

Floodplain Harvesting Measurement Overview



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Manager, Governance and
Coordination – Metering and
Measurement team

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What we'll cover today

1. Why measure overland flow
2. Where will the policy apply?
3. Measurement at a glance
4. Measurement methods
5. Measurement period
6. Steps required to measure
7. Point-of-intake measurement
8. Faulty devices
9. Existing storage metering equipment
10. Duly qualified persons (DQPs)
11. We're ready to go!
12. Programs to support floodplain harvesting



1. Why measure overland flow

The Floodplain Harvesting Measurement Policy's guiding principles are that measurement is:



Accurate



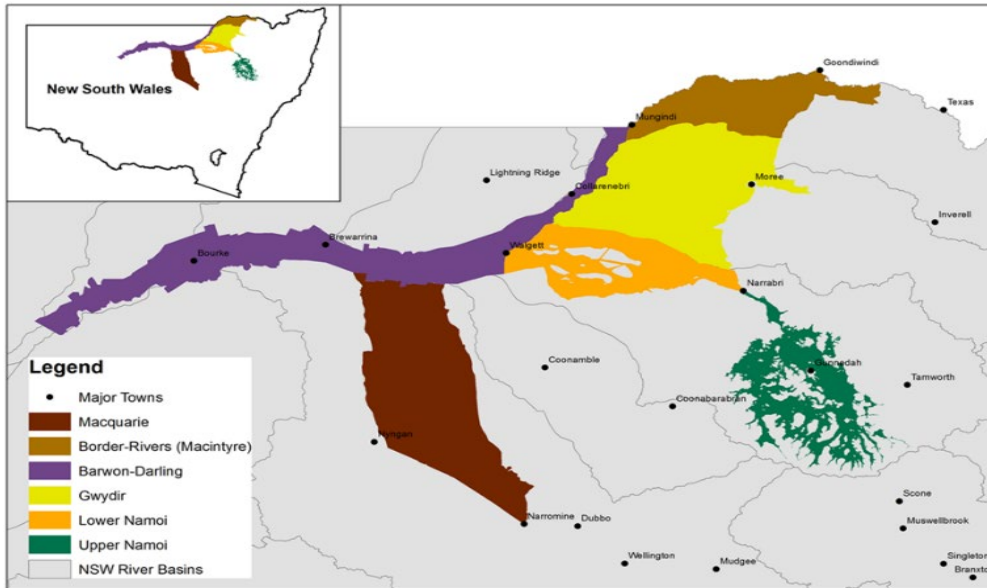
Auditable



Tamper proof



2. Where will the policy apply?



Valley	Storages
Gwydir Valley	324
Border Rivers	110
Macquarie	178
Barwon-Darling	86
Namoi	447

Floodplain harvesting measurement will be rolled out in the **Macquarie and Barwon-Darling** next with conditions imposed when floodplain harvesting licences are issued

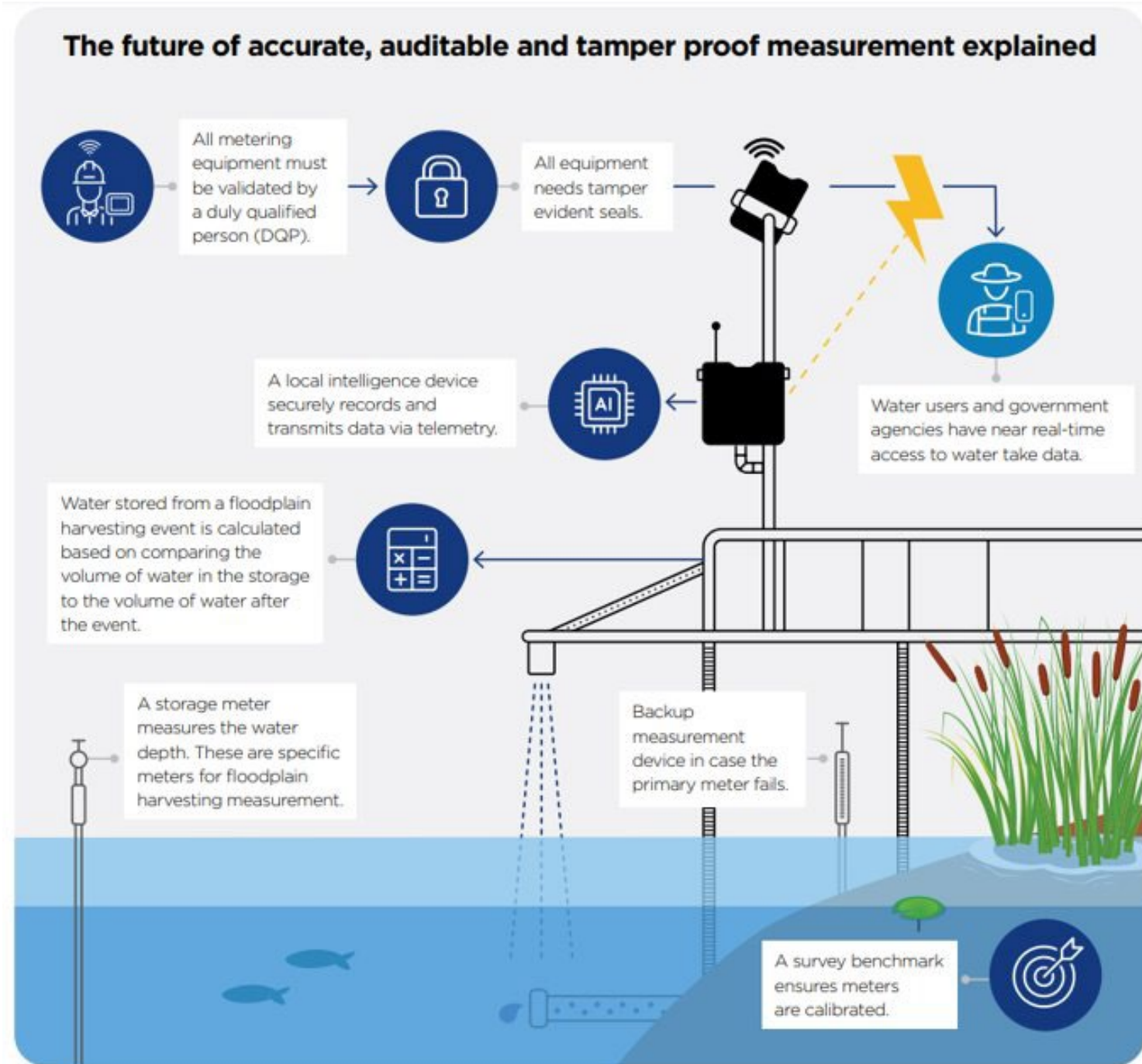
Landholders have 12 months to install 'primary metering equipment' from when licences are first credited – deadline **1 March 2024 (Macquarie)** and **1 April 2024 (Barwon-Darling)** for measurement.

Landholders can use 'secondary metering equipment', such as a gauge board if they wish to floodplain harvest during that time.

3. Measurement at a glance

The amount of water collected from a floodplain harvesting event is calculated as the increase in storage volume over the measurement period.

Floodplain harvesting measurement



4. Measurement methods

Floodplain harvesting occurs when water is either collected and impounded in an on-farm storage or is directly used.

There are 2 ways you can measure floodplain take:

- at the storage method OR
- point-of-intake method



Measurement method continued: storage method

This is the **default measurement method** – est. for 90% of cases.

Storage sensors are used to measure storage (dam) level changes to determine volumes of floodplain harvested water.

No irrigation allowed during a floodplain harvesting event.

Calculated:

Sum of daily gross storage volume increase for all storages nominated on water supply work approval
minus

metered take under other licences put into storage during the measurement period.



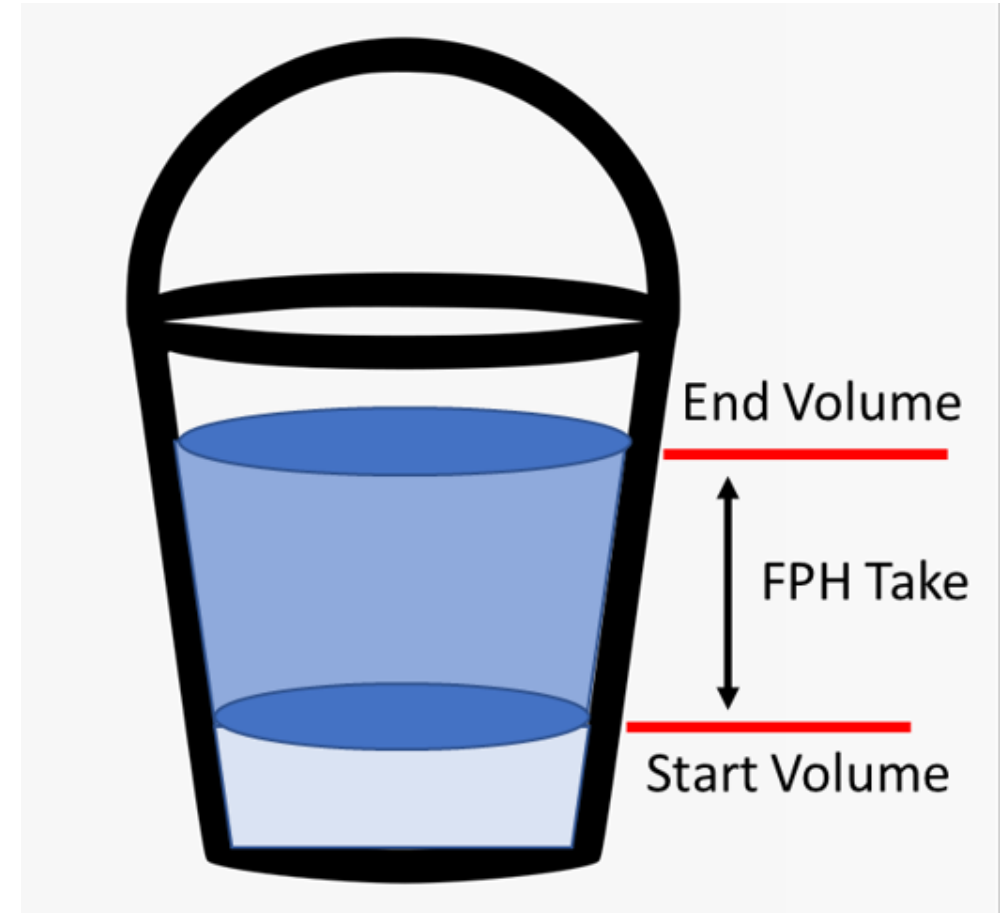
5. Measurement period

The Measurement ***STARTS*** when overland flow:

- enters your property, or
- mixes with water on the property.

The measurement period ***STOPS*** when water is no longer being brought into your property and all water in the buffer zones, other than water that cannot reasonably be transferred, has been moved to a metered storage.

Landholders nominate the beginning and end of the measurement period in [iWAS](http://www.watarnsw.com.au/iwas) (www.watarnsw.com.au/iwas).

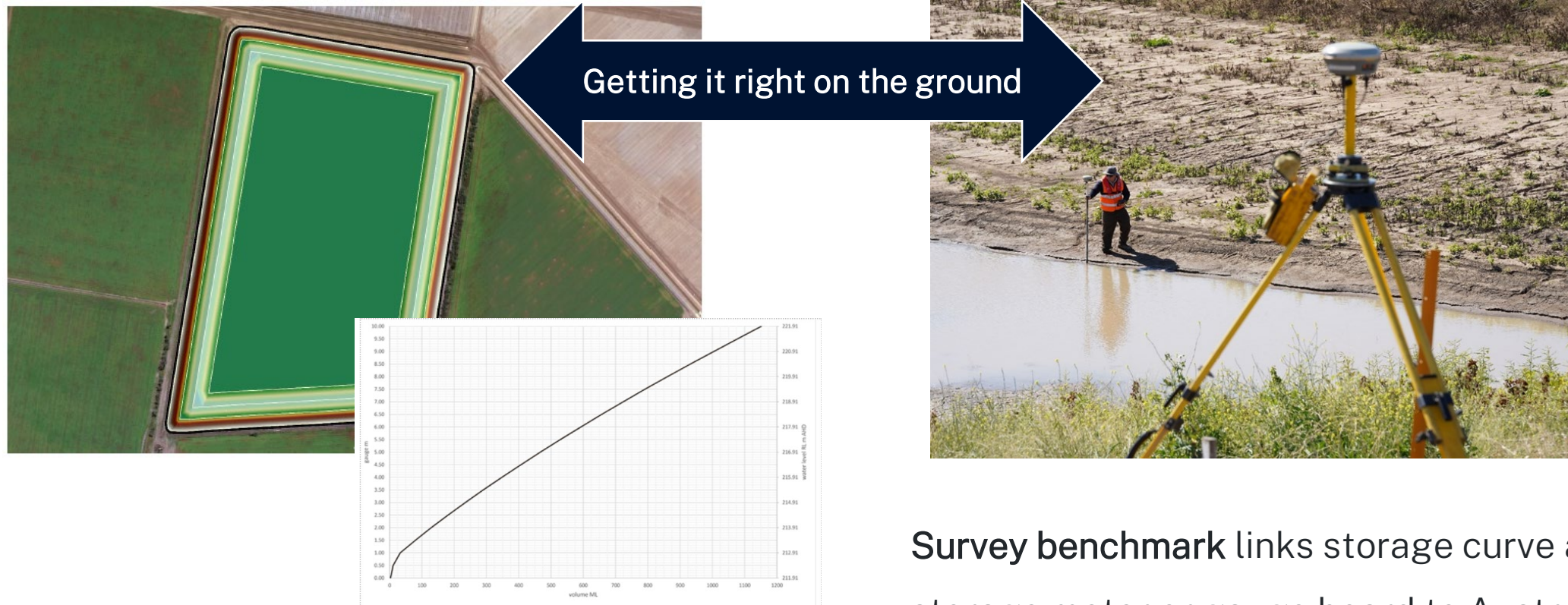


6. Steps required to measure

- a. Survey benchmark and storage curve
- b. Storage meter and local intelligence device (data logger with telemetry)
- c. Secondary metering devices (OPTIONAL)
 - gauge board, or
 - another approved system such as a storage meter.



Steps required to meter: a. Storage curve and survey benchmark



Storage curve is used to determine volume

Survey benchmark links storage curve and the storage meter or gauge board to Australian Height Datum benchmark

Steps required to measure:

b. Primary metering equipment – storage sensor



Radar Sensor – measures water level using radar from above (catwalk)

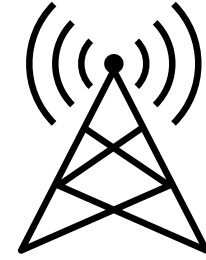


Submersible Pressure Sensor – affixed to the deepest point of the storage

Devices accurate to +/- 10 mm

Steps required to measure:

b. Primary metering equipment – local intelligence device (LID)



- All storage meters must be combined with a local intelligence device that meets the department's telemetry specs.
- LID logs and sends data via telemetry to WaterNSW in near real-time.
- Landholders have access to their data in iWAS.

Steps required to measure:

b. Primary metering equipment – tamper-evident seals



To detect tampering, **all** floodplain harvesting metering equipment will have NSW tamper-evident seals installed.



Steps required to measure:


c. Secondary metering devices

The following secondary metering equipment can be used:

- A gauge board that meets the standards
- Another device or class of devices approved by the Minister

Secondary metering is required if landholders wish to floodplain harvest in the 12-month transition period and do not have primary equipment OR if primary metering fails.

Guidelines available for landholders at www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/measurement.



Department of Planning and Environment
Guideline

Secondary Metering Devices

This guideline provides advice on secondary metering devices for floodplain harvesting measurement.

Introduction

The NSW Government is implementing a framework to licence and measure floodplain harvesting to ensure this take occurs within legal sustainable limits.

An important part of this framework is that floodplain take is measured by accurate, auditable and tamper-proof metering equipment.

The NSW Government has developed a series of implementation guidelines to assist water users and duly qualified persons (DQPs) in understanding their compliance obligations under this framework.

When is a secondary metering device required?

A secondary metering device is required to take water under a floodplain harvesting access licence 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 12 months after floodplain harvesting access licences are issued and the landholder wishes to floodplain harvest during this 12-month period.

What secondary metering devices can be used?

Only secondary metering devices approved by the Minister as being appropriate can be used. A list of all approved devices will be maintained at www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/measurement.

The *Market Engagement Policy For Metering and Telemetry* includes further details on the requirements for secondary metering devices for storage metering equipment and the process for approval. Secondary metering devices must be validated by a DQP in accordance with the standards specified by the Minister for the device or type of device.

7. Measurement method: Point of intake

All floodplain harvesting intake points metered.

Landholder eligibility determined by a certified practising hydrographer or engineer with overland flow experience.

Calculated:

Sum of daily gross inflow volume for all intake points nominated on the water supply work approval

minus metered take under other licences during a measurement period.



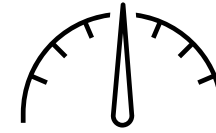
8. Faulty devices



- Landholders must notify the Minister within 24 hours of becoming aware their metering equipment is faulty or telemetry has failed. (At www.waternsw.com.au/s91i)
- Landholders will have 21 days from the time they have lodged a faulty meter form with the Minister to repair or replace the meter.
- Landholders can continue to floodplain harvest during repairs to their primary device (storage meter), using an approved secondary device (e.g. gauge board).
- Find more information about what to do when experiencing faulty metering equipment on our website: www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/measurement/how-to-become-measurement-ready#secondary



9. Existing storage metering equipment

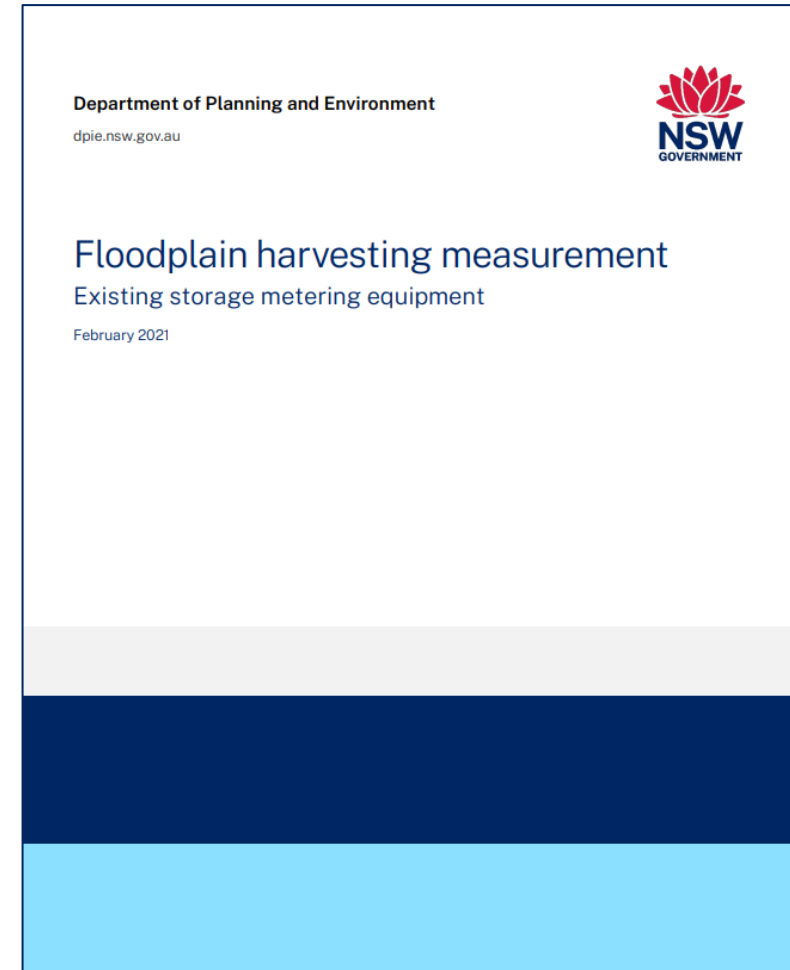


Metering equipment purchased on or before 14 February 2020:

Accounts for approx. 8% of storage meters

Following requirements:

- Needs to be a digital measurement sensor
- +/-10 mm of accuracy at depths of up to 10 m
- independent (separated) from any on-farm or private network
- Must be fitted with local intelligence device that meets the Minister's specs
- Need to reference to storage curve and survey benchmark
- Must be validated by duly qualified person



10. Duly qualified persons - DQPs

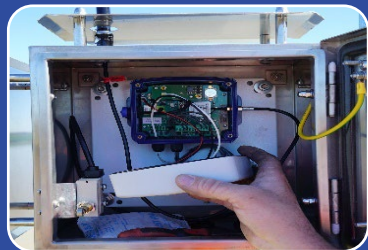


Survey benchmark	Storage curve	Storage meter installation and validation	Meter installation and validation	Local intelligence device	Secondary metering device	Point-of-intake eligibility
Registered surveyor	Registered surveyor	Certified storage meter installer and validator (CSV)	Certified meter installer (CMI)	CMI or CSV	Registered surveyor	Certified practising hydrographer
Class of persons approved by the Minister <i>(recognising existing professional skills)</i>			Certified practising hydrographer	Certified practising hydrographer	Register practising engineer	Registered professional engineer <i>(experienced in overland water flow)</i>
				Telemetry technician	Class of persons approved by the Minister	

11. Device and installation availability



10 compliant level sensors



2 compliant local intelligence devices

Market engagement policy for metering and telemetry

MHL testing



28 Certified Storage Meter Validators

12. Programs to support floodplain harvesting measurement

Programs to support floodplain harvesting include:

- Floodplain harvesting measurement demo site at Australian Cotton Research Institute
- \$975 account credit for every data logger connected to the data acquisition service (telemetry rebate - \$18m program)
- 50 storages being fitted with equipment in Border Rivers and Gwydir valleys (\$2.5m)
- Field days to support continued learning, development and recertification of certified storage meter installer and validators (CSV)
- Multiple CSV courses were conducted in 2022 and will be completed in 2023 to boost CSV numbers.



Enquiries



Websites

www.dpie.nsw.gov.au/water/nsw-non-urban-water-metering

www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/measurement

Enquiries

water.enquiries@dpie.nsw.gov.au

1300 081 047

Small group session – informal, online meeting held on Teams next week 27 Feb-1 March 23

Register your interest here:

<https://www.eventbrite.com.au/e/floodplain-harvesting-measurement-small-group-information-session-tickets-546835448547>

Learning from the field demonstration project



Jamie Condon

Departmental Contractor - Sierratek

February 2023

Field demonstration project objectives

- End to end system testing of IT systems for floodplain harvesting measurement
- Materials and support developed to build capability of floodplain harvesting measurement installer and supplier industry
- Install metering equipment on 50 storages within the Border Rivers and Gwydir valleys to support compliance



Installation process

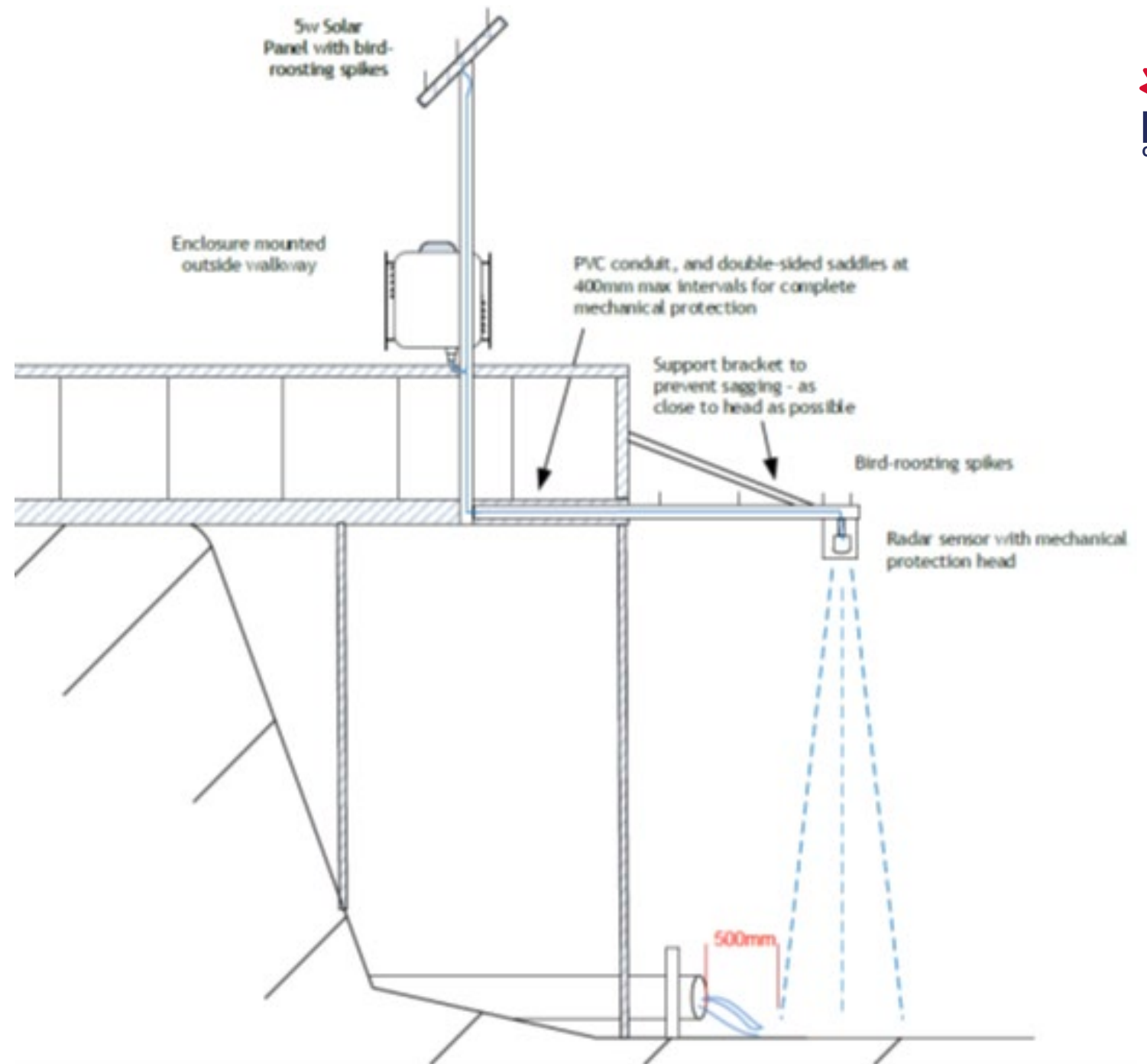


Site visit

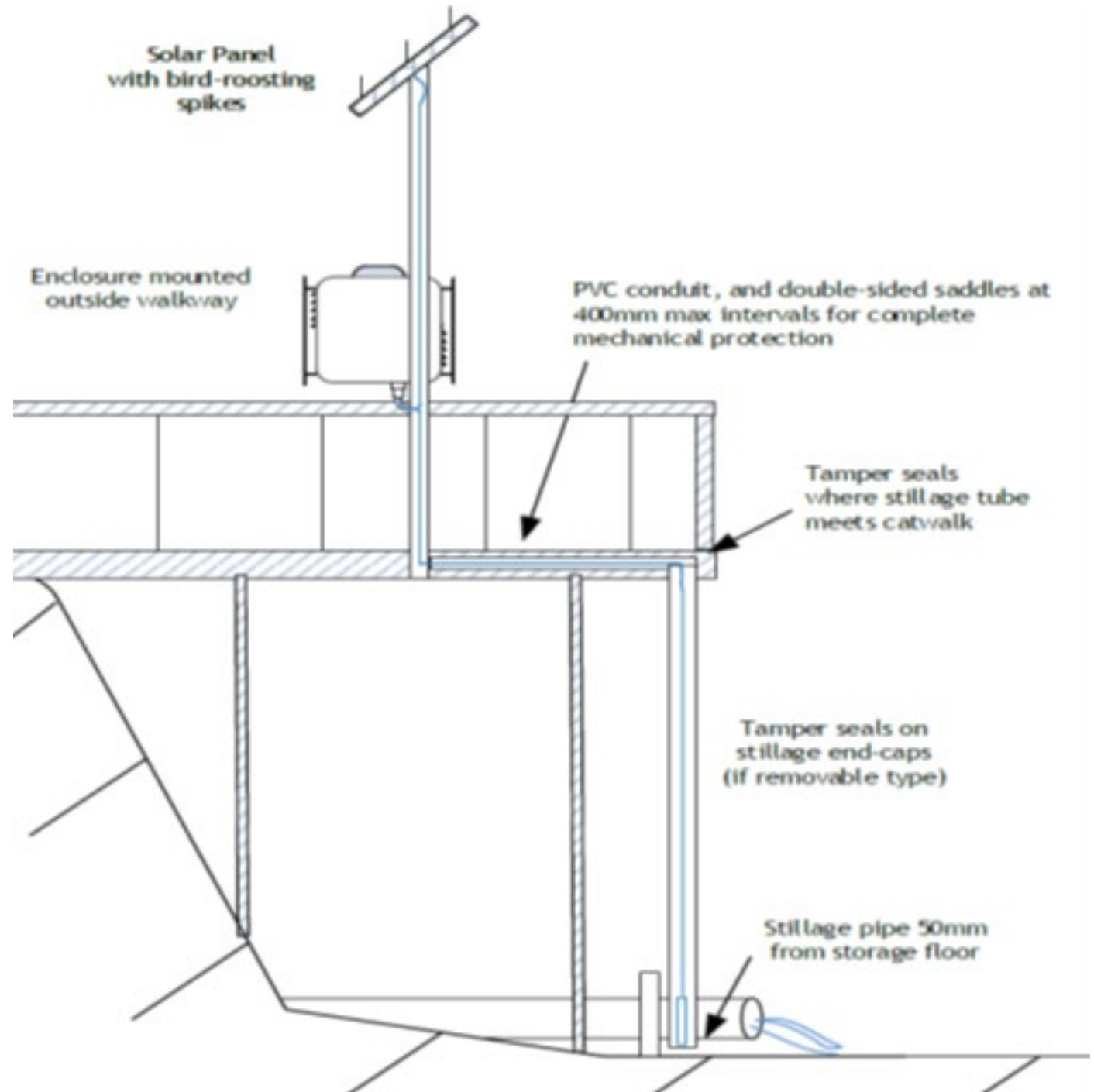


- Is there clear access to the storage?
- Is there any catwalk or steelwork?
- What's the distance from the catwalk to the bottom of storage – discharge gate?
- Is there Telstra Coverage?
- Is the storage full of water?
- Any secondary devices (gauge boards) already installed?
- Evidence of benchmarks?
- Document all details for local intelligence device (LID) and sensor installation.

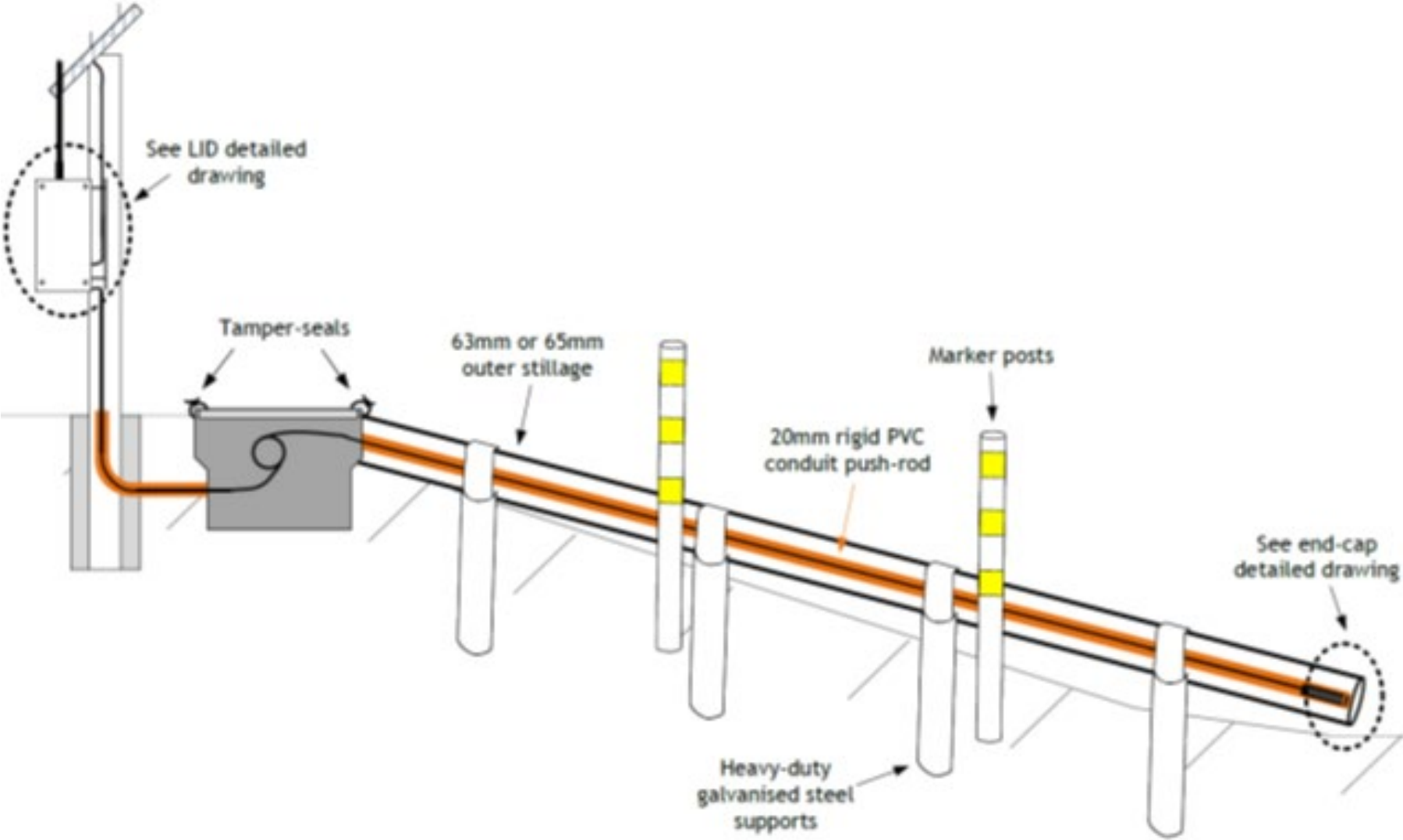
Elevated platform radar sensor installation



Elevated platform submersible sensor installation

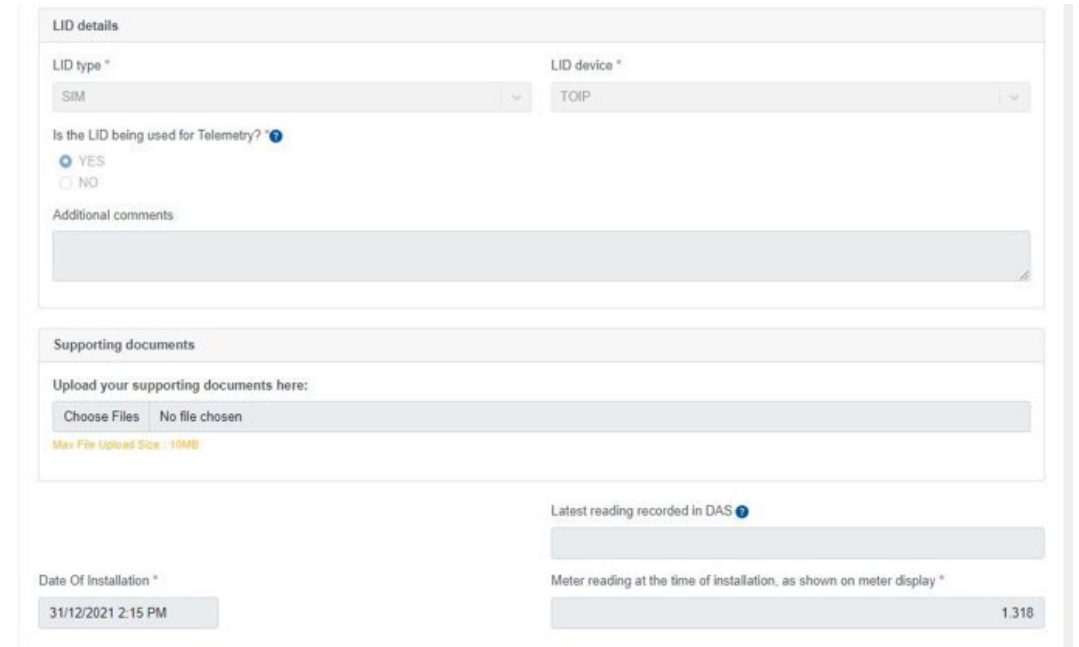


Embankment installation – submersible sensor



Register site in the DQP Portal

All information for the site from both the CSV and the surveyor, including telemetry registration, needs to be documented and put into the DQP Portal (dqp.watnsw.com.au/)



The screenshot shows a registration form with the following sections:

- LID details:** Includes dropdowns for 'LID type *' (set to 'SIM') and 'LID device *' (set to 'TOIP'). A radio button question 'Is the LID being used for Telemetry?' has 'YES' selected. Below is an 'Additional comments' text area.
- Supporting documents:** Features an 'Upload your supporting documents here:' section with a 'Choose Files' button and 'No file chosen' text. A note indicates 'Max File Upload Size - 10MB'.
- Latest reading recorded in DAS:** A text input field.
- Date Of Installation *:** A date and time selector showing '31/12/2021 2:15 PM'.
- Meter reading at the time of installation, as shown on meter display *:** A text input field containing the value '1.318'.

Installing tamper-evident seals



A DQP must apply tamper-evident seals to all accessible points to prevent unauthorised access to:

- local intelligence device
- sensor
- sensor brackets or supports
- cable termination boxes

Process for installing survey benchmarks

Process Summary

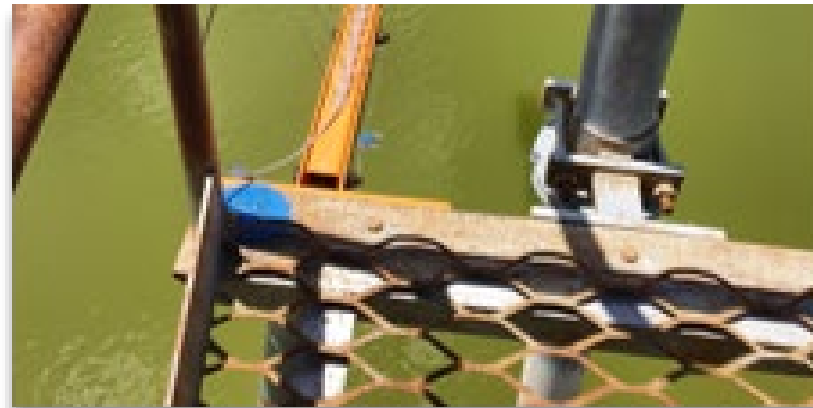
1. Landowner engages DQP (CSV) to establish storage metering equipment
2. CSV engages registered surveyor
3. Surveyor installs benchmarks and undertakes all other necessary survey work
4. Surveyor documents all work on site
5. Surveyor enters all survey data into the DQP portal



Survey benchmarks



Steel posts that are painted or marked with Benchmark symbols denote storage surveyor point of reference.



Blue painted circle covers a triangle shape cut into steel work to indicate benchmark location for height of Gantry AHD



Painted triangles like this can highlight a survey reference point or benchmark to cross-check other benchmark heights in the vicinity,

Floodplain harvesting measurement Case Studies

Camila Ridoutt-Wolfenden
Manager, Governance and
Coordination (job share with Chayna
Moldrich)

February 2023

Recap – Floodplain harvesting measurement period

Landholders must nominate the beginning and end of the measurement period – **this is the only time permitted to floodplain harvest**

The measurement period **BEGINS** when overland flow:

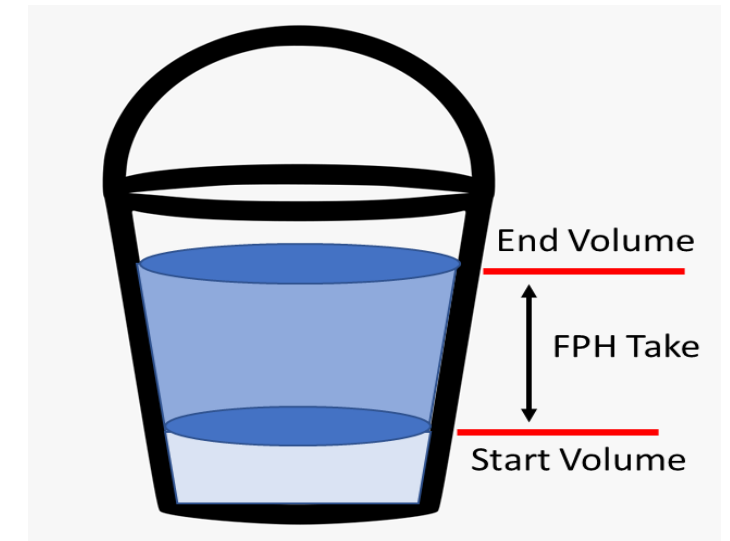
- starts entering your property, OR
- mixes with water on your property

The measurement period **ENDS** when floodplain water is no longer flowing in to your property, and all water in buffer zones, other than water that cannot reasonably be transferred, has been moved to metered storage.

Calculated:

Sum of daily gross storage volume increase for all storages nominated on water supply work approval minus

metered take under other licences put into storage during the measurement period.



Buffer zones are any field storages, surge areas or dams that are not metered.

It does not include supply channels.

Storage measurement method



Legend

Pipes



Pumps



Channels



On-Farm Storages



Storage transfers permitted during a measurement period

Primary metering equipment

Secondary metering equipment

Survey benchmark

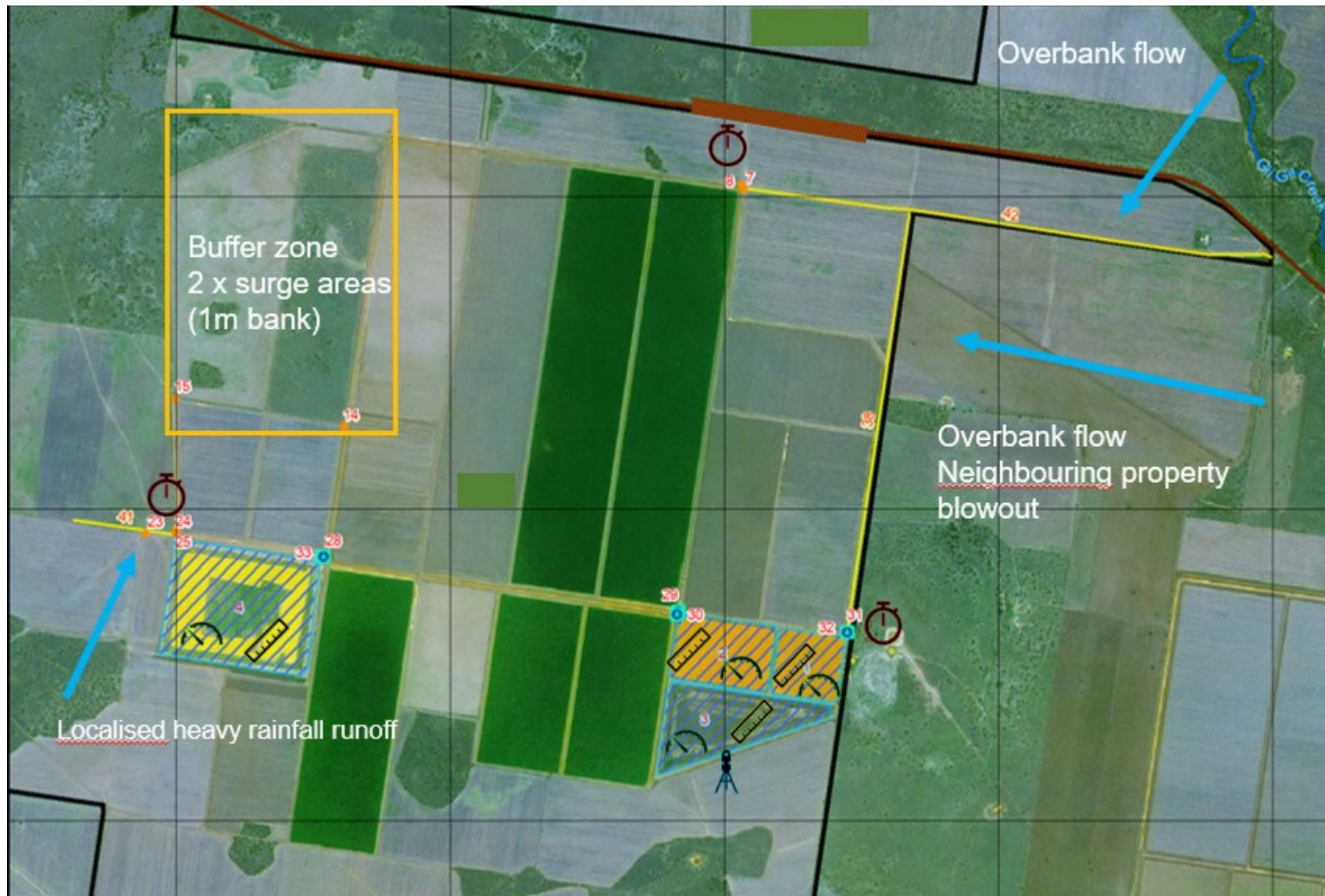
Measurement period

Starts:

Floodplain harvested water moves through pipes 7, 8, 23, 24 and 25 or pumps 31 or 32.

Ends:

All water in buffer zones already moved to another storage (1, 2, 3 or 4) and water is no longer being moved through pipes 7, 8, 23, 24 and 25 or pumps 31 or 32.



Legend

Pipes



Pumps



Channels



On-Farm Storages



Primary metering equipment



Secondary metering equipment



Survey benchmark



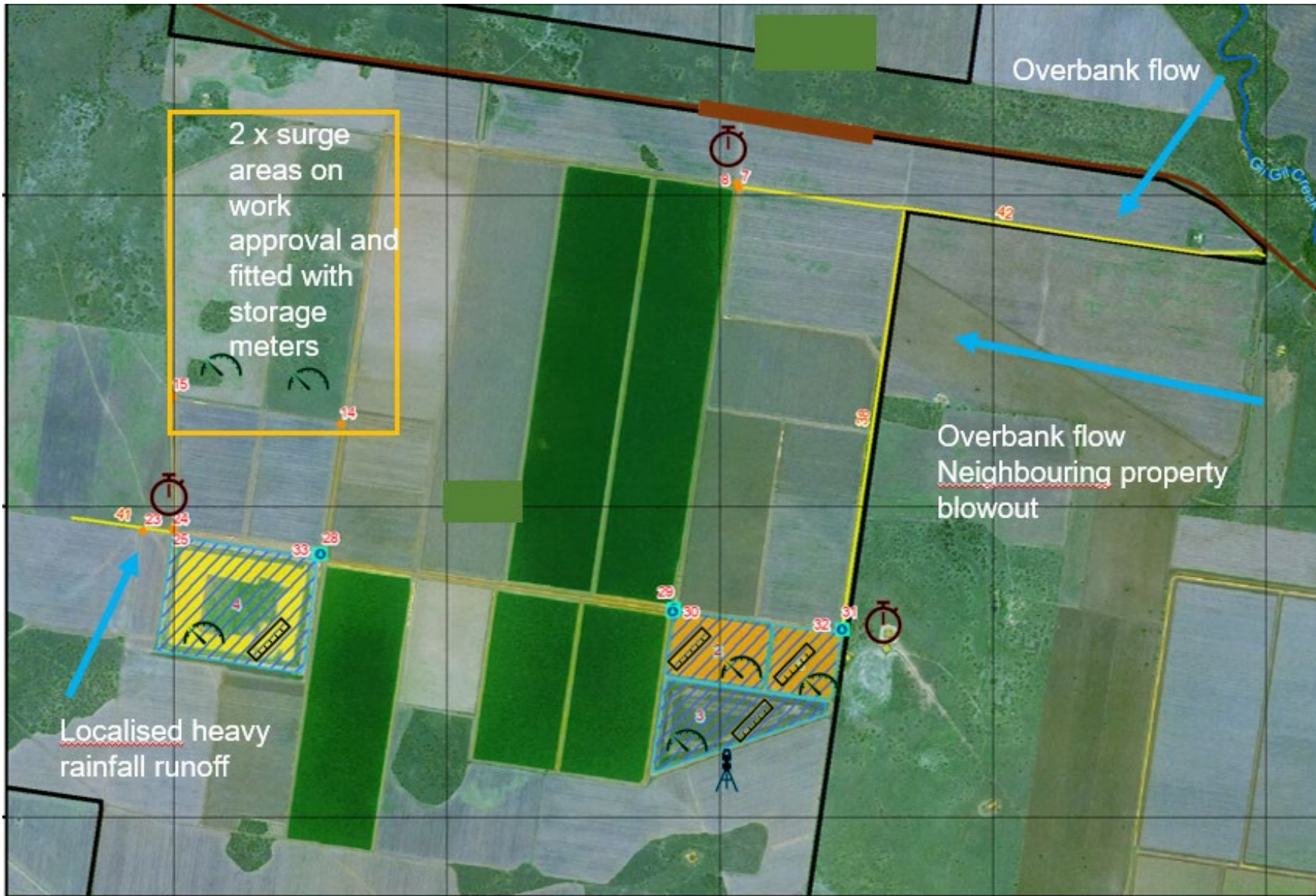
Measurement period

Starts:

Floodplain harvested water moves through pipes 7, 8, 15, 23, 24 and 25 or pumps 31 or 32.

Ends:

Water is no longer being moved through pipes 7, 8, 15, 23, 24 and 25 or pumps 31 or 32.



Point-of-intake measurement method

Legend

Pipes



Pumps



Channels



On-Farm Storages



Levee



Flow meter

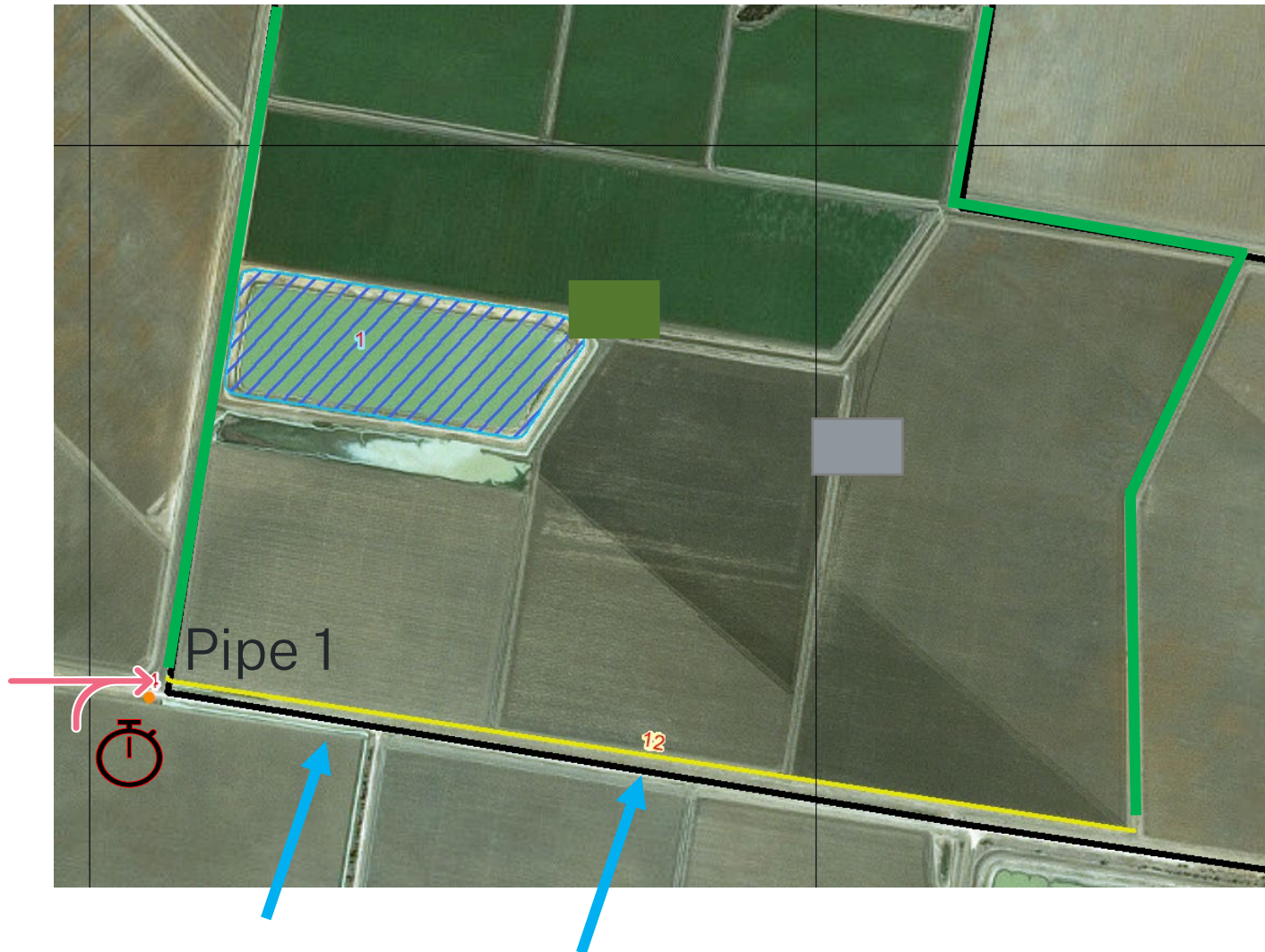


Measurement period



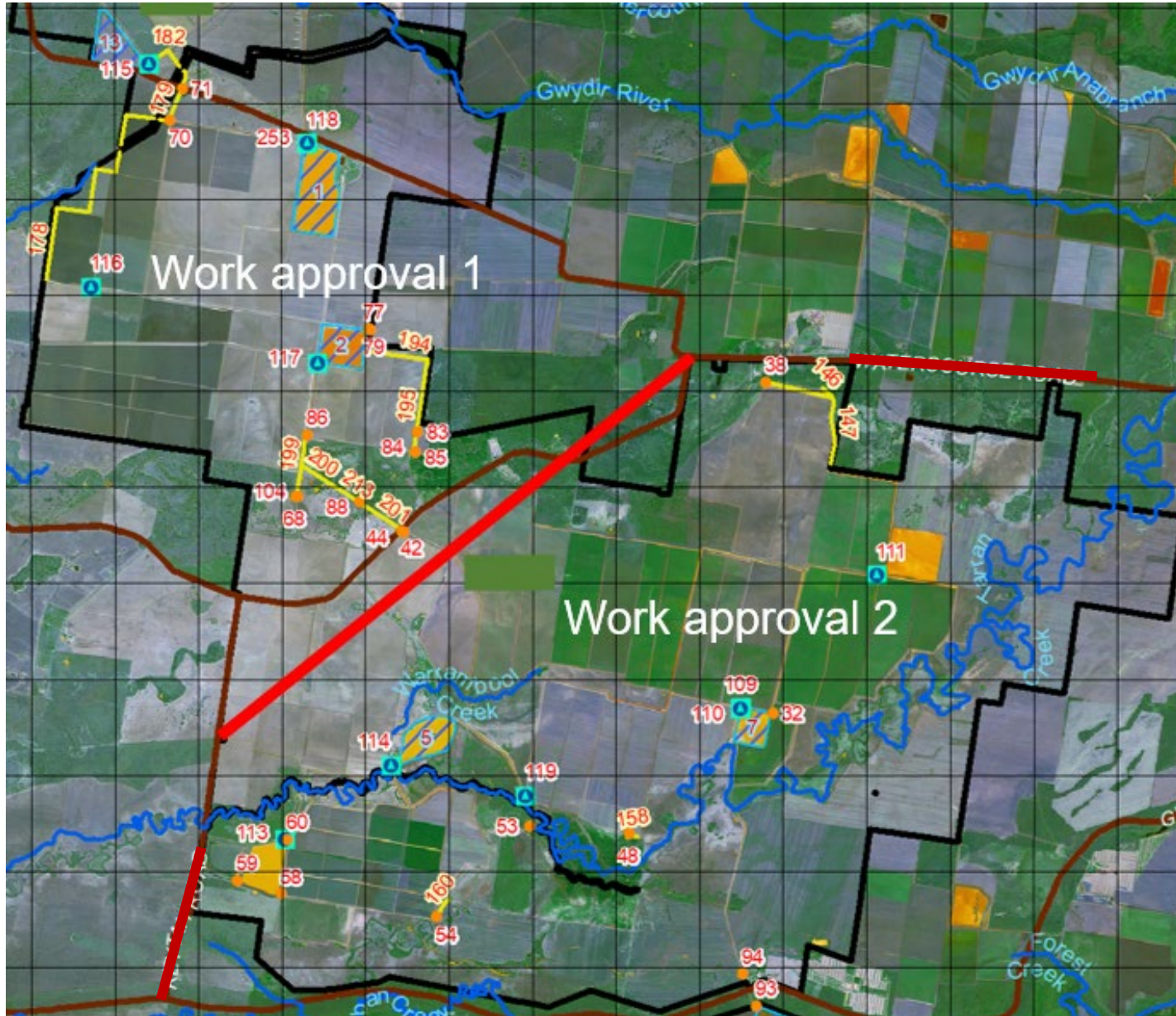
Starts: Floodplain water moves through pipe 1.

Ends: Floodplain water stops moving through pipe 1.



Localised rainfall runoff

Subdividing work approvals



Legend

Pipes



Pumps




Channels



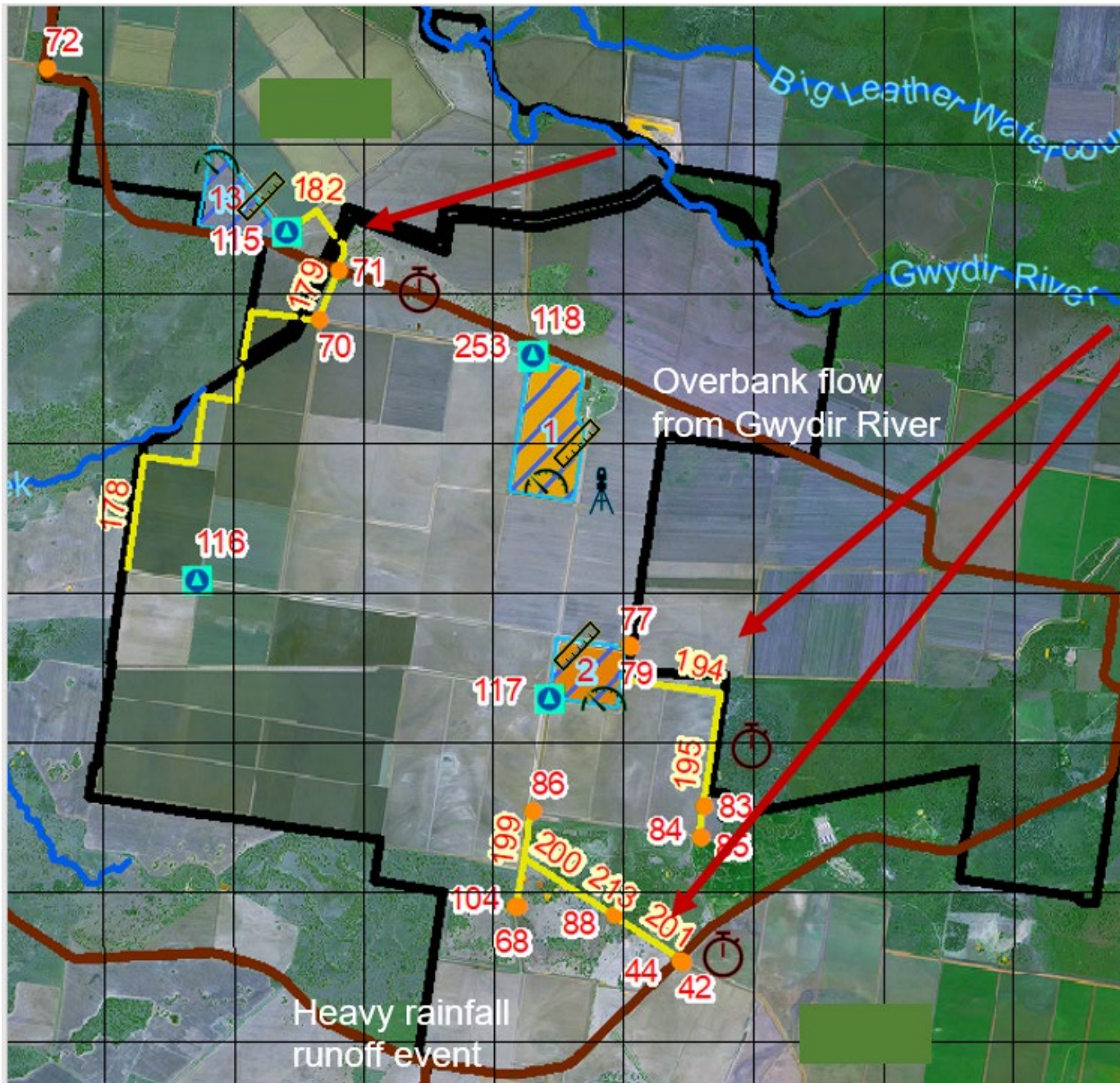
On-Farm Storages



 Subdivide work approval
into two

There must be controlling infrastructure between the two subdivided areas as it is an offence to move water from one subdivided area and another when any measurement period is in progress.

Work approval 1



Legend

Pipes



Pumps



Channels



On-Farm Storages



Primary metering equipment



Secondary metering equipment



Survey benchmark



Measurement period

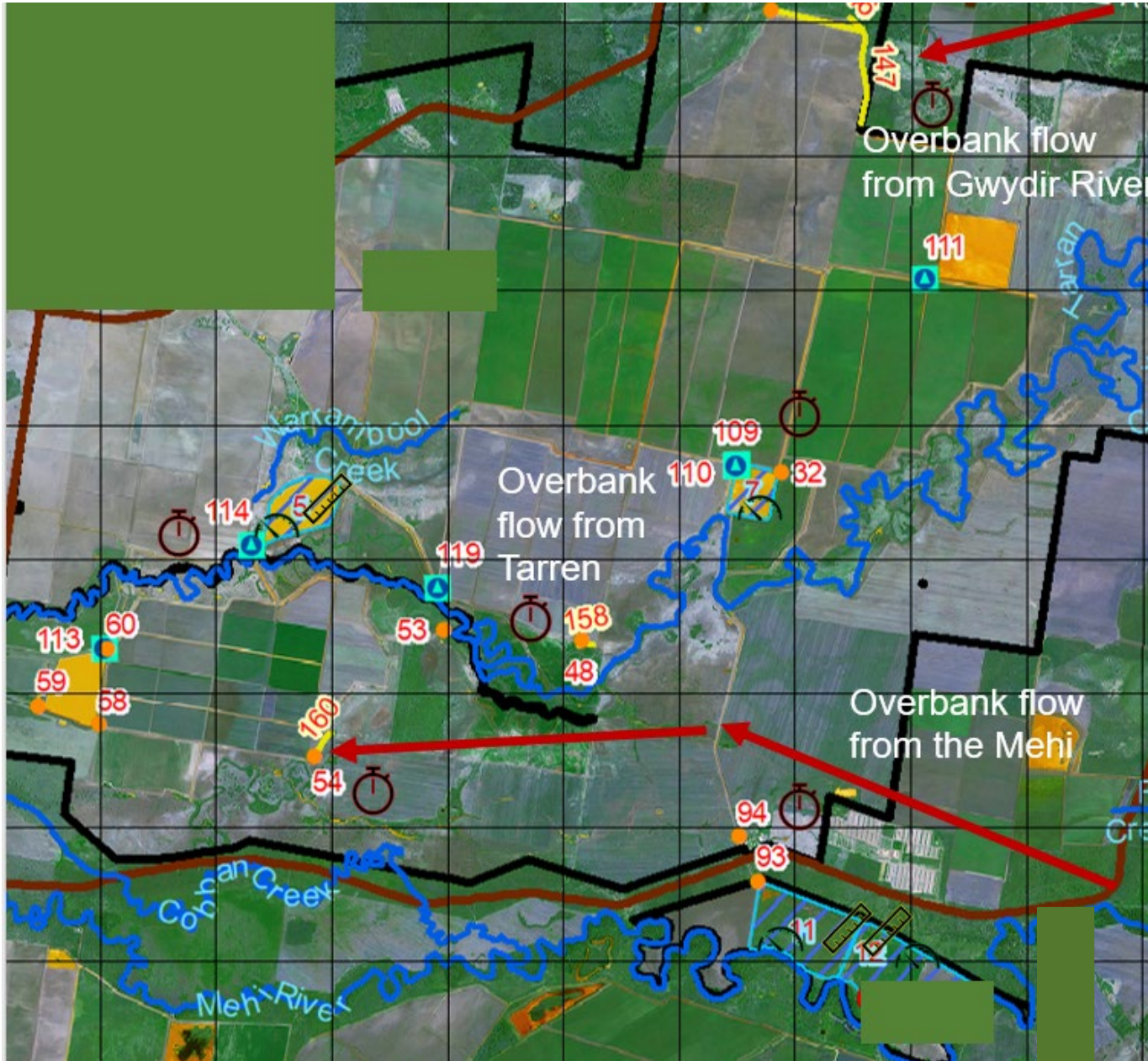
Starts:

Floodplain harvested water moves through any of the pipes or pumps on the work approval onto the property.

Ends:

No pumps or pipes are moving overland flow from external to the property to within the property (i.e. no moving water within the supply channels through any pumps or pipes).

Work approval 2



Legend

Pipes



Pumps



Channels



On-Farm Storages



Primary metering equipment



Secondary metering equipment



Survey benchmark



Measurement period

Starts:

Floodplain harvested water moves through any of the pipes or pumps on the work approval onto the property.

Ends:

No pumps or pipes are moving overland flow from external to the property to within the property (i.e. no moving water within the supply channels through any pumps or pipes).

There are no buffer zones on this property.

What you need to know and demonstrate

Property measurement plans help you to demonstrate:

- How you floodplain harvest
- How you nominate the start and end of your measurement period
- Location of primary metering equipment
- Location of secondary metering equipment
- Any subdivision of work approvals and differing measurement methods applied.