NSW GOVERNMENT

HEALTHY FLOODPLAINS PROJECT

Draft Floodplain harvesting monitoring and auditing strategy

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Draft Floodplain harvesting, monitoring and auditing strategy

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More information

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Cover image: NSW Department of Primary Industries

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Key points of the floodplain harvesting, monitoring and auditing strategy

- The variability of the occurrence of flood events and the uncontrolled delivery of overland flow across floodplains requires unique systems for monitoring harvesting of floodwaters.
- The NSW Government requires a volumetric measure of floodplain take that can be recorded and reported.
- This strategy adopts a staged approach to improve floodplain harvesting monitoring over time. Evaluation and review of this monitoring and auditing strategy will occur in the first two years post-implementation. If necessary, a revised approach may be implemented in the third year or subsequent years.
- The NSW Government is recommending that the floodplain harvesting volumetric entitlement be defined (or managed) based on volumes of water collected or impounded in permanent storages.
- Permanent storages are defined as purpose built structures in which water is routinely stored for extensive periods of more than a few weeks. Each permanent on-farm storage used to impound the floodplain take will be monitored with a physical monitoring system. The system will focus on measuring the changes in water levels of the permanent on-farm storage.
- This includes on-farm storages that may have been constructed after July 2008 that are used to store floodplain take, even though these storages are not considered in determining individual volumetric entitlements.
- The initial minimum requirement for storage monitoring is a gauge board with a corresponding storage stage volume curve.
- More sophisticated automated monitoring systems are available and may be used by the licence holder subject to approval. The choice of monitoring system above the minimum requirement is at the licence holder's discretion.
- The licence holder will be required to maintain a reporting system and keep accurate records, which will include measurements taken and methods used to determine reportable floodplain take. Records of take will need to be maintained for a period of at least 10 years. A recording template forms part of this strategy.
- Monitoring, record keeping and reporting of water harvested from the floodplain, including rainfall runoff, will be the responsibility of each individual user under a self-reported system.
- The Natural Resources Access Regulator (NRAR) will verify reported floodplain take using other sources of data including remote sensing and aerial imagery.
- Compliance monitoring and investigation will apply risk-based principles to ensure that resources are applied to their greatest effect.
- The Healthy Floodplains project will provide for the installation of gauge board and storage capacity curves to enable implementation of this strategy on the commencement of licences in the Northern Basin. The Healthy Floodplains project will also undertake the initial verification of any existing storage monitoring equipment.
- Once finalised, the implementation of this strategy will be the responsibility of the NRAR.
- WaterNSW will be responsible for the accounting and billing associated with floodplain harvesting.

Contents

Introduction

NSW Healthy Floodplains project

From its commencement in 2013, the aim of the NSW Healthy Floodplains project has been to drive reform in water management across the Northern Basin floodplains. This includes managing development in floodplain areas and bringing water extractions from floodplains into the water licensing and approval framework. With a $50 million funding commitment from the Commonwealth Government's Sustainable Rural Water Use and Infrastructure Program as part of the implementation of the Murray–Darling Basin Plan in NSW, the NSW Department of Industry is implementing the Healthy Floodplains project across five valleys in northern NSW: the Border Rivers, Gwydir, Namoi, Barwon–Darling and Macquarie valleys.

Once the NSW Healthy Floodplains project is completed, NSW will be consistent with the requirements detailed in the National Water Initiative and the NSW Floodplain Harvesting Policy. This project is also critical in enabling NSW to meet extraction limits defined in water sharing plans and sustainable diversion limits in the Murray–Darling Basin Plan.

The department is driving two key programs as part of the NSW Healthy Floodplains project:

- Floodplain Management Planning program
- Floodplain Harvesting program.

More information on the Healthy Floodplains project is available from the NSW Department of Industry website at industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/harvesting

Floodplain harvesting

Floodplain harvesting is the collection, extraction or impoundment of water flowing across a floodplain. It includes rainfall runoff but excludes water taken under a category of access licence other than a floodplain harvesting licence, a basic landholder right, a relevant licence exemption or used irrigation water. This is an important source of water for industry, particularly in the northern basin areas of NSW.

The NSW Floodplain Harvesting Policy, endorsed by the NSW Government in 2013 and revised in 2018, builds on previous, extensive water management reforms. The policy is currently being implemented in five northern valleys, with a view to further implementation across NSW.

Approvals to construct earthworks associated with floodplain harvesting under both the *Water Act 1912* and the *Water Management Act 2000* (WM Act) have been required in many areas of NSW for several decades. When the NSW Floodplain Harvesting Policy is implemented in a valley, new water access licences and the associated water supply work approvals for floodplain harvesting will be created and issued.

The policy aims to bring all legitimate floodplain harvesting diversions within the water licensing and approval framework under the WM Act. These diversions will fall within pre-existing water sharing plan limits. This means that no additional water take is allowed and flows for downstream systems are not reduced.

Hydrological models used to estimate water sharing plan limits accurately reflect river extractions and flows, but they do not accurately reflect what happens to flood flows that leave the river and do not return. This is because the focus of these models was on quantifying and managing within channel diversions, not floodplain harvesting and flood flows.

As part of the NSW Floodplain Harvesting Policy, there has been an unprecedented investment in data and modelling to more accurately quantify these floodplain processes, and more specifically the harvesting component of water sharing plan limits. These upgraded hydrological models with improved estimates of floodplain harvesting will be submitted to the Murray–Darling Basin Authority for review as part of the accreditation of Water Resource Plans.

Floodplain harvesting water access licences will be created through amendments to the Water Management (General) Regulation 2018. It is anticipated that licences in the five northern NSW valleys will take effect simultaneously in late 2019. Licences will only be created in association with those water supply works that are also approved for floodplain harvesting.

In some areas of the northern basin, there has been a significant growth in floodplain harvesting infrastructure, causing floodplain harvesting diversions to increase above plan limits. The NSW Floodplain Harvesting Policy, when implemented, will function to restrict current floodplain harvesting activities so that diversions return back to the plan limits.

NSW Floodplain Harvesting Policy

In 2013, the NSW Government introduced the Floodplain Harvesting Policy to stop unconstrained floodplain harvesting by bringing it into a licensing and approval framework. The policy is currently being implemented in the designated floodplains of the five northern NSW valleys. It will then be rolled out across the state.

In September 2018, a number of changes were made to the Floodplain Harvesting Policy to reflect lessons learned during the initial implementation. The changes incorporate feedback from all stakeholders made as part of a formal submission process in March to April 2018. The policy now:

- allows a valley to manage growth in use by applying an overall plan limit or splitting the limit into floodplain harvesting and non-floodplain harvesting components
- clarifies that 'floodplain harvesting' includes the capture of rainfall runoff
- provides for a rigorous, staged approach to improving monitoring of floodplain harvesting
- allows the development of valley-specific account management rules.

The NSW Department of Industry website has more information on the revised NSW Floodplain Harvesting Policy (industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/harvesting).

Determining a monitoring approach

There is currently no monitoring of floodplain harvesting diversions. The capacity to monitor floodplain harvesting diversions is one of the significant advantages of bringing these diversions into the licensing framework. Numerous workshops, reviews and studies have been undertaken to determine the preferred method of monitoring floodplain harvesting take.

During 2014, a pilot study was conducted to assess and evaluate possible measurement devices and monitoring systems. During 2015, further work was undertaken and consultation occurred with stakeholders on the development of a preferred monitoring strategy.

In March 2017, the NSW Government released a draft Floodplain Harvesting Monitoring Policy for public consultation. Nine formal submissions were received as part of this process.

In November 2017, the Murray–Darling Basin Water Compliance Review (www.mdba.gov.au/publications/mdba-reports/murray-darling-basin-water-compliance-review) included a recommendation to improve confidence in the measurement of take by floodplain harvesters in the northern basin. The recommendation was that by 30 June 2022 NSW (and Queensland) would be required to accurately measure 95% of take by non-metered floodplain harvesting, by methods such as calibrated storage level recorders.

In light of the submissions on the draft Floodplain Harvesting Monitoring Policy and the Murray–Darling Basin Water Compliance Review, in March 2018, the NSW Government released a consultation paper (search 'Implementing the NSW Floodplain Harvesting Policy consultation paper' at industry.nsw.gov.au) to seek feedback on the next steps in implementing the NSW Floodplain Harvesting Policy. This included a proposal to implement a staged approach to floodplain monitoring that aims to improve rigour over time. Feedback received generally supported the staged process to improving monitoring of floodplain harvesting (search 'Implementing the NSW Floodplain Harvesting Policy: consultation outcomes' at industry.nsw.gov.au). The process comprises the following stages:

1. In the first three years after floodplain harvesting licences come into effect, licence holders will be required to measure changes in on-farm storage volumes using gauge boards and calibrated storage curves.
2. During this time, the department will evaluate the performance of the approach and explore alternative approaches (including remote sensing and continuous storage monitoring).
3. If it is determined that an alternative monitoring approach is preferred, the new methodology will be implemented after the first three years.

This strategy provides more detail on the practical components of the adopted approach including the review process.

Purpose

The purposes of this strategy are to:

- ensure fair use of water resources
- build trust and confidence through a transparent strategy
- support the irrigation industry's continued access to floodplain water into the future
- support the reliability of water supply for downstream water users
- ensure compliance with the requirements of the *Water Management Act 2000*, meet the objectives of the National Water Initiative
- protect the environment.

Some key features of this strategy are that it:

- is effective—fit for purpose, measurable within reasonable limits, defensible, robust, enforceable, and meets the needs of government and industry
- is staged—it acknowledges the challenges to effective monitoring in the floodplain harvesting context but aims to improve rigour over time
- provides certainty—it details a transparent approach and supports legitimate activity in conjunction with a licensing framework to provide industry security into the future
- is easy to implement—the activities required are simple, streamlined, require minimal effort and time and use known practices where appropriate to minimise regulatory burden
- is cost effective—it minimises costs of measuring, recording and reporting floodplain harvesting take.

This strategy is consistent with the aims of the NSW Floodplain Harvesting Policy (2018), the NSW Healthy Floodplains project and the Natural Resources Access Regulator Regulatory Policy (2018).

Application of the strategy

This strategy applies to those landholders who receive a floodplain harvesting access licence and associated water supply work approvals under the Floodplain Harvesting Policy.

The monitoring requirements of this strategy will be effected through the conditions of the approvals.

Figure 1: A typical permanent storage for floodplain take (Source: NSW Department of Primary Industries)

Monitoring floodplain take

As part of the Healthy Floodplains project implementation, the NSW Government is proposing that the floodplain harvesting volumetric entitlement be defined based on volumes of water collected or impounded in permanent storages. Hence this monitoring strategy focuses predominately on measuring the changes in water levels of permanent storages.

Permanent storages are defined as purpose-built structures in which water is routinely stored for extensive periods of more than a few weeks. Each permanent storage used to impound the floodplain take will be monitored with a physical system. This includes on-farm storages that may have been constructed after July 2008 that are used to store floodplain take, even though these storages are not considered in determining individual volumetric entitlements.

Measuring storage volume change

Measurement devices

All storages used to store floodplain take must be monitored using a measurement device. The aim of the measurement device is to measure the change in water level (storage depth) as a consequence of impounding floodplain take.

As a minimum, gauge boards can be used as a means to measure storage depth. The licence holder is required to manually read the gauge when water movements occur in and out of the storage during a floodplain harvesting event (this includes rainfall runoff). Additional gauge readings outside of floodplain harvesting (FPH) events are required to support verification of starting volume records. Further detail is provided later in the Data recording and reporting section of this paper.

Licence holders may prefer a monitoring system that has some level of automation. The choice of monitoring system above the minimum requirement is at the licence holder's discretion, but any alternative methods will require NRAR approval.

Automated measurement devices range from wet sensors (pressure and bubblers) to dry devices (cameras and radar) with ancillary data loggers to record data, intervals and performance that can be manually downloaded or sent via modem and telemetry. If a storage is monitored with an automated measuring device, then it will need to be fitted with a back-up system of gauge boards which can be manually read during potential system outages. The gauge boards will also provide a quick calibration check on automated measurement devices, particularly in relation to Australian Height Datum (AHD).

All measurement devices including gauge boards will need to be calibrated to a permanent localised benchmark that is surveyed to AHD via conventional survey methods or Global Navigation Satellite Systems (GNSS). This will ensure that the measurement device can be recalibrated when required or repaired and/or replaced and recalibrated. It will also enable alignment of measurement devices to AHD land surveys of storages. The appropriate standard for the installation of gauge boards is provided in *National Industry Guidelines for hydrometric monitoring, Part 2.*

If a licence holder has an existing measurement device on a storage it will need to be verified by NRAR. The Healthy Floodplains project will undertake the initial verification of existing storage measurement systems.

Ownership and maintenance of equipment

Whilst the initial purchase and installation costs of the monitoring system (gauge boards and storage volume curves) will be met by the Healthy Floodplains project, all monitoring systems and data produced by the monitoring systems will be owned by the licence holder. The licence holder will be responsible for the repairs, maintenance and replacement of the monitoring system. The licence holder will be able to use the data from the monitoring system to complement their farm management.

Maintenance and Calibration—Gauge boards will need to be checked every ten years to demonstrate that they are correctly calibrated to the relevant localised datum and can accurately measure the depth of water in

the storage over the full range of storage levels. Automated monitoring systems will need regular servicing and calibration as determined by the supplier. Confirmation of calibration and maintenance is to be recorded by the licence holder and produced on request.

Replacement—Replacement of monitoring systems (due to failure, adoption of new technology or change to storage configuration) will be at the owner's cost.

Storage surveys and stage volume curves

All storages used to store floodplain take will require a storage survey to enable the change in measured water levels to be converted to a volume of water.

Storage surveys will be supplied by the Healthy Floodplains project.

Any change to the storage configuration—for example, increase in storage height, storage enlargement or sectioning into cells—undertaken in accordance with the respective water supply work approval will require a new storage survey and development of a revised depth/volume curve.

If a licence holder has an existing land survey and storage stage volume curve, then it will need to be verified by a suitably qualified person. The Healthy Floodplains project will undertake the initial verification of any existing storage stage volume curves.

Temporary storages

Temporary storages are defined as surge areas, sacrifice fields, supply channels, water distribution networks and other areas where water is collected or impounded opportunistically and typically for periods of less than a few weeks. The practice of using temporary storages to collect or impound floodplain water will be permitted but will be subject to the following conditions:

1. Direct extraction from temporary storages must be measured, either by routing through a monitored permanent storage or via a meter that meets the requirements of the NSW water metering framework. Direct extraction from temporary storages via a meter must also be recorded as floodplain harvesting use.
2. Diversion (such as through a pump, pipe, regulator or channel) into sacrificial fields can only be undertaken when monitored permanent storages are full. For the purposes of this condition, uncontrolled flood flows overtopping into the field or rainfall runoff from that field are not classified as diversion.

Direct temporary storage extraction via a meter must only be undertaken if this is permitted by the relevant water supply work approval. Note that an amendment to the initial water supply work will be required if this practice is intended.

Data recording and reporting

Reading frequency

Manual readings from the gauge boards for all storages and meters (in cases where there is direct temporary storage use via a meter) need to be collected and recorded by the licence holder as per the timeframes below:

- Daily—from the first day that floodplain harvesting is occurring on the property (including rainfall runoff harvesting) to the last day that this harvested water from that same event is being transferred into permanent storage
- Weekly—during the irrigation season (1 October to 28 February)
- Monthly—for all other times
- Monthly—for direct temporary storage use by meters.

A floodplain harvesting event is the collection, extraction or impoundment of water flowing across floodplains, including rainfall runoff. It excludes water taken under a category of access licence other than a floodplain harvesting licence, a basic landholder right, a relevant licence exemption or used irrigation water.

Additional gauge readings outside of FPH events are required to support verification of volume records at the start of a FPH event. The requirement for weekly recordings during the irrigation season reflect the frequent changes to storage levels that is not anticipated outside of the irrigation season where monthly recordings are most appropriate. Appendix A provides a recording template to assist in capturing this information.

Recording requirements

Recordings must at least include:

- the date of the reading
- the storage level
- the storage volume (volumetric conversion via the storage volume)
- a reason for the change in volume (for example, floodplain take, tailwater return, irrigation use etc.)
- who reviewed and recorded storage level.

A floodplain harvesting recording template has been provided in **Appendix A**.

Records can be manually captured and stored in a logbook or similar. They must be kept legible and secure for at least 10 years and must be able to be audited if required. Records can also be captured through automated processes and stored electronically.

The licence holder is responsible for closely reviewing their floodplain harvesting take against their actual account balance to ensure that at all times harvesting activities remain within their account limits and rules.

Take in excess of account limits can be discharged (for example, via a blow-out point) from the development in accordance with best management practice guidelines, notably the guideline 'Managing Riparian Lands in the Cotton Industry' available from cottoninfo.com.au/publications/managing-riparian-lands-cotton-industry.

If 'passive' diversion through off-river pools occurs in excess of that permitted by account rules, licence holders are required to pass the excess flows through the off-river pools.

Reporting requirements

Licence holders are required to self-report their total reportable take into the WaterNSW Water Accounting System (iWAS) within one calendar month of the end of a floodplain harvesting or rainfall runoff event. The licence holder must also upload the associated records to support their calculation into iWAS.

In addition, all licence holders must submit an annual report via iWAS within one calendar month of the conclusion of each financial year. This requirement is to ensure nil reports are captured to ensure that appropriate records are being maintained.

As part of the self-assessment and reporting procedures, licence holders are to report account exceedances and actions taken (for example, discharge in accordance with the Australian cotton industry: best management practices manual) to WaterNSW.

iWAS can be accessed at waternsw.com.au/iwas.

Access to first flush provision

Holders of floodplain harvesting access licences may take rainfall runoff from a developed area that has been treated with a chemical product that requires runoff to be captured. This provision allows for the floodplain harvesting account to go into debit, not exceeding a rate of 0.55 ML/ha. The debited amount associated with the first flush provision is deducted from the next available water determination. Accounting rules associated with this provision will form part of the relevant water sharing plans. Access to this provision is subject to being able to supply the following additional records:

- chemical application record showing:
    - chemical applied (including information that establishes that runoff needs to be captured)
    - application method
    - area of application
    - location of application
    - date of chemical application
- farm rainfall log showing
    - daily rainfall totals during first flush event.

The NSW Department of Primary Industries has prepared a form that can be used to capture the information required and also meets the requirements of the Pesticides Amendment (Records) Regulation 2001.

Tailwater return

The increase in storage volume due to tailwater return that occurs in combination with take associated with a rainfall runoff or floodplain harvesting event may be deducted from the total reportable floodplain take.

Records must be kept indicating how the tailwater amount has been calculated. Suitable records may include data showing previous tailwater return amounts into storage, outputs from computer programs and tools such as WaterTrack, HydroLOGIC or WaterSched or by applying first principles based on an estimated run-off percentage.

Verification, auditing and investigation and enforcement

This strategy adopts an outcomes-focused and risk-based regulatory approach that aligns with the requirements of the NSW Quality Regulatory Services Initiative. The verification, investigation and compliance activities associated with the implementation of this strategy will be managed by NRAR but may include technical support and data provision from other agencies, particularly NSW Department of Industry, WaterNSW and OEH.

Verification

Independent verification will be undertaken to establish whether the reported floodplain take through the self-reporting system falls within reasonable limits of accuracy.

The verification process will incorporate a number of methods that are likely to change over time as technology advances. Verification may include the use of:

- aerial imagery, both flown and satellite gathered to provide pre and post flood storage levels
- satellite data products such as Water Observations from Space and Irrisat to determine crop water use and the use of temporary storages
- farm water balance calculations using crop area estimates and other water usage recorded
- direct comparison of take between licence holders
- site visits.

The information gained through the verification process will provide input into a wider decision support system to provide information as to potential anomalies and outliers that may require further investigation.

Compliance monitoring and investigation

The NRAR applies risk-based principles to ensure compliance monitoring is focused on issues that are the most important, or have the highest potential consequence. Consistent with this, the auditing and investigation component of this strategy considers the consequence of non-compliance and the likelihood of non-compliance. This ensures that resources are applied to their greatest effect. Taking a risk-based approach will also result in individuals and business not being inconvenienced by unnecessary regulatory activities.

Pro-active monitoring

The NRAR will plan a range of pro-active, planned monitoring and inspection programs to determine the level of compliance within the floodplain harvesting community.

Pro-active monitoring for floodplain harvesting may include:

- the use of remote surveillance techniques such as aerial photography and satellite images, land and river surveys
- inspections/audits determined on the basis of a risk rating
- follow up audits or more frequent auditing of identified poor performers.

For example, priorities for pro-active monitoring in relation to floodplain harvesting may be where overland flows affect key ecological and cultural assets and may then focus on property features such as where capacity to take floodplain water exceeds licenced entitlement.

Subject to resourcing requirements, it is expected that 10% of floodplain harvesters will be pro-actively audited each year.

Reactive monitoring

Reactive monitoring and inspections are undertaken in response to reports, incidents or other intelligence. Those licence holders identified as having anomalies or considered as outliers identified as part of the verification process will be considered for reactive investigation.

The verification, auditing and investigation processes will ensure that NRAR can detect instances of non-compliance in a timely manner.

Enforcement

Enforcement will be applied as per the NRAR Regulatory Policy. A graduated and proportionate approach to non-compliance is employed, based on the severity of the non-compliance (its impact on the environment and potential harm to people or property) and the regulated entity's culpability, cooperation and approach to the non-compliance.

Responses to non-compliance, in increasing severity, include:

- advisory letters
- warnings (written and verbal)
- corrective requests
- statutory directions such as stop work orders and remediation notices
- enforceable undertakings
- penalty infringement notices
- civil action, such as:
    - debiting a water licence holder's account by up to 5 times the amount of water taken, or
    - imposing a penalty of up to 5 times the value of the water taken
- licence action (including suspension, variation or cancelation)
- prosecution.

The NRAR will not hesitate to take strong enforcement action when required.

Figure 2: Namoi River in flood (Source: NSW Department of Primary Industries)

Evaluation and review

A key component of this strategy is the evaluation of the approach to monitoring in the first two years of implementation.

The evaluation will consider:

- the relative accuracy of the gauge board measurement method against alternative means such as automated water level sensors
- the efficiency and effectiveness of the strategy, particularly practical implementation issues encountered and on-going resourcing requirements in relation to risk of non-compliance
- the views of the floodplain harvesting community as to the impact of the strategy on farm operations, including seeking feedback on ways to improve
- availability and viability of new technologies, via the Water Pilot Technology project (industry.nsw.gov.au/water-reform/water-pilot-technology-program) currently underway, an initiative of the NSW Water Reform Action Plan, funded by NSW Department of Industry (industry.nsw.gov.au/water-reform).

In the event that no (or a limited) flood event occurs in the two years following implementation of the strategy, the evaluation period may be extended until such time as a flood event occurs. This will allow for an effective review of the strategy, particularly the practical implications of monitoring during flood events.

Outcomes of this evaluation will inform and guide any decision to modify the approach to monitoring and auditing of floodplain take. If required, a modified or alternative approach will be implemented in the third year (or one year after a flood event).

Complementary material

Floodplain harvesting and environmental flows

An intergovernmental working group (IWG) with New South Wales and Commonwealth agency representation was established in February 2018 to develop options on how the NSW Government can deliver on its commitment to better manage environmental water.

In June 2018, the IWG produced the document ‘Better management of environmental water—Interim solutions package’ (available from industry.nsw.gov.au/water-reform/better-management-of-environmental-water) that included a roadmap that identifies further work to be progressed to implement interim solutions, as well as work required to inform the development of enduring solutions and ensure these solutions are evidence-based and take into account stakeholder concerns.

As part of this work, the IWG will consider the protection of held environmental water (HEW) which may include measures to protect HEW from being extracted by downstream users, including floodplain harvesters. A report on progress, including outcomes of stakeholder consultation, will be provided by the end of April 2019.

Trading

Trading of floodplain harvesting access licences (previously known as permanent trading) will be permitted in regulated river water sources, plus the Barwon–Darling, subject to the development of an appropriate trading framework that defines the types of trades permitted and any relevant trading restrictions. Trading of floodplain harvesting access licences in unregulated river water sources (excluding the Barwon–Darling) will not be permitted until metering is in place for all relevant access licences in these water sources.

Prior to any trade of floodplain harvesting access licences being approved in the regulated river water sources, the current owner of the floodplain harvesting access licence (the vendor) will need to demonstrate how they

will ensure that their works will no longer undertake the floodplain harvesting associated with the share component to be sold. The purchaser will need to have works approved for floodplain harvesting before taking water under the purchased share component.

The episodic nature of floodplain harvesting events and the unique conditions that exist on-farm mean that trading of water allocations for floodplain harvesting access licences is potentially problematic. The challenge such trading presents is ensuring that floodplain water is only taken once, by the person who has bought the water. As such these trades will be considered as soon as appropriate procedures to ensure compliance and appropriate measuring, monitoring, administrative and accounting processes can be put in place.

The evaluation and review of this strategy will inform the development of the trading framework.

More information

You are invited to make a submission on this draft 'Floodplain harvesting monitoring and auditing strategy' until 5 pm on Friday 15 February 2019. All submissions will be considered when finalising the strategy. To provide feedback on the draft strategy, visit the Have Your Say website at www.haveyoursay.nsw.gov.au

For more information on the NSW Healthy Floodplains project, visit the project pages on the NSW Department of Industry website at industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project.

For more information on the regulatory policy and compliance activities of the Natural Resources Access Regulator, visit industry.nsw.gov.au/natural-resources-access-regulator

Appendix A Floodplain harvesting recording template

Licensee:

Storage name/location:

(Use a separate form for each storage)

Annual water year: to	Floodplain harvesting water access licence number:
Property location:	
Floodplain harvesting account balance at start of water year:	

Event record

Record any collection of water flowing across floodplains, including rainfall runoff.

Date	Height verses volume conversion		Change in volume (ML)	Reason for change in volume (e.g. floodplain take, rainfall runoff, tailwater return, irrigation use, first flush, transfer into/out of other storage, metered take)
	Staff gauge level (m)	Storage volume (ML)		
Day/Month/Year			N/A	
Day/Month/Year				
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Day/Month/Year				

Notes:

Refer to Storage Volume Curve for volume conversion

Date	Height verses volume conversion		Change in volume (ML)	Reason for change in volume (e.g. floodplain take, rainfall runoff, tailwater return, irrigation use, first flush, transfer into/out of other storage, metered take)
	Staff gauge level (m)	Storage volume (ML)		
Day/Month/Year				
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Notes:

Add additional pages as required.

Continuous volume record

Record storage volumes weekly during the irrigation season (October 1 to February 28) and monthly for all other times.

Reading requirement	Date	Height verses volume conversion	
		Staff gauge level (m)	Storage volume (ML)
July	Day/Month/Year		
August	Day/Month/Year		
September	Day/Month/Year		
October Week1	Day/Month/Year		
October Week 2	Day/Month/Year		
October Week 3	Day/Month/Year		
October Week 4	Day/Month/Year		
November Week1	Day/Month/Year		
November Week2	Day/Month/Year		
November Week3	Day/Month/Year		
November Week4	Day/Month/Year		
November Week5	Day/Month/Year		
December Week1	Day/Month/Year		
December Week2	Day/Month/Year		
December Week3	Day/Month/Year		
December Week4	Day/Month/Year		
January Week1	Day/Month/Year		
January Week2	Day/Month/Year		
January Week3	Day/Month/Year		
January Week4	Day/Month/Year		
January Week5	Day/Month/Year		
February Week1	Day/Month/Year		
February Week2	Day/Month/Year		
February Week3	Day/Month/Year		
February Week4	Day/Month/Year		
March	Day/Month/Year		
April	Day/Month/Year		
May	Day/Month/Year		
June	Day/Month/Year		

Add additional pages as required.

Tailwater return deduction

Date of irrigation event: Day/Month/Year	Date of floodplain take/rainfall runoff event: Day/Month/Year
Estimated tailwater return:	
Evidence: please explain how tailwater return has been estimated— attach additional information if required.	

Tailwater return deduction

Date of irrigation event: Day/Month/Year	Date of floodplain take/rainfall runoff event: Day/Month/Year
Estimated tailwater return:	
Evidence: please explain how tailwater return has been estimated— attach additional information if required.	

Tailwater return deduction

Date of irrigation event: Day/Month/Year	Date of floodplain take/rainfall runoff event: Day/Month/Year
Estimated tailwater return:	
Evidence: please explain how tailwater return has been estimated— attach additional information if required.	

Add additional pages as required.

First flush provision

Date of chemical application: Day/Month/Year	Date of rainfall event: Day/Month/Year
First flush volume (based on storage records):	
Evidence 1) Please attach a chemical application record showing: o chemical applied—including information demonstrating that runoff needs to be captured o application method o area of application o location of application o date of chemical application 2) Please attach your farm rainfall log showing daily rainfall totals during the first flush event.	

First flush provision

Date of chemical application: Day/Month/Year	Date of rainfall event: Day/Month/Year
First flush volume (based on storage records):	
Evidence 1) Please attach a chemical application record showing: o chemical applied—including information demonstrating that runoff needs to be captured o application method o area of application o location of application o date of chemical application. 2) Please attach your farm rainfall log showing daily rainfall totals during the first flush event.	

First flush provision

Date of chemical application: Day/Month/Year	Date of rainfall event: Day/Month/Year
First flush volume (based on storage records):	
Evidence 1) Please attach a chemical application record showing: o chemical applied—including information demonstrating that runoff needs to be captured o application method o area of application o location of application o date of chemical application. 2) Please attach your farm rainfall log showing daily rainfall totals during the first flush event.	

Floodplain take calculation*

Storage name/location:	Take event start: Day/Month/Year Take event end: Day/Month/Year
Total storage volume increase (as per records above)	
MINUS transfers from other storages	
MINUS metered take	
MINUS total tailwater return (if applicable)	
REPORTABLE FLOODPLAIN HARVESTING TAKE (for this storage):	

*Complete a floodplain take calculation for each event (floodplain take or rainfall runoff).

Floodplain take calculation*

Storage name/location:	Take event start: Day/Month/Year Take event end: Day/Month/Year
Total storage volume increase (as per records above)	
MINUS transfers from other storages	
MINUS metered take	
MINUS total tailwater return (if applicable)	
REPORTABLE FLOODPLAIN HARVESTING TAKE (for this storage):	

*Complete a floodplain take calculation for each event (floodplain take or rainfall runoff).

Floodplain take calculation*

Storage name/location:	Take event start: Day/Month/Year Take event end: Day/Month/Year
Total storage volume increase (as per records above)	
MINUS transfers from other storages	
MINUS metered take	
MINUS total tailwater return (if applicable)	
REPORTABLE FLOODPLAIN HARVESTING TAKE (for this storage):	

*Complete a floodplain take calculation for each event (floodplain take or rainfall runoff).

Add additional pages as required.

TOTAL floodplain take calculation*

Storage name/location	**Reportable floodplain harvesting take**
Direct extraction from temporary storage (if applicable)	
TOTAL	

*This calculation only needs to be completed once for each floodplain harvesting water access licence.