Gwydir Groundwater Source | <i>Water Sharing Plan for the Lower Gwydir Groundwater Source 2019</i> |
| Lower Lachlan Groundwater Source | <i>Water Sharing Plan for the Lower Lachlan Groundwater Source 2003</i> |
| Lower Macquarie Groundwater Sources | <i>Water Sharing Plan for the Lower Macquarie Groundwater Sources 2019</i> |
| Lower Murray Groundwater Source | <i>Water Sharing Plan for the Lower Murray Groundwater Source 2019</i> |
| Lower Murrumbidgee Groundwater Sources | <i>Water Sharing Plan for the Lower Murrumbidgee Groundwater Sources 2019</i> |
| Cudgegong Alluvial Groundwater Source Upper Macquarie Alluvial Groundwater Source Bell Alluvial Groundwater Source Talbragar Alluvial Groundwater Source | <i>Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012</i> |
| Upper Murray Groundwater Source | <i>Water Sharing Plan for the Murray Unregulated and Alluvial Water Sources 2011</i> |
| Kyeamba Alluvial Groundwater Source Mid Murrumbidgee Zone 3 Alluvial Groundwater Source Wagga Wagga Alluvial Groundwater Source Billabong Creek Alluvial Groundwater Source Bungendore Alluvial Groundwater Source Gundagai Alluvial Groundwater Source | <i>Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2012</i> |
| Currabubula Alluvial Groundwater Source Manilla Alluvial Groundwater Source Quipolly Alluvial Groundwater Source | <i>Water Sharing Plan for the Namoi Unregulated Water Sources 2012</i> |

| Water source | Water sharing plan |
|---|--|
| Quirindi Alluvial Groundwater Source | |
| Macintyre Alluvial Groundwater Source NSW Border Rivers Downstream Keetah Bridge Alluvial Groundwater Source NSW Border Rivers Upstream Keetah Bridge Alluvial Groundwater Source | <i>Water Sharing Plan for the NSW Border Rivers Unregulated and Alluvial Water Sources 2012</i> |
| NSW Great Artesian Basin Groundwater Sources | <i>Water Sharing Plan for the NSW Great Artesian Basin Groundwater Sources 2008</i> |
| Orange Basalt Groundwater Source Young Granite Groundwater Source | <i>Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011</i> |
| Gunnedah - Oxley Basin MDB (Spring Ridge) Management Zone of the Gunnedah - Oxley Basin MDB Groundwater Source | <i>Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2011</i> |
| Peel Alluvium Water Source | <i>Water Sharing Plan for the Peel Valley Regulated, Unregulated, Alluvium and Fractured Rock Water Sources 2010</i> |
| Upper and Lower Namoi Groundwater Sources | <i>Water Sharing Plan for the Upper and Lower Namoi Groundwater Sources 2019</i> |

Attachment C—List of pattern approved meters (non-urban)

Important: The Murray-Darling Basin Authority maintains a current list of pattern approved meters on its website: <https://www.mdba.gov.au/publications/mdba-reports/compliance-enforcement-documents>

A summary of this list, current at the time of publication, is provided in Table C. However the Authority will update the list from time to time, so **you should refer to the Authority's website for the most up to date list.**

Table C. List of non-urban pattern approved meters prepared by the Murray-Darling Basin Authority April 2020

| Certificate of Approval Number | Meter Model | Approved sizes (DN = internal pipe diameter in mm) | Approved maximum continuous flowrates m ³ /h (Q3) |
|--|--|--|--|
| CLOSED CONDUIT METERS | | | |
| 14/3/21 | KROHNE Model WATERFLUX 3070 Electromagnetic | DN25 – DN600 | 10 – 6,300 |
| 14/3/24 | Siemens Model MAG8000 Electromagnetic | DN50 – DN1200 | 63 – 12,500 |
| 14/3/29 | Arad Model Octave DN50 Ultrasonic | DN50 – DN200 | 40 – 400 |
| 14/3/30 | ABB Model AquaMaster3 FEV2 Electromagnetic | DN40 – DN200 | 40 – 1,000 |
| 14/3/32 | Aquamonix/Pentair Model I500 Electromagnetic | DN50 – DN600 Provisional approval: DN700 –DN1035 | 36 – 7,027 |
| 14/3/34 | Sensus Model WP-Dynamic | DN40 – DN400 | 25 – 2,000 |
| 14/3/36 | Euromag Model MUT 2200 EL Electromagnetic | DN40 – DN1000 | 25 – 3,600 |
| 14/3/42 | Rubicon Sonaray Pipe Meter Ultrasonic | DN600 | 42 – 1,313 |
| 14/3/44 | Arad WSTsb Woltman type (mechanical) | DN50 – DN300 | 63 – 1,000 |
| 14/3/46 | ABB AquaMaster4 Electromagnetic | DN40 - DN300 | 25 – 1,600 |
| 14/3/49 | Krohne Optiflux 2300C Electromagnetic | DN25 – DN1800 | 16 – 25,000 |
| 14/3/50 | Siemens MAG5100W Electromagnetic | DN50 – DN1200 | 63 – 16,000 |
| OPEN CHANNEL METERS - There are currently no pattern approved open channel meters. | | | |

Attachment D - Meter roll-out

The water sources referred to in stages 2 to 4 in Table D have been grouped into regions. Some water sharing plans contain water sources which span across these regions. To ensure that the roll-out dates are clear and consistent for users, all water sources will remain in the same region as the relevant water sharing plan for the purposes of the meter roll-out.

Table D. Meter roll-out stages

| Stage 1 surface pumps 500 mm + 1 December 2020 | Stage 2 Northern inland 1 December 2021 | Stage 3 Southern inland 1 December 2022 | Stage 4 Coastal area 1 December 2023 |
|---|--|--|---|
| <p>Surface water pumps authorised by the authority to be 500 mm or larger, or the pump installed is 500mm or larger</p> | <p>All remaining works in water sources in the following water sharing plans:</p> <ul style="list-style-type: none"> Barwon-Darling Unregulated and Alluvial Water Sources 2012 Castlereagh River Unregulated and Alluvial Water Sources 2011 Gwydir Regulated River Water Source 2016 Gwydir Unregulated and Alluvial Water Sources 2012 Intersecting Streams Unregulated and Alluvial Water Sources 2011 Lower Gwydir Groundwater Source 2019 Lower Macquarie Groundwater Sources 2019 Macquarie and Cudgegong Regulated Rivers Water Source 2016 Macquarie Bogan Unregulated and Alluvial Water Sources 2012 Namoi Unregulated and Alluvial Water Sources 2012 NSW Border Rivers Regulated River Water Source 2009 | <p>All remaining works in water sources in the following water sharing plans:</p> <ul style="list-style-type: none"> Belubula Regulated River Water Source 2012 Lachlan Regulated River Water Source 2016 Lachlan Unregulated and Alluvial Water Sources 2012 Lower Lachlan Groundwater Source 2003 Lower Murray Darling Unregulated and Alluvial Water Sources 2011 Lower Murray Groundwater Source 2019 Lower Murray Shallow Groundwater Source 2012 Lower Murrumbidgee Groundwater Sources 2019 Murray Unregulated and Alluvial Water Sources 2011 Murrumbidgee Regulated River Water Source 2016 Murrumbidgee Unregulated and Alluvial Water Sources 2012 New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2016 | <p>All remaining works in water sources in the following water sharing plans:</p> <ul style="list-style-type: none"> Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011 Bellinger River Area Unregulated and Alluvial Water Sources 2008 Brunswick Unregulated and Alluvial Water Sources 2016 Central Coast Unregulated Water Sources 2009 Clarence River Unregulated and Alluvial Water Sources 2016 Clyde River Unregulated and Alluvial Water Sources 2016 Coffs Harbour Area Unregulated and Alluvial Water Sources 2009 Deua River Unregulated and Alluvial Water Sources 2016 Greater Metropolitan Region Groundwater Sources 2011 Greater Metropolitan Region Unregulated River Water Sources 2011 Hunter Regulated River Water Source 2016 |

| Stage 1 surface pumps 500 mm + 1 December 2020 | Stage 2 Northern inland 1 December 2021 | Stage 3 Southern inland 1 December 2022 | Stage 4 Coastal area 1 December 2023 |
|--|---|--|--|
| | <p>NSW Border Rivers Unregulated and Alluvial Water Sources 2012</p> <p>NSW Great Artesian Basin Shallow Groundwater Sources 2011</p> <p>NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011</p> <p>NSW Murray Darling Basin Porous Rock Groundwater Sources 2011</p> <p>Peel Valley Regulated, Unregulated, Alluvium and Fractured Rock Water Sources 2010</p> <p>Upper and Lower Namoi Groundwater Sources 2019</p> <p>Upper Namoi and Lower Namoi Regulated River Water Sources 2016</p> <p>North Western Unregulated and Fractured Rock Water Sources 2011</p> <p>NSW Great Artesian Basin Groundwater Sources 2008</p> <p>and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 80, 85 or 90</p> | <p>and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 40, 50, 57, 60 or 70</p> | <p>Hunter Unregulated and Alluvial Water Sources 2009</p> <p>Lower North Coast Unregulated and Alluvial Water Sources 2009</p> <p>Macleay River Unregulated and Alluvial Water Sources 2016</p> <p>Murrah-Wallaga Area Unregulated and Alluvial Water Sources 2010</p> <p>Nambucca Unregulated and Alluvial Water Sources 2016</p> <p>North Coast Coastal Sands Groundwater Sources 2016</p> <p>North Coast Fractured and Porous Rock Groundwater Sources 2016</p> <p>Paterson Regulated River Water Source 2019</p> <p>Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010</p> <p>Snowy Genoa Unregulated and Alluvial Water Sources 2016</p> <p>South Coast Groundwater Sources 2016</p> <p>Towamba River Unregulated and Alluvial Water Sources 2010</p> <p>Tuross River Unregulated and Alluvial Water Sources 2016</p> <p>Tweed River Area Unregulated and Alluvial Water Sources 2010</p> <p>Hastings Unregulated and Alluvial Water Sources 2019</p> |

| Stage 1 surface pumps 500 mm + 1 December 2020 | Stage 2 Northern inland 1 December 2021 | Stage 3 Southern inland 1 December 2022 | Stage 4 Coastal area 1 December 2023 |
|---|--|--|---|
| | | | and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 10, 20 or 30 |

Attachment E - Duly qualified persons

Table E provides a summary of the qualifications, skills or experience required by a duly qualified person (as listed column 2) to perform activities in relation to metering equipment (as listed in column 1) correct as at the date of publication. However the list is subject to change, if the regulation is amended. Please refer to clause 236 of the *Water Management (General) Regulation 2018* for the current list.

Table E. Duly qualified person qualifications, skills or experience

| Activity | Qualification, skill or experience required to be a duly qualified person |
|---|--|
| Design | |
| Design metering equipment installed in connection with an open channel | Metering system designer Certified meter installer |
| Install metering equipment | |
| Install metering equipment | Certified meter installer |
| Telemetry | |
| Install, maintain or repair telemetry | Certified meter installer Telemetry technician Certified practising hydrographer |
| Validation | |
| Validate metering equipment (except open channel) | Certified meter installer who has experience in using intrusive and non-intrusive flow measurement testing equipment |
| Validate metering equipment in connection with an open channel | Certified meter installer who has experience in using intrusive and non-intrusive flow measurement testing equipment Certified Practising Hydrographer who is trained in the use of testing equipment |
| Testing | |
| Volumetric or simulated testing (in situ accuracy testing) for metering equipment (except open channel) | Certified meter installer who has experience in using intrusive and non-intrusive flow measurement testing equipment |

| Activity | Qualification, skill or experience required to be a duly qualified person |
|--|--|
| Volumetric testing (in situ accuracy testing) of metering equipment installed in connection with an open channel using in situ volumetric measurement procedures specified in AS4747 | Certified meter installer who has experience in using intrusive and non-intrusive flow measurement testing equipment Certified practising hydrographer who has experience in using intrusive and non-intrusive flow measurement testing equipment |
| Maintenance | |
| Maintenance activities that are required to be carried out annually or at more frequent intervals under the maintenance specifications (except open channel) | Certified meter installer* |
| Maintenance activities that are required to be carried out annually or at more frequent intervals under the maintenance specifications in relation to open channels | Certified meter installer* Certified practising hydrographer* |
| Maintenance activities that are required to be carried out every 5 years under the maintenance specifications (except open channel) | Certified meter installer Telemetry technician (but only in relation to telemetry maintenance activities) |
| Maintenance activities that are required to be carried out every 5 years under the maintenance specifications in relation to open channels | Certified meter installer Certified practising hydrographer |
| Repair faulty metering equipment | |
| Repair faulty metering equipment | Certified meter installer Certified practising hydrographer |

A **certified meter installer** means a person who holds a current certification as a meter installer issued by Irrigation Australia Ltd.

A **certified practising hydrographer** means a person who is listed as a certified practising hydrographer in the register of certified professionals kept by the Australian Hydrographers Association.

A **metering system designer** means a person who:

- holds a current certification as an irrigation designer or irrigation professional issued by Irrigation Australia Ltd, or
- holds a vocational education and training qualification in irrigation management, the installation of irrigation equipment or the design of irrigation equipment issued by a registered training organisation, or

- holds an engineering qualification issued by an Australian university and who has not less than 2 years experience in designing water management systems.

A **telemetry technician** means a person who:

- holds a current electrical licence, or
- holds a communications engineering qualification issued by an Australian university, or
- holds a telecommunications engineering qualification issued by an Australian university, or
- holds a vocational education and training qualification in radio communications or in electronics and communications issued by a registered training organisation.

* At the date of publication, the maintenance activities listed in column 2 of schedule 1 of the maintenance specifications published on the Department's website may also be carried out by the holder of the work approval, access licence or *Water Act 1912* entitlement.