



WATER MANAGEMENT

NSW Non-Urban Water Metering Policy

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NSW Non-Urban Water Metering Policy

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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 mandatory metering condition requiring metering equipment to be installed, used and properly maintained on all water supply work approvals. Any exceptions and other requirements for complying with the mandatory metering condition are covered in the regulation.

The regulation sets out the requirements that must be complied with by all holders of approvals, licences and entitlements who are subject to the mandatory metering condition. It also prescribes which approval holders are exempted from the mandatory metering condition, based on thresholds. The regulation also contains new record-keeping rules for holders of approvals, licences and entitlements, 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 commence on 1 December 2018. Some parts of the regulation relating to new and replacement meters, faulty meters and inactive works will commence on 1 April 2019.

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 water users need to have a meter
- **Part 2** outlines the standards that metering equipment will need to meet, including arrangements for existing meters
- **Part 3** describes the staged roll-out of metering requirements
- **Part 4** describes other requirements, including record-keeping and the requirements that apply when a meter is faulty
- **Part 5** describes the review of the regulation and policy that will occur after five years.

Part 1: Who needs a meter?

This section outlines the types of water take the policy and regulation apply to, and the categories of water users that need to install new meters, or maintain or upgrade existing meters.

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 *Water Management Act 2000*
- works taking water for state significant development, state significant infrastructure under the *Environmental Planning and Assessment Act 1979*, or prospecting or fossicking 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*.

The metering requirements do not apply to:

- works solely used to take water under basic landholder rights
- works where the take of water cannot be measured using a meter and the Minister has granted an exemption
- works solely used to take water that is exempt from the requirement for a water access licence
- works solely used to take water under a floodplain harvesting access licence
- surface water works marked as inactive on the water supply work approval.

See section 101A in the Water Management Amendment Act 2018 and the following clauses in the regulation: 229 and 231

Who needs a meter

You will **need a meter if you meet any of the meter thresholds:**

1. already required to meter or measure
2. infrastructure size
3. multiple works on the same licence, approval or landholding that meet the capacity threshold
4. at-risk groundwater sources.

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

Table 1: Metering thresholds

Already required to meter or measure	Infrastructure size— surface water	Infrastructure size— groundwater	Multiple works	At-risk groundwater
All users already required to meter or measure will need a meter.	100 mm works and above	200 mm works and above	If capacity is equivalent to size thresholds	All works metered regardless of size

See the following clause in the regulation: 231

Already required to meter or measure

Some water users are already legally required to have metering or measuring equipment installed as a condition of their water supply work approval, water access licence or *Water Act 1912* entitlement. These works are required to 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 for state significant infrastructure, state significant development 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* entitlement require the holder to have metering equipment, a flow measurement device, or an extraction measurement device to take water
- the approval holder has received a direction from the Minister to install or maintain metering equipment, a flow measurement device, or an extraction measurement device on the work (for example, a direction made pursuant to a condition on the approval, or a direction to install metering equipment made under section 326 of the *Water Management Act 2000*).

Water users should refer to the conditions of their water supply work approval, water access licence or *Water Act 1912* entitlement to identify whether they meet this threshold. The wording of conditions on your statement of conditions (for access licences) and statement of approvals can also be checked on the NSW Water Register available at: www.waternsw.com.au/nswwaterregister.

Infrastructure size

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

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

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

Table 2: Infrastructure size thresholds

Type of water source	Infrastructure size threshold
Surface water	All works (including open channels and closed pipes) are required to have a meter, except pumps where the authority authorises the use of a pump that is less than 100 mm .
Groundwater	All works (including individual spear points and batteries of spears) are required to have a meter, except water bores where the authority authorises the use of a bore with a diameter that is less than 200 mm , or if the authority does not specify the diameter and the water bore has a diameter that is less than 200mm.

How the infrastructure-size threshold will be applied

For surface water, unless the authority authorises the use of 1 surface pump that is below 100 mm, the work meets the infrastructure-size threshold and will need a meter.

In addition, if the authority does not specify a size for the pump, the work will need a meter.

For groundwater, unless the authority authorises the use of 1 water bore with a diameter that is below 200 mm, the work meets the infrastructure-size threshold and will need a meter. This means that all other groundwater works such as spear points and batteries of spears will need a meter.

In addition, if the authority does not specify a size for the water bore and the **size of the bore installed is 200 mm or larger**, the work will need a meter.

Where an authorised work meets the infrastructure size threshold, but the actual work installed on the ground is smaller than the infrastructure-size threshold, the work will require a meter unless the authority is amended to specify the actual size of the installed work.

Multiple works

Users with multiple works permitted by the same approval, entitlement or nominated by one access licence, or situated on the same landholding meet the multiple works threshold and are required to have meters on all their works, 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 is less than 160 mm
 - no more than 3 bores, each of which is less than 130 mm, or
 - no more than 4 bores, each of which is less than 120 mm.

The multiple works 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 multiple works 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) and (3)

At-risk groundwater sources

There are a number of 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
- 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 25 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

Exceptions to the metering requirement

A meter is not required for works:

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

Basic landholder rights works

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.

The government will be developing, and consulting on, reasonable use guidelines in 2019 to establish a method for determining reasonable water use for domestic and stock consumption pursuant to basic landholder rights.

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 takes *both* exempt water and licensed water will need a meter if the work meets one of the metering thresholds previously stated.

¹ Basic landholder rights means domestic and stock rights, harvestable rights or native title rights, set out in sections 52-55 of the *Water Management Act 2000*. Domestic and stock rights are different to the licensed take of water for domestic and stock purposes.

² The water access licence exemptions are specific circumstances where the take of water from a water source will not require a water access licence. The exemptions are contained in clause 21 and Part 1 of Schedule 4 to the *Water Management (General) Regulation 2018*.

Minister's exemption

Water users may be granted an exemption from the metering requirement if it is not possible for the water take to be measured by metering equipment.

The Minister can grant these exemptions but in practice this will be administered 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. The taking of water under a floodplain harvesting access licence will be subject to measurement requirements to be determined in stage two of the healthy floodplains project. The following link contains more information about this project: industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project

Inactive works

The exception for inactive works commences on 1 April 2019.

A surface water work that is marked as 'inactive' on the water supply work approval will not need a meter provided that:

- the work is marked as inactive on the approval (or access licence for state significant infrastructure, state significant development or fossicking)
- the approval or licence contains a condition that prohibit the work from being used to take water and from being capable of taking water from a water source
- all conditions applying to the inactive work are complied with.

This exception is only available to surface water works that have been disabled and that are not physically able to take water from a water source. It is not available for groundwater bores as they have specific decommissioning requirements to reduce the risk of contamination.

To be considered inactive, water users will need to demonstrate that the work is 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.	No – but note the thresholds will be reviewed after five years and they could change. You may still continue use your meter.
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.	Yes – or the approval/licence could be amended to reflect the size of the surface work. No - for water bores if the diameter of the constructed bore is less than 200 mm.
Your current approval, water access licence or <i>Water Act 1912</i> licence requires you to have a meter, flow measurement device or extraction measurement device installed.	Yes

Part 2: Standards for metering equipment

This section describes the metering standards that apply to those 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.

All new and replacement meters will need to comply with these standards from **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 on or after 1 April 2019.

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

Table 4: Standards for new and replacement meters

Pattern-approved	Installation to AS4747	Tamper-evident seals	Data logger	Telemetry	Maintenance
√ Or alternative option for open channels	√	√	√	√ Except surface water pumps authorised to be less than 200mm and Groundwater works	√

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, Innovation and Science.

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.

A list of pattern-approved meters for non-urban water take current at 15 November 2018 is found in Attachment C. The Murray-Darling Basin Authority will also publish a list of pattern-approved meters for non-urban use on its website from early 2019. This list will include the details of all pattern-approved meters for non-urban use, the minimum and maximum flow rates (Q ratings) for those meters, as well as information from

manufacturers about which models they are currently seeking pattern approval for and when the process will likely be complete. A link to this page will be provided on the department's website.

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

From the relevant roll-out date, all metering equipment must be installed by a duly qualified person and 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 approved by the Minister and published on the Department's website as well as gazetted.

A **duly qualified person** (DQP) is a person with the qualifications, skills or experience listed in clause 236 of the regulation. Attachment E contains a summary of the qualifications, skills or experience required by duly qualified persons.

Water users must ensure that a duly qualified person:

- installs or re-installs any metering equipment in connection with their works
- validates their metering equipment on installation, at least every five years (for closed pipe) or annually (for open channels), and in any other circumstances in which validation is required under AS 4747 (for example where maintenance activities impact on a feature assessed during a previous validation), and
- carries out all maintenance required to be carried out by a duly qualified person under the maintenance specifications approved by the Minister and published on the department's website.

A duly qualified person who validates metering equipment (on installation, re-installation or when otherwise required by AS4747) must provide a certificate to the relevant user, in the approved form, that the validation has been done in accordance with AS4747.

Where the metering equipment does not comply, a certificate in the approved form must be provided setting out the reasons why the equipment does not comply and modifications required for compliance, and the DQP must notify the Minister if they know or reasonably suspect that metering equipment they are installing or are carrying out work on has been tampered with.

It is an offence under the regulation if a duly qualified person fails to do any of the above. It is also an offence under section 91J of the *Water Management Act 2000* for a person to make a statement or furnish information in connection with a metering record the person knows to be false or misleading.

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

Tamper-evident seals

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

Metering equipment must be sealed after installation and resealed following re-installation or maintenance. It must also have a means of identifying whether interference has occurred with data readings or other electronic functions of the equipment including telemetry).

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.

Data loggers

Metering equipment must have a data logging capability that enables it to:

- collect, record and store the flow rate and cumulative volume of water taken at minimum hourly intervals. This must include the time and date of each interval and the period or periods for which water was taken, and
- retain the data for at least five years.

A single data logger may be used to store water data from one or more works, thereby allowing users to save on costs and tailor metering equipment to suit their needs.

The data logging capacity of metering equipment must comply with the data logging and telemetry specifications that will be approved by the Minister and published in the NSW Government Gazette. The specifications will be made by **1 April 2019** and will also be published on the Department's website.

The specifications will set out further requirements for data loggers such as collecting, recording and storing, which may include:

- data relating to the operation of the metering equipment, including power inputs and whether a work is turned on or off
- data relating to malfunctions that indicate whether the accuracy or other operation of metering equipment may be affected
- contextual data about the meter itself, the location and links to approvals and licences, maintenance data including power data (e.g. battery charge, solar cell faults), and compliance data, including evidence of tampering.

The specifications will also require data loggers to be telemetry ready (this means they will need to have a communications port to allow information to be transmitted electronically). In any case, it is recommended that all data loggers are telemetry ready, to reduce the later costs associated with retrofitting the metering equipment if telemetry is subsequently required.

See clause 4 of Schedule 8 in the regulation

Telemetry

All **surface water works must have telemetry, except for pumps** authorised to be **less than 200 mm**. This includes where the authority does not specify a size, where the pump installed is 200 mm or larger, and where the authority authorises the pump to be 200 mm or larger.

The telemetry requirement applies to new and replacement works from 1 December 2019 and to all other works from the relevant roll-out date.

In cases where a user has a work installed that is smaller than 200 mm and the authority lists the authorised work as 200 mm or larger or does not specify a size, the holder of the approval may wish to apply to have the approval amended to specify the actual size of the installed work.

Telemetry is not required for **groundwater works**.

Water users may voluntarily install telemetry equipment even if not prescribed.

Water users who do not meet the above criteria may still be directed to install telemetry by an order of the Minister made under section 326 of the *Water Management Act 2000*.

See clause 6 of Schedule 8 in the regulation

Data and telemetry specifications

All works that are required to have telemetry must comply with the data and telemetry specifications approved by the Minister and published in the NSW government gazette. The specifications will be made by **1 April 2019** and will also be published on the Department's website.

The specifications will deal with matters such as:

- the person to whom the data is to be transmitted
- the data that is required to be transmitted, and
- the method by which the data is to be transmitted.

Ownership of data

The government will own the data that it receives from water users. However, this will not prevent water users from accessing and using their data for their own purposes.

Maintenance

From 1 April 2019 all new or replacement metering equipment (surface water and groundwater works) must be:

- maintained in accordance with the maintenance specifications approved by the Minister
- 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.

The maintenance specifications will be gazetted and published on the Department's website. The maintenance specifications will contain the requirements for maintenance including:

- the frequency that maintenance needs to be carried out
- the different types of maintenance for different components of the metering equipment that needs to be carried out
- requirements for the maintenance of telemetry equipment.

Maintenance specifications apply to works taking water from both surface and ground water sources.

See clause 2 of Schedule 8 in the regulation

Standards for existing meters

Table 5 sets out the standards for existing meters. By the relevant roll-out date, users with works that meet the infrastructure size or multiple works thresholds must either:

- install a meter that meets the new standards, or
- ensure their existing meter is pattern-approved and validated, or confirmed as accurate, and meets the other standards for existing meters in Table 5 below.

An **existing meter** means a meter that was installed on an authorised work **before 1 April 2019**. Any meter installed from 1 April 2019 on a work that meets one of the metering thresholds under Part 1 must meet the new meter standards.

Users with works that are below the infrastructure size and multiple works thresholds but who are still required to have a meter must ensure their existing meter operates properly. When it no longer operates properly, the meter must be replaced with one that meets the new standards.

Table 5: Standards for existing meters

Circumstance	Comply with existing metering requirements	Confirm existing meter is accurate	Pattern-approved	Tamper-evident seals	Data logger	Telemetry	Maintenance
Work meets the infrastructure size or multiple works threshold	√ until roll-out date	√ by roll-out date and at five-year intervals	-	√ from roll-out date	√ from roll-out date	√ from roll-out date, except surface water pumps authorised to be less than 200mm and Groundwater works	√ from roll-out date
Work is below the infrastructure size or multiple works threshold, but: <ul style="list-style-type: none"> • the work is already required to have a meter or • is located in an at-risk groundwater source 	√	-	-	-	-	-	- but must ensure metering equipment is operating properly ³

³ In accordance with section 91H (2) of the *Water Management Act 2000*.

Existing pattern-approved meters

Users with works that meet the infrastructure size or multiple works threshold and who wish to keep their 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 within the last five years
- submit a report and supporting documentation to the Minister confirming that the meter is pattern-approved and has been validated by a duly qualified person within the last five years
- install a data-logger, tamper-evident seals and telemetry (unless the work is a surface water pump authorised to be less than 200 mm or a groundwater work), if not already installed.

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 and by a person who meets the new criteria of a duly qualified person.

Users with works that are below the infrastructure size and multiple works thresholds and who wish to keep their existing pattern-approved meter will need to ensure the meter operates properly. When it no longer operates properly, the meter must be replaced with one that meets the new standards.

Existing meters that are not pattern-approved

Users with works that meet the infrastructure size or multiple works threshold and who wish to keep their existing meter that is **not pattern-approved** will need to do the following by the roll-out date:

- ensure the accuracy of the meter has been confirmed
- submit a report and supporting documentation to the Minister confirming the accuracy of the meter
- install a data-logger, tamper-evident seals and telemetry (unless the work is a surface water pump authorised to be less than 200 mm or a groundwater work), if not already installed.

Users with works that are below the infrastructure size and multiple works thresholds and who wish to keep their existing meter that is not pattern-approved will need to ensure the meter operates properly. When it no longer operates properly, the meter must be replaced with one that meets the new standards.

How to confirm accuracy of an existing meter

To confirm the accuracy of an existing meter that is **not pattern-approved** a user may provide to the Minister (before the roll-out date) a report, together with supporting documentation, to prove that:

1. (a) the meter has been validated within the last five years by a duly qualified person, and
(b) the maximum error of the meter did not exceed +/- 2.5 % after manufacture as confirmed by a written manufacturer's certificate, or
2. (a) the metering equipment has been checked for accuracy within the last five years by a duly qualified person, and
(b) the check determined that the maximum permissible error of the metering equipment did not exceed +/- 5 % in the field.

Ways that a user may confirm that the maximum permissible error of their meter did not exceed +/- 5 % in the field include in-situ volumetric measurement, or in-series metering with another temporary pattern-approved meter.

Duly qualified persons

A duly qualified person means a person with the qualifications, skill or experience to carry out meter validation as listed in clause 236 of the regulation. A summary of the qualifications, skill or experience required by a duly qualified person to carry out meter validation is at Attachment E.

A **duly qualified person** who:

- checks existing metering equipment for accuracy must provide the person for whom the check is done with a certificate, in the approved form, certifying whether or not the maximum permissible error of the metering equipment does or does not exceed +/- 5 % in the field
- validates metering equipment must provide a certificate to the user, in the approved form, that the validation has been done in accordance with AS4747. Where the equipment does not conform, a certificate in the approved form must be provided setting out the reasons why the equipment could not be validated and modifications required for compliance.

See clauses 8 and 9 of Schedule 8 to the regulation

Maintenance requirements for existing meters

All users with works that meet the metering thresholds who wish to keep their existing meter must ensure the meter is operating properly until the relevant roll-out date.

From the roll-out date:

- users with works that meet the infrastructure size thresholds or the multiple works threshold will be required to maintain their metering equipment in accordance with the maintenance specifications approved by the Minister and published in the Gazette and on the department's website
- users with works that do not meet the infrastructure size thresholds or the multiple works threshold, but meet the already required to meter or at-risk groundwater sources thresholds will need to continue to ensure the meter operates properly.⁴ The maintenance specifications will not apply to these users. However if the meter no longer operates properly, it will need to be replaced with one that complies with the new meter standards.

All users that meet the metering thresholds and who wish to keep their existing meter must also:

- have the metering equipment 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, or
- for those relying on the accuracy confirmation (above) – have the metering equipment checked by a duly qualified person every five years (or every 12 months for open channels) to confirm that it does not exceed +/- 5 % in the field.

⁴ It is a requirement of section 91H (2) of the *Water Management Act 2000* to ensure the proper operation of any metering equipment that has been installed in connection with a water management work.

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

Table 6: 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 or multiple works 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 tamper-evident seals and data logger • install telemetry (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 works 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 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 2019).

For existing meters, the metering requirements will be rolled-out in a staged manner as shown in Table 7 below. This is date by which an existing meter needs to either be brought up to standard to meet the standards for existing meters (described in part 2 above), or where it cannot meet those standards, be replaced with a new meter that meets the new meter standards.

The staged roll-out takes a risk-based approach by ensuring that the largest water users in NSW are metered and telemetered within a year of the metering requirements commencing, by 1 December 2019. The staged roll-out of the metering requirements over the following four years 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 7: Roll-out dates for meters

Stage	Works covered	Roll-out date
1	Large works: Surface water pumps authorised by the authority to be 500 mm or larger, or the pump installed is 500 mm or larger	1 December 2019
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 2020
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 2021
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

Part 4: Other requirements

Requirements to keep and provide records

Users required to have meters

Users required to have meters (because they meet 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 confirm the accuracy of existing metering equipment (described in Part 2 above) – this includes the manufacturer’s certificate of the accuracy of the metering equipment and records of any check of the accuracy of the metering equipment.

Copies of any certificates from a duly qualified person relating to validation of metering equipment need to be **provided** to the Minister within 28 days of receipt.

Users required to have meters must also **record** the following information within 24 hours after water is taken and keep the record for five years:

- when water is taken under a basic landholder rights entitlement (for meters used to take both licensed water and basic landholder rights water)
- when water is taken under a water access licence exemption (for meters used to take both licensed water and under an exemption) , and
- that water has been taken in compliance with any conditions of the approval, licence or entitlement limiting water take (for example, cease to pump or commence to pump conditions).

Users will be required to keep the records in the manner and form approved by the Minister as notified on the Department’s website. This may be through an online interface, which will allow water users to submit these records online.

Under section 91J of the *Water Management Act 2000*, 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.

See the following clauses in the regulation: 238 and 244

Users not required to have meters

From 1 December 2019, licensed water users who are not required to have a meter will be subject to a new mandatory condition requiring them to keep certain records about their water take. This will replace any existing log book requirements.

Users will be required to keep the records in the manner and form approved by the Minister as notified on the Department’s website. This may be through an online interface, which will allow water users to submit these records online.

See clause 250 in the regulation

Faulty meters

These new requirements for faulty meters commence on 1 April 2019.

The 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 *Water Management Act 2000* to take water while a meter is not operating or not operating properly.

It is also a new 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 or when power supply is lost.

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 faulty, users will be required to report the following information to the Minister in the form approved by the Minister:

- 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.

Options will be made available to facilitate how this information can be provided.

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 911 (3) of the *Water Management Act 2000*, if the user complies with the following proposed 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 record the following information in the manner and form approved by the Minister and notified on the Department's website. The government will develop an online portal so that water users will be able to make and submit the following records through the portal:

- 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 the Minister, by notice in writing to the person, 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 by the Minister, 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 the Minister 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 the Minister in the approved form:

- 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 5: Review

The 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 *Water Management Act 2000* 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 <i>Water Management Act 2000</i>
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

All works in these at-risk groundwater sources need meters, even if they are below the infrastructure size threshold.

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 2003</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 2003</i>
Lower Murray Groundwater Source	<i>Water Sharing Plan for the Lower Murray Groundwater Source</i>
Lower Murrumbidgee Groundwater Sources	<i>Water Sharing Plan for the Lower Murrumbidgee Groundwater Sources 2003</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 Quirindi Alluvial Groundwater Source	<i>Water Sharing Plan for the Namoi Unregulated Water Sources 2012</i>
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>

Water source	Water sharing plan
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 2003</i>

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

This list has been prepared by the National Measurement Institute and is correct at the date of publication (November 2018). However the list is subject to change. Please refer to the National Measurement Institute's website for the most current list of pattern-approved meters (note that at the date of publication, the water meters in the online NMI list include both urban and non-urban meters):

www.measurement.gov.au/Publications/CertificateOfApproval/OtherInstruments/Water_utility_Meters

Table C. List of non-urban pattern-approved meters prepared by the National Measurement Institute dated 15 November 2018

Certificate of Approval Number	Meter Model	Approved sizes (DN = internal pipe diameter in millimetres)	Approved maximum continuous flowrates (Q3)
14/3/21	KROHNE Model WATERFLUX 3070	DN25 – DN600	10m ³ /h – 6,300m ³ /h
14/3/24	Siemens Model MAG8000	DN50 – DN1200	63m ³ /h – 12,500m ³ /h
14/3/29	Arad Model Octave DN50	DN50 – DN200	40m ³ /h – 400m ³ /h
14/3/30	ABB Model AquaMaster3 FEV2	DN40 – DN200	40m ³ /h – 1,000m ³ /h
14/3/32	Aquamonix/Pentair Model I500	DN50 – DN600 Provisional approval: DN700 – DN1000	10L/s – 1953.4L/s
14/3/34	Sensus Model WP-Dynamic	DN40 – DN400	25m ³ /h – 2,000m ³ /h
14/3/36	Euromag Model MUT 2200 EL	DN40 – DN600	25m ³ /h – 3,600m ³ /h
P14/3/42	Rubicon Sonaray Pipe Meter	DN600	1ML/d – 31.5ML/d

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— December 2019	Stage 2 Northern inland— December 2020	Stage 3 Southern inland—December 2021	Stage 4 Coast— 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> <p>Barwon-Darling Unregulated and Alluvial Water Sources 2012</p> <p>Castlereagh River Unregulated and Alluvial Water Sources 2011</p> <p>Gwydir Regulated River Water Source 2016</p> <p>Gwydir Unregulated and Alluvial Water Sources 2012</p> <p>Intersecting Streams Unregulated and Alluvial Water Sources 2011</p> <p>Lower Gwydir Groundwater Source 2003</p> <p>Lower Macquarie Groundwater Sources 2003</p> <p>Macquarie and Cudgegong Regulated Rivers Water Source 2016</p> <p>Macquarie Bogan Unregulated and Alluvial Water Sources 2012</p> <p>Namoi Unregulated and Alluvial Water Sources 2012</p> <p>NSW Border Rivers Regulated River Water Source 2009</p> <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 2003</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>All remaining works in water sources in the following water sharing plans:</p> <p>Belubula Regulated River Water Source 2012</p> <p>Lachlan Regulated River Water Source 2016</p> <p>Lachlan Unregulated and Alluvial Water Sources 2012</p> <p>Lower Lachlan Groundwater Source 2003</p> <p>Lower Murray Darling Unregulated and Alluvial Water Sources 2011</p> <p>Lower Murray Groundwater Source</p> <p>Lower Murray Shallow Groundwater Source 2012</p> <p>Lower Murrumbidgee Groundwater Sources 2003</p> <p>Murray Unregulated and Alluvial Water Sources 2011</p> <p>Murrumbidgee Regulated River Water Source 2016</p> <p>Murrumbidgee Unregulated and Alluvial Water Sources 2012</p> <p>New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2016</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>All remaining works in water sources in the following water sharing plans:</p> <p>Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011</p> <p>Bellinger River Area Unregulated and Alluvial Water Sources 2008</p> <p>Brunswick Unregulated and Alluvial Water Sources 2016</p> <p>Central Coast Unregulated Water Sources 2009</p> <p>Clarence River Unregulated and Alluvial Water Sources 2016</p> <p>Clyde River Unregulated and Alluvial Water Sources 2016</p> <p>Coffs Harbour Area Unregulated and Alluvial Water Sources 2009</p> <p>Deua River Unregulated and Alluvial Water Sources 2016</p> <p>Greater Metropolitan Region Groundwater Sources 2011</p> <p>Greater Metropolitan Region Unregulated River Water Sources 2011</p> <p>Hunter Regulated River Water Source 2016</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>Murrumbidgee 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 2007</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 (expected to commence September 2018)</p> <p>and all works under a <i>Water Act 1912</i> entitlement with a number that begins with 10, 20 or 30</p>

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
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

Activity	Qualification, skill or experience required to be a duly qualified person
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
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

* At the date of publication, the maintenance activities listed in column 2 of schedule 1 of the Maintenance Specifications 2018 may also be carried out by the holder of the work approval, access licence or *Water Act 1912* entitlement.

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 two 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.