

Due to the disallowance of the amendments to the Water Management (General) Regulation 2018 that relate to floodplain harvesting, implementation dates for the NSW Floodplain Harvesting Policy are uncertain. The dates specified in our reports and guidelines may therefore be superseded.



HEALTHY FLOODPLAINS PROJECT

NSW Floodplain Harvesting Measurement Policy

July 2020



Published by NSW Department of Planning, Industry and Environment

dpie.nsw.gov.au

Title: NSW Floodplain Harvesting Measurement Policy

First published: July 2020

Department reference number: PUB20/5

© State of New South Wales through Department of Planning, Industry and Environment 2020. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided that you attribute the Department of Planning, Industry and Environment as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication in advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (July 2020) and may not be accurate, current or complete. The State of New South Wales (including the NSW Department of Planning, Industry and Environment), the author and the publisher take no responsibility, and will accept no liability, for the accuracy, currency, reliability or correctness of any information included in the document (including material provided by third parties). Readers should make their own inquiries and rely on their own advice when making decisions related to material contained in this publication.

Contents

Executive summary	1
Landholder responsibilities	1
Measurement methods	1
Devices	1
Measurement periods and reporting	2
Creating different measurement areas on farm	2
The rollout of the policy	2
Additional condition for Stage 2	3
Introduction	4
The NSW Floodplain Harvesting Policy	4
The NSW Floodplain Harvesting Measurement Policy	4
Part 1: Meeting measurement objectives and providing flexibility	6
Part 2: Measurement methods	7
Storage measurement	7
Point-of-intake measurement	10
Part 3: Storage meter standards	11
Minimum specifications for storage meters and local intelligence devices	11
Storage meters for storage measurement	11
Local intelligence devices	11
Data ownership	11
Maintenance	11
Existing storage meters for floodplain harvesting	12
Installation, calibration and validation by duly qualified persons	12
Certificates for landholders	13
Part 4: Accounting and reporting requirements	13
Floodplain harvesting accounting and measurement period	13
Floodplain harvesting using storage measurement	13
Floodplain harvesting reporting	14
Existing storage meters	15
Contaminated run-off provisions	15
Part 5: Meter failure provisions	15
Storage meter or telemetry failure	15
Redundancy system during the faulty meter period	15
Part 6: Staged rollout of measurement requirements	15
Deadline for compliance	16
Part 7: Review and evaluation of the policy	16

Part 8: Next steps	16
Part 9: References	18
Part 10: Glossary	19
Appendix A - Consultation	21
Appendix B—Buffer zones	22
Appendix C—Minimum specifications for sensors	23
Appendix D—Meter failure provisions	24
Conditions for an extension	25

Executive summary

The NSW Floodplain Harvesting Measurement Policy sets out the objectives, methods and rules for floodplain harvesting measurement in the northern Murray–Darling Basin. The policy aims to ensure a fair share of water for all: Aboriginal and First Nations peoples, irrigated and non-irrigated agricultural producers; downstream users and communities; the environment; and river systems throughout the Murray-Darling Basin.

To ensure high-quality data informs compliance with state and federal legal limits, the NSW Government requires landholders receiving a floodplain harvesting access licence to contract a duly qualified person to install telemetry-enabled storage meters that meet the Minister’s minimum specifications outlined in the policy. The move to automated storage meters for floodplain harvesting measurement aligns with other water reforms such as the NSW Non-urban Water Metering Framework (2018).

Together, these programs will deliver accurate and reliable water take data for managing our valuable water resources. This will create a foundation for delivering a strong compliance and enforcement framework for water taken in NSW. It will promote fairness and equity for all users and the riverine environment.

Landholder responsibilities

The policy applies to landholders in the northern Murray–Darling Basin who will receive a floodplain harvesting access licence under the NSW Floodplain Harvesting Policy (2018).

The conditions of the landholder’s water supply work approval will apply the requirements of the NSW Floodplain Harvesting Measurement Policy. By complying with the policy, landholders who receive a floodplain harvesting access licence will ensure that they remain within their licence limit and conditions.

Measurement methods

Two measurement methods are offered under this policy:

- 1) storage measurement, and
- 2) point-of-intake measurement.

The storage measurement method is the default method provided by this policy. Landholders can only choose to use point-of-intake measurement, if the landholder’s application is assessed to meet specific requirements by the Measurement Technical Panel (Part 1 details this Panel’s responsibilities).

Devices

Landholders must be a duly qualified person or contract a duly qualified person to install storage meters that meet the Minister’s minimum specifications.

The Minister will accept existing storage meters—under certain conditions—until the end of the storage meter’s life. Landholders must then have existing storage meters replaced with a storage meter that meets the Minister’s minimum specifications. Duly qualified persons must verify the installation of all existing storage meters.

If a storage meter, telemetry or related structure fails, the landholder must notify the Minister within 24 hours of becoming aware. Landholders will have 21 days to repair or replace their faulty storage meter, telemetry or structure. They will be permitted to floodplain harvest in this time if they have a preinstalled, redundancy system that meets the Minister’s specifications to measure take during this period.

Measurement periods and reporting

Landholders must notify the Minister of the start and end of each floodplain harvesting event that they take from in near real time. This is the only time that they will be permitted to floodplain harvest. For the purpose of this policy, the time between starting and ending the nomination is referred to as the 'measurement period'. Landholders will have access to their measurement data in near real-time to keep account of how much water has been floodplain harvested, to ensure they stay within their licence limit.

Landholders must report the total volume floodplain harvested by no later than 28 days after the end of each measurement period and the end of each water year. During a measurement period, landholders must send the Minister data from their existing storage meters weekly and data on any non-floodplain inputs to on-farm storages fitted with storage meters fortnightly.

Creating different measurement areas on farm

Landholders may apply to the Minister to subdivide their water supply work approval in order to create different measurement areas, provided that the areas are separated by controlling infrastructure.

Landholders will only be permitted to transfer water between subdivided water supply work approval areas outside of a measurement period.

Property measurement plans

Landholders are encouraged to develop 'property measurement plans' that describe how they are implementing the requirements of this policy on-farm. These property management plans will be an important communication tool between the landholder and the Natural Resources Access Regulator should there be any investigations into non-compliance.

The rollout of the policy

The NSW Floodplain Harvesting Measurement Policy will have a staged rollout over two years:

- New storages meters using the default measurement method must be installed and verified in accordance with the timeframes in Table 1.
- Existing storage meters using the default measurement method must be verified by 1 July 2021.
- Meters using the point of intake measurement method must be assessed by the Measurement Technical Panel, approved by the Minister, installed and verified by 1 July 2022.

Table 1. Policy rollout stages

Stage	Capacity and frequency of filling of on-farm storages listed on a landholder's work approval	Deadline for installing and certifying a storage meter that meets the Minister's specifications
Stage 1	1,000 ML or greater	1 July 2021

Stage	Capacity and frequency of filling of on-farm storages listed on a landholder's work approval	Deadline for installing and certifying a storage meter that meets the Minister's specifications
Stage 2	Less than 1,000 ML Storages used less frequently than 1 in 7 years on average ¹	1 July 2022

Additional condition for Stage 2

Landholders in the Stage 2 category must have a redundancy system installed, in accordance with the Minister's 'Redundancy system specifications', if they wish to floodplain harvest between 1 July 2021 and 1 July 2022.

Unexpected delays

The implementation timeframe for this policy is predicated on landholders in Stage 1 having a minimum of 9 months to organise installation of storage meters. Should all the required elements of this policy, excluding supporting documentation such as guidelines, not be in place by 1 October 2020, then the Minister will publish communication to explain how these delays affect the rollout.

¹ The Waterbody area mapping tool will be used to assess dam frequency of filling which is based on Landsat imagery time series from 1987 to 2019. To qualify for stage 2 roll out, landholders must contact the department to assess whether their storage filling frequency meets the threshold specified in this policy.

Introduction

The NSW Floodplain Harvesting Policy

The NSW Floodplain Harvesting Policy was established in 2013 to formally incorporate floodplain harvesting into the NSW water licensing framework. The Floodplain Harvesting Policy is now being implemented across the northern Murray–Darling Basin valleys of NSW; it involves creating new work approvals, licences and rules for floodplain harvesting. This is the best way to ensure that all water users, Aboriginal and First Nations peoples and the environment, get their fair share.

Historically, floodplain harvesting diversions have been unlicensed and unmonitored in NSW. Floodplain harvesting is now estimated to account for between 15 and 35 percent, varying significantly between the valleys and from year to year, of the overall historic surface water take in northern Murray–Darling Basin of NSW.

Given the significant volume of water that floodplain harvesting accounts for, it is essential that access is managed within a sound policy and regulatory framework. This will ensure:

- the future security of water access for all water users in the Murray–Darling Basin
- a fair share of water for Aboriginal and First Nations peoples, for downstream users, to protect the environment and the health of river systems throughout the Murray–Darling Basin.

The NSW Government acknowledges that water harvested from floodplains has become crucially important to the irrigation industry in the northern basin and that irrigated agricultural production contributes a substantial component of the northern NSW economy, creating jobs in regional communities. The government also acknowledges that unmanaged floodplain harvesting in the northern basin has had significant cumulative negative impacts on Aboriginal culture and traditional practices, non-irrigated agricultural production, downstream communities and provision of ecological services. This policy reflects the first ever measurement requirements for floodplain harvesting in NSW and leads the way across Australia.

Under the NSW Floodplain Harvesting Policy (2018), volumetric floodplain harvesting access licences will be issued to eligible property owners to recognise historic take while ensuring that floodplain harvesting diversions are managed within the legal limits prescribed in the Murray–Darling *Basin Plan 2012* and the NSW water sharing plans.

The NSW Floodplain Harvesting Measurement Policy

The Minister requires landholders who receive a floodplain harvesting access licence to contract a duly qualified person to install telemetry-enabled metering equipment, as specified in this policy. The purpose of the policy is to accurately measure floodplain harvesting to ensure that:

- landholders remain within their floodplain harvesting access licence limits
- overall take is maintained within statutory water limits and
- fairness and equity for water users and the environment in the basin improves.

The policy is an integral part of a transparent and robust framework that meets the recommendations of the Murray–Darling Basin Authority Compliance Review (2017), the commitments made through the Murray–Darling Basin Compliance Compact (2018), and the commitments made under the NSW Floodplain Harvesting Action Plan (2019).

The Department of Planning, Industry and Environment has consulted a wide range of stakeholders several times about developing a measurement approach for floodplain harvesting. These consultations have included users directly affected by the reforms in the northern basin;

Aboriginal and First Nations peoples, downstream users and communities; and environmental groups (Appendix A).

The objectives of the policy are to:

- measure all water floodplain harvested that is directly used or collected and impounded in on-farm storages
- ensure metering equipment fitted to on-farm storages, pipes and pumps are reliable, accurate and tamper-evident
- ensure measurement requirements are practical, cost effective and can be implemented effectively and safely
- ensure measurement data is readily available to inform farming decisions and landholder calculations of take, as well as monitoring and evaluation programs
- ensure measurement requirements generate enough data to trigger an investigation into non-compliance.

The department have used these objectives to guide the policy settings and will use them for evaluating the performance of the policy in the future.

Part 1: Meeting measurement objectives and providing flexibility

It is the landholder's responsibility to measure the total floodplain harvested volume that is directly used or collected and impounded in on-farm storages. Two measurement methods have been developed to provide flexibility whilst ensuring that the objectives of the policy are not undermined.

Landholders may apply to subdivide their water supply work approval in order to create different measurement areas, provided that the areas are separated by controlling infrastructure.

The landholder may apply different measurement periods and measurement methods to each of these subdivided areas. This option may be attractive for very large properties that access floodplain water from functionally separate areas in the landscape. It will be an offence to transfer water from one subdivided area to another during any floodplain harvesting measurement period nominated in one or more of the subdivided areas.

Property measurement plans

Landholders are encouraged to develop 'property measurement plans' that describe how they are implementing the requirements of this policy on-farm. These property management plans will be an important communication tool between the landholder and the Natural Resources Access Regulator should there be any investigations into non-compliance.

Property measurement plans should include:

- how, when and where floodplain water enters the property
- where the meters that meet the Minister's specifications are located on farm
- where existing meters are located on farm
- where any installed redundancy systems are located on farm
- how and when a landholder proposes to nominate their measurement period
- where buffer zones are located on farm
- measurement areas achieved through subdividing water supply work approvals noting the controlling infrastructure that separates them

Measurement Technical Panel

An expert advisory panel titled the Measurement Technical Panel will be appointed by the Minister to support implementation of this Policy. Advice from the Measurement Technical Panel will be considered by the Minister.

A landholder must seek advice from the Measurement Technical Panel before:

- the point of intake measurement method is adopted
- a water supply work approval is subdivided into two or more separate approvals
- an on-farm storage is removed from a water supply work approval

If a landholder believes that they cannot comply with one or more of the requirements of this policy, they may seek advice from the Measurement Technical Panel on alternate measuring options that ensure that all floodplain harvesting that is directly used or is collected and impounded in an on-farm storage is measured.

Terms of reference and guidelines to support a landholder application to the Measurement Technical Panel will be published.

Part 2: Measurement methods

Floodplain harvesting occurs when water is either directly used or is collected and impounded in an on-farm storage. For the purposes of this policy, on-farm storages are any dam, surge or field where floodplain harvested water is stored outside a floodplain harvesting measurement period.

For the majority of farm layouts, the most practical and cost-effective place to measure floodplain water will be at the on-farm storage (Figures 1 and 2). In some instances, measuring intake points may either be required to meet the policy's objectives or may be preferable to the landholder.

Storage measurement

This is the default measurement method. Under this method, a certified storage meter installer and validator must fit a storage meter that meets the policy's minimum specifications to any on-farm storage where a landholder intends to store floodplain harvested water outside of a floodplain harvesting measurement period.

Storage meters log water level data and transmit it to the data acquisition service. Detailed storage curves using LiDAR have been developed to translate water level data for each on-farm storage into volumes. Each storage will be required to have a survey benchmark installed in Australian Height Datum.

Guidelines for updating storage curves and installing storage benchmarks will be published upon release of the policy.

Surge areas, field storage and purpose-built dams that are used to hold water temporarily within a floodplain harvesting measurement period are not required to be fitted with a storage meter. Storages used in this way are referred to as buffer zones (see Appendix B).

Landholders must amend their water supply work approval if they want to add or remove the on-farm storages that they use for floodplain harvesting. If an on-farm storage is not nominated on a water supply work approval then it can only operate as a buffer zone during a measurement period.

If a landholder wants to remove an on-farm storage from their water supply work approval they must:

- provide a justification as to why they no longer require that on-farm storage for floodplain harvesting and evidence to demonstrate that it is no longer capable of floodplain harvesting (i.e. no gravity filled storages will be permitted to be removed)
- be prepared to justify (on request from the Natural Resources Access Regulator) why water stored in that storage during a measurement period is not floodplain harvested water.

When using this method it will be an offence for a landholder to:

- use water directly from any on-farm storage with a storage meter that meets the Minister's specifications prior to the end of a measurement period being nominated
- irrigate during a nominated measurement period unless the water being used to irrigate has already been debited under another non-floodplain harvesting access licence
- nominate the end of a measurement period before all water in the buffer zone has been transferred to an on-farm storage fitted with a storage meter that meets the Minister's specifications.

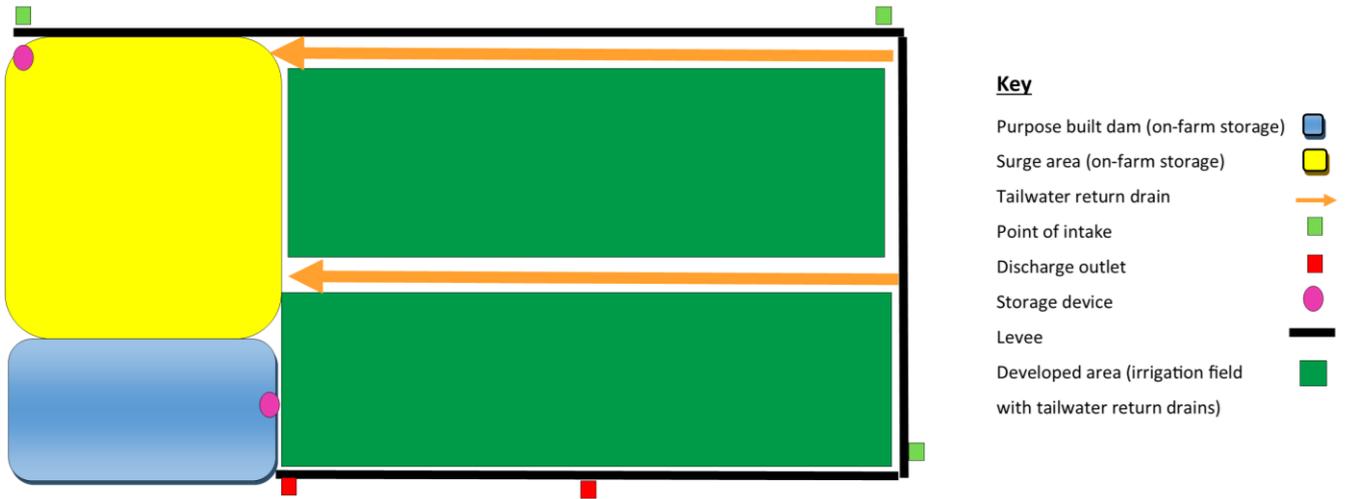


Figure 1. Storage measurement using storage meters

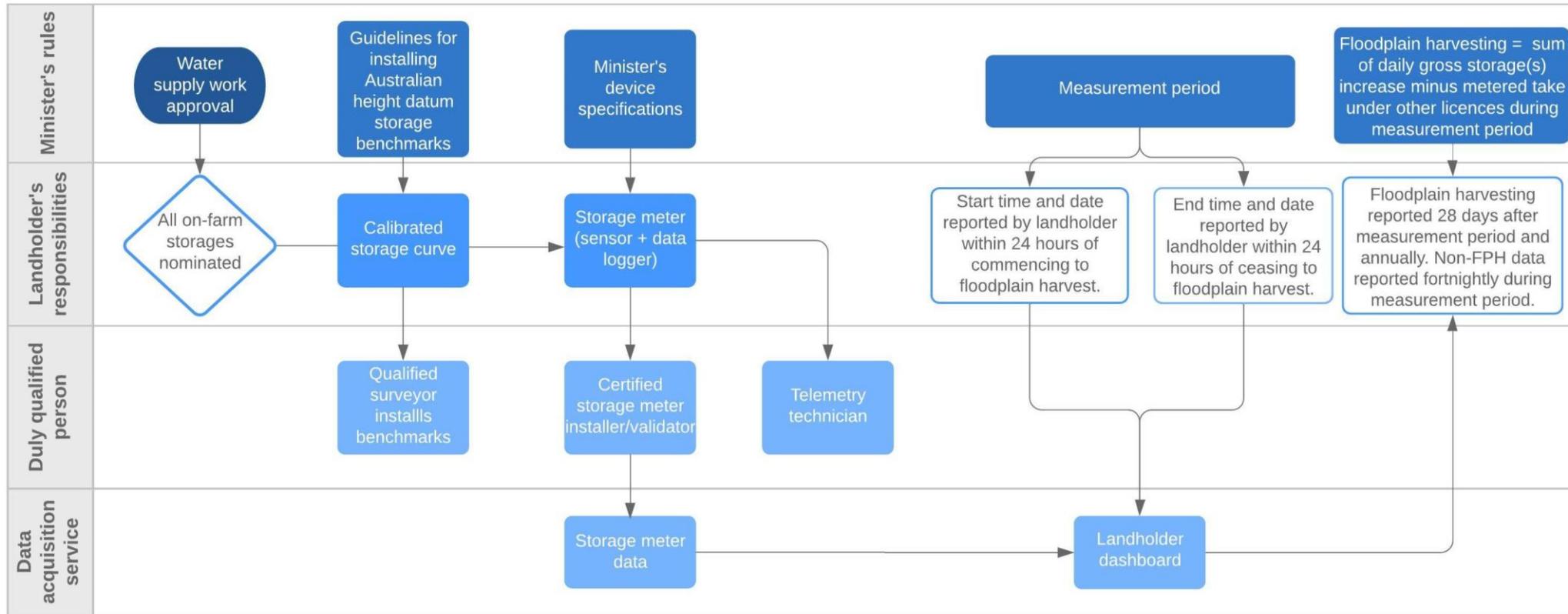


Figure 2. Overview of the policy for using storage meters for floodplain harvesting measurement

Point-of-intake measurement

Point-of-intake measurement using meters can only be adopted in situations when all floodplain harvesting intake points (excluding tailwater return drains) can be measured. Prior to adopting this method, landholders will have to provide evidence of how they satisfy the requirement to meter all intake points (excluding tailwater return drains). This evidence will be assessed by a Measurement Technical Panel and the landholder will be provided with a decision of whether they satisfy the Minister’s requirements.

This measurement method may be attractive to landholders who have;

- a small number of intake points; and/or that
- directly use floodplain harvested water prior to transferring it to an on-farm storage

The point-of-intake measurement method requires a landholder to have a certified meter installer fit a meter on all intake points listed on their water supply work approval (Figure 3). These meters will need to be integrated with a local intelligence device that meets the Minister’s specifications.

If a landholder no longer wishes to use an intake point for floodplain harvesting, they can amend their water supply work approval to make the work ‘inactive’. The landholder will not be required to fit a meter to this inactive work. If this amendment is approved, it will be an offence to floodplain harvest using the inactive work.

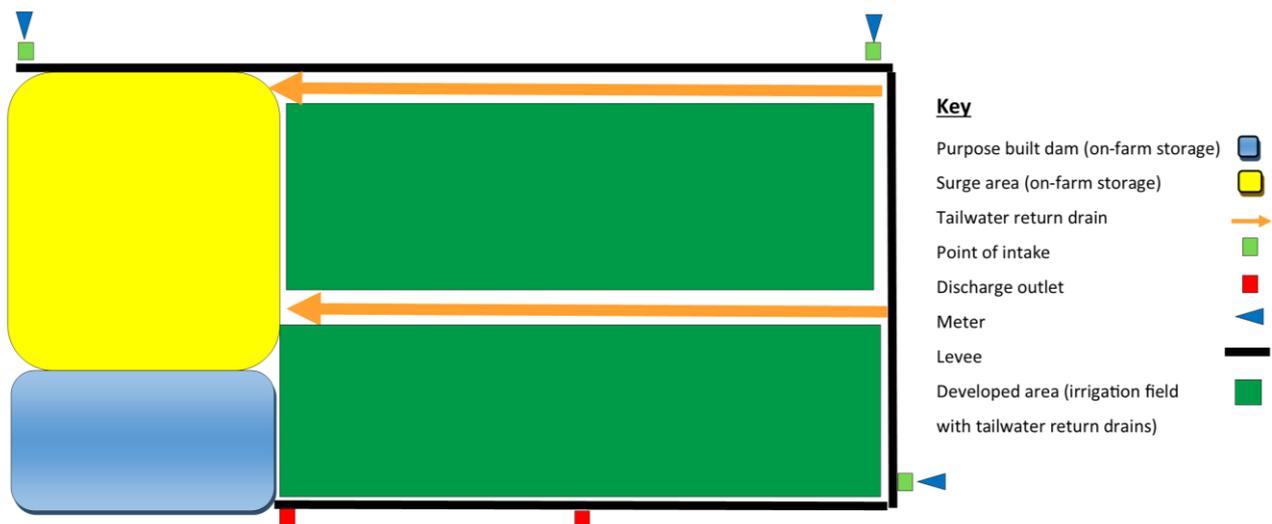


Figure 3. Point-of-intake measurement using meters

Part 3: Storage meter standards

Minimum specifications for storage meters and local intelligence devices

Storage meters for storage measurement

Several different storage meter technologies were considered for floodplain harvesting measurement. Many types, however, were excluded because:

- people could tamper with them
- the technology was becoming outdated and not fit-for-purpose
- meter costs were too high
- they were susceptible to environmental conditions.

As such, the Minister accepts only radar and submersible storage sensors for floodplain harvesting measurement at on-farm storages. For clarity, storage sensors integrated with local intelligence devices are called storage meters.

All new storage meters installed must meet the minimum acceptable specifications for storage meters (see Appendix C—Minimum specifications for sensors). A list of the storage meters that meet these specifications have been provided on the department's website.

Any vendor can submit for assessment a storage meter not listed on the department's website. The Minister will assess whether it meets the minimum specifications. If the storage meter meets the specifications, it will be tested for compatibility with the local intelligence devices listed on the department's website. If the integrated storage meter is deemed to be compatible, the department will add it to the list on the department's website.

Local intelligence devices

All storage meters must be integrated with a local intelligence device that meets the Minister's specifications for data logging and telemetry. These specifications will be published on the department's website.

Data ownership

In accordance with the NSW Non-Urban Water Metering Framework (2018), the NSW Government will own the data that it receives from landholders via the data acquisition service. This is in addition to any data submitted to the NSW Government for the purposes of meeting the policy.

Landholders will have free and unfettered access to all measurement data generated by the meters they own.

Maintenance

Landholders must maintain storage meters in accordance with the maintenance instructions specified by the manufacturer of the storage meter, which must be installed by a duly qualified person. Specifications for storage meter maintenance will be published to assist duly qualified persons meet the policy requirements.

A landholder must have a qualified surveyor re-survey the calibrated storage curve for any on-farm storage that has an installed storage meter when they undertake maintenance. This may mean that the storage meter will have to be recalibrated at the same time.

Existing storage meters for floodplain harvesting

The policy permits landholders to use existing storage meters for floodplain harvesting measurement until the end of the meter's life, provided the hardware has appropriate tamper-evident equipment installed (for example, a data logger tamper-evident seal). This will ensure that the Natural Resources Access Regulator can access verifiable, secure data at any time.

The data generated by the existing storage meters must be:

- a) permitted to be sent directly via telemetry to the data acquisition service, or
- b) be connected to a network where data generated by the meter is telemetered and accessed by the landholder.

End of life is defined as when the storage meter is no longer functioning in accordance with its specifications and it is beyond mechanical repair. A certified storage meter installer and validator will assess the end life of a storage meter.

The policy permits existing storage meters to be used until the end of life because:

- 1) there is significant landholder investment in these storage meters that, if calibrated correctly, will achieve a high level of measurement accuracy, similar to that of storage meters that meet the Minister's specifications
- 2) existing storage meters only account for approximately 8% of storage meters that are required to be installed, meaning that 92% of on-farm storages will be fitted with storage meters that meet the Minister's specifications with data telemetered to the data acquisition service in near-real time
- 3) accepting existing storage meters does not penalise landholders that have proactively improved their measurement accuracy, independent of the policy.

An existing storage meter is defined as a storage meter that has been purchased before 14 February 2020. If requested, the landholder must provide evidence of the date of purchase, such as a receipt, to substantiate that it qualifies as an existing storage meter.

Once an existing storage meter fails, the landholder must replace the device with a storage meter that meets the Minister's specifications.

Landholders with an existing storage meter must submit their storage meter data to the Minister weekly during a measurement period to report the amount of floodplain harvested water.

Data generated from existing storage meters that cannot be accessed via telemetry or without opening the tamper-evident seal will not be permitted. This is because the Natural Resources Access Regulator needs access to the amount floodplain harvested in near-real time. The data must be available in near-real time because of the potential high risk of the activity and so that data can be accessed before the floodplain harvesting event passes.

Installation, calibration and validation by duly qualified persons

To conform to new metering requirements prescribed under the Water Management (General) Regulation 2018, the Minister has decided that duly qualified persons must install and validate storage meters.

Only duly qualified persons that have undertaken the 'certified storage meter installer and validator' course run by a registered training organisation are permitted to install storage meters that meet the Minister's specifications, apply the tamper-evident seals and verify the installation of existing storage meters.

Certified storage meter installers and validators will also be responsible for connecting the storage meter to the data acquisition service by setting up a telemetry connection. The connection between the storage meter and data acquisition service can also be performed by a telemetry technician (see Figure 2).

Before installing the storage meter, Australian Height Datum (AHD) benchmarks need to be installed at the on-farm storage so that the storage meter can be appropriately referenced against these benchmarks and with the calibrated storage curve. Only a qualified surveyor can install these benchmarks in accordance with the Guidelines for installing AHD storage benchmarks (the Guidelines). Qualified surveyors will also have to verify the installation and calibration of any existing on-farm storage benchmarks to ensure the benchmarks meet the guidelines, which the department will publish on its website upon release of the Policy.

Certificates for landholders

A duly qualified person who validates the installation, calibration, recalibration or validation of new or existing storage meters must provide a certificate to the landholder that is evidence that the storage meter is installed correctly and meets all relevant specifications of the policy.

Where the storage meter installation, calibration or validation does not comply, the duly qualified person must give the landholder a certificate listing the reasons why the equipment does not comply and the modifications required for compliance. The duly qualified person must notify the Natural Resources Access Regulator if they know or reasonably suspect that metering equipment they are installing or are carrying out work on has been tampered with.

It will be an offence if a duly qualified person fails to do any of the above. Duly qualified persons must perform their duties in accordance with the code of conduct from the relevant registered training organisation from which they were certified. If a duly qualified person is deemed to be in breach of the code of conduct, they could have their certification suspended or revoked.

Part 4: Accounting and reporting requirements

Floodplain harvesting accounting and measurement period

Floodplain harvesting using storage measurement

Floodplain harvesting can be measured using on-farm storage volume changes, adopting the following equation:

Sum of daily gross storage volume increase for all storages nominated on the water supply work approval minus metered take under other licences put into storage during a measurement period

Because of the unique nature of floodplain harvesting events within the landscape and unique property infrastructure, take of floodplain harvesting water differs significantly from property to property. As such, landholders must notify the Minister of the start and end time, and the date of when they start and cease to take floodplain harvesting water, respectively. This is called the measurement period. Floodplain harvesting outside a nominated floodplain harvesting measurement period will be an offence.

Landholders must accurately record the start and end time (in 24-hour time) and the date (dd/mm/yyyy) of their floodplain harvesting take. They will have 24 hours in which they can back-date this start and end time and date. This gives landholders the flexibility they need to avoid going automatically into non-compliance (for example, when using gravity-filled storages).

Landholders must nominate their measurement period as follows:

Start: when overland flow collected and impounded by floodplain harvesting works that are identified on the water supply work approval:

- cannot be isolated from water that has been taken under other licences; or
- has commenced to fill an on-farm dam.

End: when overland flow is no longer being collected and impounded by floodplain harvesting works that are identified on the water supply work approval and all buffer zones are empty.

Note: It will be an offence to take water without sufficient account balance.

Gravity-filled storages will need to be configured to discharge water that exceeds remaining account balances as soon as it is practical and safe to do so. Stored water that exceeds remaining account balances must be discharged before the end time for the floodplain harvesting measurement period is notified.

Floodplain harvesting reporting

It will be a condition on the landholder's water supply work approval that they access their water measurement data, and keep up-to-date on their account balance, to ensure that they are adhering to their licence limits and conditions. It is not a reasonable excuse for a landholder to go into non-compliance because they are not up-to-date with their floodplain harvesting accounting.

Landholders adopting the storage meter measurement method will be required to report their non-floodplain harvesting licensed water take (such as metered supplementary access licence take) transferred into on-farm storage during the measurement period to the Minister fortnightly.

Reporting begins 14 days after the start of the measurement period. It will continue fortnightly until the end of the measurement period. Landholders must record:

- the start and end time (24-hour time)
- date (dd/mm/yyyy)
- meter reading
- on-farm storage the water was transferred to
- total weekly volume (megalitres)

The proportion of non-floodplain harvesting metered data transferred to an on-farm storage during a floodplain harvesting measurement period is still required to be reported fortnightly even if the data is telemetered. This is because not all water taken under a non-floodplain harvesting licence will be put into storage. Telemetry of data is mandated for any surface water pumps that are equal to or greater than 200 mm in size under the NSW Non-Urban Water Metering Framework (2018).

Fortnightly reporting is not required if non-floodplain harvesting licensed water is not transferred to storage in any of the weeks of the measurement period. If no fortnightly reporting occurs, all storage volume increases will be attributed to floodplain harvesting take during the measurement period.

Given the time-sensitive nature of floodplain harvesting events and the often large quantity of water that can be taken during an event, the Natural Resources Access Regulator must have data in near-real time so that it can act on any potential compliance cases before it is too late (that is, when the floodplain harvesting event has already passed). It is essential that all parts of the on-farm water balance, in particular the storage volume inputs, are known so that the Natural Resources Access Regulator does not wrongly assume that a landholder is non-compliant because they have taken water using a non-floodplain harvesting access licence and it has been measured twice, once through a meter and once through a storage meter.

Landholders will be required to report their floodplain harvesting take 28 days after the end of each measurement period and at the end of each water year. Annual take must be submitted to the Minister by 30 June every year.

Existing storage meters

Existing storage meters that are permitted to send their data to the data acquisition service will be subject to the same reporting requirements as described in the previous section.

Landholders that access the data generated from their existing storage meter, through their own telemetry network, must report data weekly (starting seven days from the start of the floodplain harvesting measurement period) to the Minister until all data has been reported for the measurement period.

Contaminated run-off provisions

Water sharing plans will specify the account rules for taking contaminated run-off from developed areas.

Landholders must notify the Minister within 24 hours of the start and end time and date for taking contaminated run-off, in the same way the measurement period is nominated, however, they must nominate that this is a contaminated runoff measurement period.

Landholders must measure all water taken during the contaminated measurement period. This will be debited against the landholder's account as soon as there is enough account balance to do so.

It will be an offence for a landholder to take any overland flow generated outside of the developed area during a contaminated runoff measurement period.

Part 5: Meter failure provisions

Storage meter or telemetry failure

Landholders must notify the Minister within 24 hours of becoming aware that a storage meter is faulty or telemetry has failed (Appendix D—Meter failure provisions). 'Faulty metering equipment' includes equipment and structures related to the installation of storage meters such as storage benchmarks.

Landholders will have 21 days from the time that they have lodged their faulty meter form with the Minister, to repair or replace the faulty storage meter. Extensions to this timeframe can be sought from the Minister. Any extensions granted together with the initial 21 days is called the authorisation period.

Redundancy system during the faulty meter period

A 'Redundancy systems specifications' will be gazetted under the Water Management (General) Regulation 2018. This will define the only redundancy systems the Minister approves for measuring floodplain harvesting during the authorisation period only, as defined above, and for storages that fall under Stage 2 of the rollout until 1 July 2022.

Part 6: Staged rollout of measurement requirements

The policy is an important part of a substantial new reform which landholders must comply with. For most landholders, it represents a significant change to measurement practice. To allow industry and suppliers to adapt, and the capacity of duly qualified persons to grow and mature, the Minister has adopted a staged approach to implementation of the policy, as shown in Table 2.

Table 2. Policy rollout stages

Stage	Capacity and filling frequency of on-farm storages listed on a landholder's work approval and measurement method	Deadline for compliance
Stage 1	1,000 ML or greater	1 July 2021 for installation and certification of a storage meter that meets the Minister's specifications
	All existing storage meters	1 July 2021 for certification of an existing storage meter
Stage 2	Less than 1,000 ML	1 July 2022 for installation and certification of a storage meter that meets the Minister's specifications
	Storages historically used less frequently than 1 in 7 years – as determined by the Minister ²	1 July 2022 for installation and certification of a storage meter that meets the Minister's specifications
	Point-of-intake measurement method	1 July 2022 for assessment by the Measurement Technical Panel and the installation and certification of meters

Deadline for compliance

From 1 July 2021, it will be an offence for a landholder to floodplain harvest unless the above measurement conditions are satisfied or a redundancy system has been installed, in accordance with the Minister's 'Redundancy system specifications'.

Part 7: Review and evaluation of the policy

As part of the NSW Government's commitment to continually improve and adaptively manage water policy into the future, the policy will be reviewed and evaluated after five years to assess its performance against the policy objectives.

Under this review, the department will modify the policy, if required, to take account of new information about meeting the policy objectives, measurement technology, landholder behaviour and how floodplain harvesting water is taken and landholder measurement costs.

Part 8: Next steps

As stated in the NSW Floodplain Harvesting Action Plan, the NSW Government has committed to developing a best-practice guideline for floodplain harvesting measurement, in partnership with the Queensland Government and the Murray–Darling Basin Authority.

² The Waterbody area mapping tool will be used to assess dam frequency of filling which is based on Landsat imagery time series from 1987 to 2019. To qualify for Stage 2 roll out, landholders must contact the Minister to assess whether their storage filling frequency meets the threshold specified in this policy.

This guideline will be based on the requirements of the policy and related documents. It will ensure that there is consistency across Queensland and NSW over how floodplain harvesting measurement occurs.

Part 9: References

NSW Department of Planning, Industry and Environment (2019). *Draft Floodplain Harvesting Monitoring and Auditing Strategy: consultation outcomes report*. Accessed on 25 January 2020 at www.industry.nsw.gov.au/_data/assets/pdf_file/0006/272292/monitoring-and-auditing-consultation-outcomes-report.pdf

NSW Department of Industry (2018). NSW Non-urban Water Metering Framework (2018). Accessed 14 February 2020
www.industry.nsw.gov.au/water-reform/metering-framework

Part 10: Glossary

Buffer zone is any on-farm storage (surge, field or purpose-built storage) that will not store water at the end a floodplain harvesting measurement period.

Calibrated storage curve (also referred to as a ratings table) is a lookup table that gives the:

- relative storage (dam) volume (megalitres)
- storage surface area (hectares) to storage height (centimetres).

These have been generated using LiDAR or photogrammetry technology or through on-ground surveys by a registered surveyor.

Contaminated run-off is any surface water runoff from developed areas (irrigation fields with tailwater return drains).

Data acquisition service is a NSW Government-owned, cloud-based system that collects and stores water take data sent by data logger and telemetry units.

Data logger and telemetry unit (also referred to as a local intelligence device) stores and transmits the water take data to the data acquisition service. Only units that have met the Minister's data logging and telemetry specifications are permitted to send data to the data acquisition service for data security reasons.

Developed areas are defined as irrigation fields with tailwater return drains.

Draft Floodplain Harvesting Monitoring and Auditing Strategy (2018) is a previous iteration of this policy.

Duly qualified person is a person that has the prescribed qualifications, skills and experience to carry out work in connection with metering equipment as specified in the policy, including:

- certified storage meter installer and validator
- certified meter installer
- qualified surveyor
- telemetry technician

Field storage irrigation fields that can be used to opportunistically store water.

Floodplain harvesting is the collection, extraction or impoundment of water flowing across floodplains, including rainfall run-off and overbank flow, but excluding the taking of:

- water under a water access licence that is not a floodplain harvesting access licence
- water under a basic landholder right, including water taken under a harvestable right
- water under an applicable water access licence exemption under the *Water Management Act 2000*^A
- used irrigation water.

Floodplain harvesting occurs during periods of overland flow. Overland flow may also be taken under unregulated river access licences.

Developed area run-off exemption any landholder will be exempt from requiring a water access licence when taking overland flow from a developed area (irrigated area of land with an associated tailwater return system) when no other overland flow is being taken.

Floodplain harvesting work is any infrastructure capable of taking floodplain harvesting i.e. pumps, pipes, regulators, supply channels and on-farm storages.

Measurement period is a landholder-nominated period in which floodplain harvesting water can be legally taken and the landholder is required to measure all take in accordance with the policy.

Minister is a delegated authority body acting on behalf of the Minister for Water.

On-farm storages includes any purpose-built dam, surge areas or field storages that is not a buffer zone and has been nominated on a landholder's water supply work approval that requires measurement using a storage meter.

Overland flow water is defined under section 4A (1) of the *Water Management Act 2000* as water (including floodwater, rainfall run-off and urban stormwater) that is flowing over or lying on the ground as a result of:

- a) rain or any other kinds of precipitation, or
- b) rising to the surface from underground, or
- c) any other process or action of a kind prescribed by the regulations.

Registered training organisation means a training organisation that is listed as a registered training organisation on the National Register established under the [National Vocational Education and Training Regulator Act 2011](#) of the Commonwealth.

Storage meter is an integrated measurement unit that contains both the storage sensor and the data logger and telemetry unit (local intelligence device). The term 'meter' or 'metering equipment' captures storage meters.

Storage sensor is a meter that measures storage water height. For the purposes of measuring floodplain harvesting, only radar and submersible sensors that have met the minimum acceptable specifications, outlined in this document, are permitted for data security and meter robustness reasons.

Surge areas are dedicated areas that are designed to store or buffer inflows to purpose-built on-farm storages that exceed pump or on-farm storage capacity. They are generally not designed or developed as irrigation fields, but there are some examples of this type of development.

Telemetry technician means a person who holds a:

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

The department refers to the Department of Planning, Industry and Environment

Appendix A - Consultation

The department has carefully considered the feedback received from the consultation sessions. The feedback has shaped the development of the policy. This is evidenced in the [Draft Floodplain Harvesting Monitoring and Auditing Strategy: Consultation outcomes report \(2019\)](#).

Table 3 summarises the development of the policy.

Table 3. Timeline in developing the NSW Floodplain Harvesting Measurement Policy

Date	Action
2014	The department conducted a pilot study to assess and evaluate possible measurement meters and monitoring systems.
2015	The department consulted stakeholders on the development of a monitoring strategy.
March 2017	The NSW Government released the draft Floodplain Harvesting Monitoring Policy for public consultation. The department received nine formal submissions.
March 2018	The department released <i>Implementing the NSW Floodplain Harvesting Policy consultation paper</i> for comment, which included a proposal for a staged approach to floodplain monitoring that aimed to improve rigour over time.
November 2018	The department released a draft Floodplain Harvesting Monitoring and Auditing Strategy. 32 formal submissions were received as part of public consultation.
July 2019	The department consulted targeted stakeholder groups about development of the draft Floodplain Harvesting Measurement Strategy (previously the draft Monitoring and Auditing Strategy).
September 2019	The department consulted with stakeholders regarding the peer review report of the NSW Floodplain Harvesting Policy's implementation, including the draft Floodplain Harvesting Measurement Strategy. 14 written submissions were received as part of the peer review process.
December 2019	The department held workshops to ensure the draft Floodplain Harvesting Measurement Strategy (now known as the Floodplain Harvesting Measurement Policy) could be implemented.
March/April 2020	The department held targeted consultation sessions with peak stakeholder groups and showcased a final version of the draft NSW Floodplain Harvesting Measurement Policy.

Appendix B—Buffer zones

If an on-farm storage is not fitted with a storage meter, all water that it contains must be transferred to an on-farm storage that has been fitted with a storage meter before the end of a floodplain harvesting event can be reported. When an on-farm storage is used in this manner, it is called a buffer zone.

It will be an offence for a landholder to nominate the end of a floodplain harvesting measurement period before all the water contained in a buffer zone has been transferred to a measured on-farm storage (that is, the buffer zone is empty).

Appendix C—Minimum specifications for sensors

Table 4. Minimum acceptable specifications for storage sensors

Criterion	Minimum specification
Output	Digital (SDI-12/Modbus) directly output from sensor
Range	Appropriate to the storage depth (typically 0–5 m, up to 10 m)
Accuracy	±10 mm
Calibration capability	Has the capacity to record/adjust calibration constants, and can be tested against a reference meter
Supply voltage and power consumption	Able to operate on nominal 12 V DC supply and < 20 mA average current draw
Data acquisition service/data logger and telemetry unit compatibility	Data acquisition service compatibility for relevant floodplain harvesting measurement parameters. Sensor able to respond to requests for serial number, and other diagnostic information
Temperature range	-5 °C to +50 °C operating temperature
Warranty	Minimum 12 months
Performance testing	Sensor has been trialled or is used in harsh environments by a reputable independent agency in Australia
Support	Satisfactory vendor documentation and local support available

Appendix D—Meter failure provisions

Landholders must report the following information to the Minister within 24 hours via the online form called 'S911 self-reporting form' (referred to as the 'faulty meter form' in this policy):

- name
- contact details
- the unique meter or storage meter ID
- location of the meter/respective work
- any relevant approval and/or access licence numbers
- the purposes for which water take from the measured work is used
- a description of the Minister-approved system that will be used to determine quantity of water taken while the meter is faulty
- photo evidence of the faulty meter
- any correspondence sent by the data acquisition service (that is, emails) that relates to the faulty meter.

It will be an offence to harvest water from a floodplain if a landholder:

- has not notified the Minister within 24 hours of becoming aware of a faulty meter
- does not continue to measure their floodplain harvested volume using a Minister-approved redundancy method.

If a landholder satisfies these two conditions, they will be permitted to harvest water for 21 days after lodging the notification. As soon as the floodplain harvesting faulty meter form is lodged, the 21 days starts without prior approval from the Minister (Figure 4).

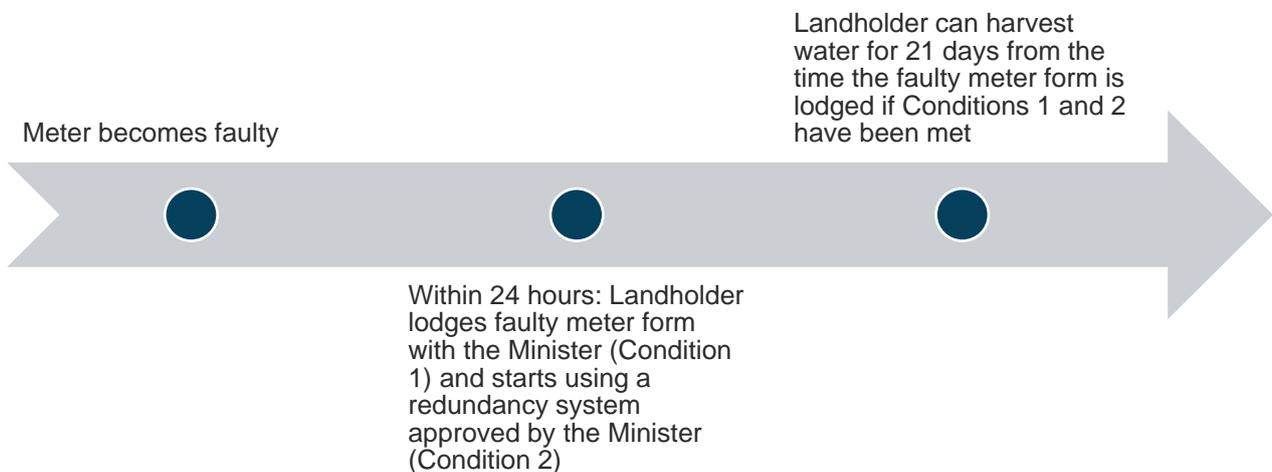


Figure 4. Meter failure provisions

Table 5. gives faulty meter scenarios, and definitions of landholders becoming aware of these scenarios to determine when the 24 hours allowed for reporting the faulty meter begins.

Table 5. Scenarios where landholders must report the faulty meter, structure or telemetry issue

Faulty meter scenario	Definition of a landholder becoming aware
Storage meter is calibrated incorrectly and generating incorrect measurement data	Data acquisition service sends an email to the landholder informing them that the measurement data appears faulty and the meter needs to be checked by a duly qualified person (for example, this may appear as storage volume data going up and down in orders of magnitude and time that do not correlate with normal meter behaviour). Landholder realises that on-ground observations do not match the meter readings (for example, the storage is full but the meter data says it is at half storage volume capacity).
Meter telemetry fails	Data acquisition service sends email to the landholder. Landholder observes that they are no longer receiving data on the data acquisition service dashboard.
Storage sensor or meter fails to generate data	Data acquisition service sends email to the landholder. Landholder observes that they are no longer receiving data on the data acquisition service dashboard.
Storage benchmarks have moved, for example movement due to soils, physical or environmental damage	Landholder observes that benchmark has been damaged or moved.
Storage sensor or meter has a mechanical fault, for example a part not working or damaged by environmental factors such as insect or animal damage	Data acquisition service sends email to the landholder. Landholder observes fault.

Conditions for an extension

If a landholder requires more than 21 days to repair or replace their faulty meter, they must submit an online extension form to the Minister before the end of the 21-day period. Any extensions granted, together with the initial 21 days, is called the authorisation period.

Floodplain harvesting must not occur past the initial 21 days until the extension has been approved by the Minister.

To satisfy the reasonable excuses for an extension to be approved by the Minister, landholders must provide written evidence that they have requested a duly qualified person to repair the faulty meter or install an approved replacement within one business day of notifying the Minister of the faulty meter. The evidence may take the form of:

- an email, or
- order receipt, or
- registered post letter issued by Australia Post,

that they have put a request into a duly qualified person to repair or install the faulty meter within one business day of notifying the Minister of the faulty meter.

The process and timing for an extension is shown in Table 6.

Table 6. Extension process

Event	Timing
1. Landholder lodges faulty meter form with the Minister and starts using a redundancy system approved by the Minister if they continue to floodplain harvest.	Within 24 hours of becoming aware of the fault
2. Landholder requests a duly qualified person to repair the faulty meter or install an approved replacement.	Within one business day of notifying the Minister of the faulty meter
3. If the duly qualified person finds that the faulty meter must be replaced or new parts are required, the landholder must submit an order for the new meter or parts.	Within one business day of receiving written advice from the duly qualified person
4. Landholder to repair or replace the faulty meter.	Within 21 days of notifying the Minister of the fault
5. If unable to repair/replace the faulty meter within 21 days, the landholder submits an online extension form to the Minister.	Within 21 days of notifying the Minister of the fault
6. Extension approved by the Minister, if applicable.	Determined by the Minister
7. Floodplain harvesting can take place during the extension.	Determined by the Minister