



HEALTHY FLOODPLAINS PROJECT

Floodplain Harvesting Measurement – Secondary (backup) Measurement Devices

Guideline

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Document control

Revision	Date	Who	Remarks
1	07.10.2020	Department of Planning, Industry and Environment	Initial draft for industry review
2	28.10.2020	Department of Planning, Industry and Environment	Final edits

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Introduction

The [NSW Floodplain Harvesting Policy \(2018\)](#) will licence and limit floodplain harvesting water extractions. The [Floodplain Harvesting Measurement Policy \(2020\)](#) has been released together with implementation guidelines to assist water users and duly qualified persons in understanding their compliance obligations.

This guideline, *Secondary (backup) measurement devices* provides landowners and duly qualified persons with guidance on what needs to be considered in the installation and use of secondary, or backup, measurement systems.

When is a secondary measurement device required?

The *Floodplain Harvesting Measurement Policy (2020)* requires that a secondary (also known as a backup or redundancy) measurement device be installed if a landholder wants to undertake floodplain harvesting activities in the following circumstances:

1. Where the primary metering equipment is faulty and awaiting repair¹ or
2. The storage does not need to be fitted with primary metering equipment until 1 July 2022 and the landholder wishes to floodplain harvest between 1 July 2021 and 1 July 2022.

What secondary measurement devices can be used?

The following secondary measurement devices can be used under the Floodplain Harvesting Measurement Policy:

1. A storage gauge board that meets the requirements in this guideline.
2. A storage meter that is compliant with the standards under the *NSW Floodplain Harvesting Measurement Policy (2020)*
3. Another device or class of devices approved by the Minister

This guideline addresses the use of a storage **gauge board**, given it will likely be the preferred choice for most secondary devices.

What are the equipment requirements for gauge boards?

1. The gauge board must comply with the requirements of *Australian Standard AS 3778.6.5*, Section 7.1.
2. The gauge board must be constructed from durable material resistant to corrosion in alternating wet and dry environments with legible, unambiguous markings resistant to wear and fading. The material shall have a low coefficient of thermal expansion commensurate with the accuracy requirement.
3. Gauge boards must have measurement increments as follows to allow a full reading to be undertaken: 0.01m (10mm), 0.1m (100mm) and 1.0m increments.
 - a. Existing gauge boards (those installed prior to the release of this guideline – 1 November 2020) with 100mm increments are acceptable, provided they meet all other requirements of this guideline.

¹ Under the Measurement Policy, landholders must also notify the Minister if their primary metering equipment is faulty.

- b. A registered surveyor, registered engineer or other class of person approved by the minister (see below) must assess and certify that an existing gauge board with 100mm increments meets all other requirements of this guideline.
 - c. If an existing gauge board with 100mm increments is accepted, when taking readings, the landowner must estimate to the nearest 10mm (for example 5.63m).
4. New gauge boards (those installed after the release of this guideline – 1 November 2020) must have:
 - a. 10mm increments
 - b. Numbered values for 0.1m (100mm) and 1.0m increments.
5. Each successive 0.01m (10mm) increment is to alternate black and white 0.01m (10mm) strips, on a white, reflective background for ease of reading in low light environments.
6. The gauge board width, increment markers and numbering must be of a size that can be visually read from a safe location (i.e. from an elevated platform or storage embankment).

Who can install, level and certify a gauge board?

The gauge board can be installed by any competent person in accordance with this guideline.

One of the following people must certify that the gauge board has been installed in accordance with the relevant requirements and level the gauge board to the storage benchmark:

- A Registered Surveyor as recognised by the NSW Board of Surveying and Spatial Information (BOSSI)
- A Registered Engineer as recognised by Engineers Australia,
- Another person or class of persons approved by the Minister.

How must gauge boards be installed?

The gauge board, either in single or sectional configuration, must be installed as follows:

1. The base gauge board must be set at the lowest accessible (floor level) in the storage. This location must be consistent with the storage curve for the storage. The gauge board must not be in any localised low points i.e. the low point must be reflective of the floor level of the storage.
2. The location must be easily accessed safely for maintenance and readings during wet weather and/or flooding events. The DQP engaged to certify the installation can provide guidance for the most appropriate installation location and configuration.
3. The bottom of the first gauge board should ideally be set at 0.00m (gauge height).
 - a. There is flexibility for the lowest reading to be a value other than 0.00m given the requirement for calibration to the storage benchmark (refer Section 0).
4. The gauge board(s) must measure from the lowest accessible level to the top of the storage embankment level.
5. The gauge board may be mounted on a single structure or comprise sectional boards mounted sequentially on the inside batter of the storage. Refer to Figure 1.
 - a. If the gauge board is fixed to a structure (e.g. inlet/outlet, elevated platform, headwall, etc.), the fixing must be secure, stable and not allow any movement.

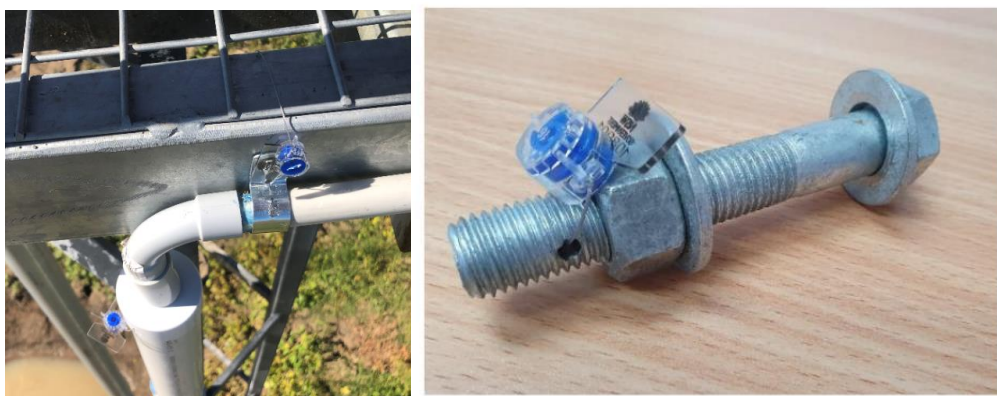
6. If no structure is available, the gauge board must be mounted on a 50mm diameter galvanised steel post secured into a mass concrete (N25) footing(s) of:
 - a. Min. 1000mm depth x 600mm diameter (single board to 10m maximum height).
 - b. Min. 600mm depth x 450mm diameter (sectional boards, each up to 2m maximum height).
7. All gauge boards must be vertically plumb.
8. **[Sectional boards only]** – must be located so that the highest, or last, increment is accurately levelled and aligned to the lowest, or first, increment on each successive (higher) board.
9. All gauge boards must be fitted with at least one tamper-evident seal on securing **fasteners** (not welds; refer to **Figure 1**). All tamper seals used must be NSW Government approved seals supplied by Irrigation Australia. Only DQPs can purchase approved seals by logging in to the Irrigation Australia website using their membership details. Refer to <https://www.irrigationaustralia.com.au/>
10. All fixings used (screws, nuts, bolts, brackets, mounting poles, frames etc.) must be non-corrosive in a submerged environment such as galvanised iron, aluminium, stainless steel, or other non-corrosive alloys. Bolted connections shall use locknuts or spring washers to maintain torque. Where commercially galvanised steel products are cut, ground or drilled, cold galvanising paint shall be applied to restore the galvanising finish.
11. All gauge boards must be fitted with stainless steel anti-roosting spikes atop to minimise fouling of the gauge board by bird faeces.
12. All equipment and connections must be designed and arranged to minimise the risk of damage, impact by debris, tampering or impacts by wildlife and insects.

Work health and safety obligations

All people undertaking site-based work in NSW have obligations under the **Work Health and Safety Act 2011**. It is essential that all persons involved in the installation of metering equipment under this guideline are aware of and comply with these obligations.

These people should undertake a **risk assessment for each site and all activities** involved in the installation process and remain responsible for the site and any person who enters the site during construction.

Figure 1. Example of tamper-evident seals on fasteners.



How must gauge boards be levelled in?

Gauge boards must be referenced (levelled in) to the survey benchmark to allow a correlation of depth readings to the storage curve.

Surveying of the gauge boards, either in single or sectional configuration, must be as follows:

- The base of the first gauge board must be levelled to Australian Height Datum (mAHD). Where the storage floor is not set at 0.00m on the gauge board, the lowest value of the gauge board must be recorded (this will be required for validation in the DQP Portal).
- The level (mAHD) of the gauge board must be recorded at an even 0.1m (100mm) mark of the gauge board.
- The (GDA20) coordinates (Latitude and Longitude) of the gauge board(s) shall be determined.
- A level (mAHD) shall be taken on the storage floor adjacent to the gauge board. The storage floor level shall be indicative of the storage floor level and not be taken in any localised low points (e.g. Inlet pipe erosion sump etc).

How must information be submitted?

An installation and calibration check list is available on the department's website (an example is provided in Figure 3). The installation and calibration checklist must be completed by one of the following people:

- A Registered Surveyor as recognised by the NSW Board of Surveying and Spatial Information (BOSSI)
- A Registered Engineer as recognised by Engineers Australia,
- Another person or class of persons approved by the Minister

Each gauge board must be registered in the WaterNSW online DQP Portal (<https://dqp.watarnsw.com.au/>) by one of the following people:

- A Registered Surveyor as recognised by the NSW Board of Surveying and Spatial Information (BOSSI)
- A Registered Engineer as recognised by Engineers Australia,
- Another person or class of persons approved by the Minister

It is an offence to provide inaccurate or misleading information. A *Validation Certificate* will be generated when all necessary information is entered into the DQP Portal.

Figure 3. An example of the installation and calibration checklist.

INSPECTION COMPLIANCE				
(Y = Yes, P = Photo taken, N/A = Not Applicable)				
SITE DETAILS		DETAILS		
Landholder name				
Storage ID - work approval number				
Date of installation				
Details of certifying DQP				
Details of qualified person (as defined in section Error! Reference source not found.) undertaking survey				
SITE PREREQUISITES	Y	P	N/A	REMARKS
Site selection:				
- Able to measure lowest accessible point in storage as confirmed by DQP	<input type="checkbox"/>			
- Easily and safely accessed for reading and maintenance	<input type="checkbox"/>			
- Resistant to damage, tampering or attack	<input type="checkbox"/>			
Installation method:				
- Single gauge board affixed to existing structure	<input type="checkbox"/>	<input type="checkbox"/>		
- Single gauge board installed standalone	<input type="checkbox"/>	<input type="checkbox"/>		
- Sectional gauge boards affixed to existing structure	<input type="checkbox"/>	<input type="checkbox"/>		
- Sectional gauge boards installed standalone	<input type="checkbox"/>	<input type="checkbox"/>		
WHS Risk Assessment completed	<input type="checkbox"/>			
GAUGE BOARD SELECTION	Y	P	N/A	REMARKS
Gauge board construction in accordance with specifications	<input type="checkbox"/>	<input type="checkbox"/>		
- Gauge boards increment 100mm (existing)	<input type="checkbox"/>	<input type="checkbox"/>		
- Gauge boards increment 10mm (new)	<input type="checkbox"/>	<input type="checkbox"/>		
Total height (single or sectional boards combined) allows for measurement from lowest accessible point in storage to embankment crest level	<input type="checkbox"/>	<input type="checkbox"/>		
GAUGE BOARD INSTALLATION	Y	P	N/A	REMARKS
Gauge height (0.00m) set to lowest accessible point in storage (consistent with storage curve)	<input type="checkbox"/>	<input type="checkbox"/>		
Securely mounted as per specifications for selected installation method	<input type="checkbox"/>	<input type="checkbox"/>		
Gauge board(s) are installed vertically plumb	<input type="checkbox"/>	<input type="checkbox"/>		

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Securely mounted as per specifications for selected installation method	<input type="checkbox"/>	<input type="checkbox"/>	
Gauge board(s) are installed vertically plumb	<input type="checkbox"/>	<input type="checkbox"/>	
[Sectional boards only] Highest increment on lower board accurately levelled to lowest increment on higher board successively	<input type="checkbox"/>	<input type="checkbox"/>	
Non-corrosive fixings used	<input type="checkbox"/>	<input type="checkbox"/>	
Tamper-seals installed on fixing bolts by DQP	<input type="checkbox"/>	<input type="checkbox"/>	

SURVEY	Y	P	N/A	REMARKS
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Reference survey benchmark ID	<input type="checkbox"/>			
Reference survey benchmark level (mAHD)	<input type="checkbox"/>			
Vertical height difference from 0.00m (gauge height) to survey benchmark (m)	<input type="checkbox"/>			
Level of gauge height 0.00m (mAHD)	<input type="checkbox"/>			
Level on the storage floor adjacent to the gauge board (mAHD)	<input type="checkbox"/>			
GDA20 coordinates of the gauge boards (Latitude and Longitude)	<input type="checkbox"/>			

CERTIFICATION	Y	P	N/A	REMARKS
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Site registered on WaterNSWDQP portal by DQP	<input type="checkbox"/>			
Details entered in DQP portal and validation certificate generated	<input type="checkbox"/>			