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# **SUBMISSION**

## **Draft Floodplain Harvesting Monitoring and Auditing Strategy**

February 2019



## Introduction

The NSW Irrigators' Council (NSWIC) is the peak body representing irrigation farmers and the irrigation farming industry in NSW. Our Members include valley water user associations, food and fibre groups, irrigation corporations and commodity groups from the rice, cotton, dairy and horticultural industries. Through our members, NSWIC represents over 12,000 water access licence holders in NSW who access regulated, unregulated and groundwater systems.

NSWIC engages in advocacy and policy development on behalf of the irrigation farming sector. As an apolitical entity, the Council provides advice to all stakeholders and decision makers.

Irrigation farmers are stewards of tremendous local, operational and practical knowledge in water management. With over 12,000 irrigation farmers in NSW, there is a wealth of knowledge available. To best utilise this knowledge requires participatory decision making and extensive consultation to ensure this knowledge can be incorporated into best-practice, evidence-based policy. NSWIC and our Members are a valuable way for Governments and agencies to access this knowledge.

NSWIC welcomes this public exhibition as an opportunity to work with the NSW Department of Industry (DoI) to incorporate local, practical and operational knowledge and expertise in water management. NSWIC offers the expertise from our network of irrigation farmers and organisations on an ongoing basis to ensure water management is practical, community-minded and follows participatory process.

This submission represents the views of the Members of NSWIC with respect to the *Draft Floodplain Harvesting Monitoring and Auditing Strategy*. Each member reserves the right to independent policy on issues that directly relate to their areas of operation, expertise or any other issues that they deem relevant.

## Engagement

The NSWIC Chair, Policy Staff and Members attended the public consultation sessions in Northern NSW and Sydney in late 2018. NSWIC noted from these sessions that the 3 main areas where feedback is sought are:

- I. Reporting;
- II. Recording; and
- III. Temporary storages.

NSWIC provided a submission to the *Independent Review of NSW Floodplain Harvesting Policy Implementation*, and a collective of Members have subsequently met with the reviewers for further feedback. The NSWIC submission is available on the NSWIC website [[HERE](#)]. This submission has been developed as an extension of the NSWIC submission to the Independent Review.



## Overview

*The most important aspect of this Strategy is ensuring a monitoring and auditing regime which supports **public confidence and trust** through accurate monitoring, using best-available data and modelling, and automation and technological advancements where possible to remove the onus from water users.*

*The second most important aspect is clearly communicating that this process will ensure that the **volumetric conversion of current and historic practice will not and cannot lead to any more or any less, take of water.***

The NSIWC emphasises from the forefront that this process is simply one of volumetric conversion, and will not lead to any increase in extraction. There will be *no more or no less* water being harvested. This is part of a process to bring *existing practices* under the same NSW water management and compliance framework as other extractive forms of take in the state. Specifically, this involves moving legitimised take under the *Water Act 1912* into the *Water Management Act 2000*. Simply put, the process is about converting descriptive measures to volumetric measures.

The NSWIC is supportive of the need to licence floodplain harvesting activities and to issue the appropriate water access licences to bring a recognised and accepted practice into line with the requirements of the *Water Management Act 2000*. The relevant work approvals for floodplain harvesting have been in place for over 30 years, thus the floodplain harvesting policy is a means to regulate historic practice.

As important as the policy is to establish a robust water take and management protocol, is the need for the policy to be practically enforceable, through monitoring and auditing. It is crucial to both the reputation of the irrigation farming industry and to the Government that the policy can be practically implemented on the ground to ensure its integrity. The NSWIC therefore welcomes the opportunity to provide feedback on the Monitoring and Auditing component.

Irrigation farmers need to be assured that:

- The monitoring system will foster confidence by both water users, government and the general public;
- Water Users across the state will not 'lose' security of access to water, which their businesses and their communities rely on; and
- That monitoring and auditing will be fit for purpose and cost-effective while being robust, effective and auditable.



## Submission

The core issue for water users regarding monitoring of floodplain harvesting is that it must give **confidence to both water users and the community**.

As such, NSWIC notes the independent review currently underway will explore many critical issues that impact substantially on how a monitoring strategy may operate.

For example, two critical questions are:

- Will this proposed method of monitoring and auditing capture enough detail to separate floodplain harvesting from existing storage that is required for confidence in the robustness and accuracy?
- Is the model, as it currently stands, robust and accurate enough to determine FPH licences at a farm level?
  - Do we need an interim step, such as a calibration period, to allow the model to be further assessed as robust and accurate?

NSWIC understands that at this stage of the process the policy itself is not open for review, and the current process is focussed on developing a robust monitoring system.

**Recommendation 1: Key to any monitoring system is ensuring there is sufficient data and calibration of modelling for the method to be robust and accurate, and able to distinguish between floodplain harvesting and other volumes of water.**

NSWIC is of the view that, at the present time, available monitoring technology is not sufficient to capture accurate data at the desired level (farm-scale). If farm-scale data is approximated based on uncertainties in the inputs and based on assumptions that may not be transparent or consistent, this will likely lead to inaccurate outputs, and only cause frustration by water users and further decrease confidence in the system by both water users and the public.

As a principle, NSWIC believes that the Monitoring & Auditing Strategy should facilitate the collection of more data to inform modelling of accurate FPH.

It is recommended that data limitations are highlighted, and systems put in place to collect this data and make aggregate data more readily and transparently available in the future, while individual farm-scale data is used by compliance agencies and the individual only. For now, until that data is available, it is too risky to develop a system based on a large number of uncertainties, and a lack of precedence or experience in testing the modelling. The risk lies in public perception and confidence in the system.

Water users originally requested that, as an interim measure, licensing and monitoring be developed at a valley-level where there is greater data availability, while appropriate data is collected to inform construction of a more detailed level of data.

In summary, the NSWIC recommends that the Department must only build a monitoring framework based on available and reliable data. The Department should invest in technology,



research and development which allows necessary data to be collected and made available at the appropriate scale to foster greater confidence and certainty.

Consideration should be given to the merit of generating a valley limit and monitoring which would still meet legislative commitments and compliance with the SDL limits, but would give greater certainty to the data used to inform individual licences. These matters are of critical importance in the consideration of the monitoring strategy.

To progress with the data that *is* available at the present time, the Department must investigate:

1. *What level of detail in data is currently known, and what is possible with available technology?*
  - a. *What does this level of data permit in terms of management practices, and monitoring?*
2. *What data currently remains unknown?*
  - a. *What systems can be put in place to ensure this data is available in the future?*

**Recommendation 2: Include a calibration period to ensure the model is accurate.**

A calibration period (e.g. 5 years) would ensure that there is sufficient data to calibrate the model accurately.

This period would also bring water users and the public into the process of developing the model, which would foster confidence and certainty in the model.

With a clear process established, data collection could progress in a participatory manner, rather than relying upon retrospective accounts.

NSWIC welcomes the evaluation and review period. This is critical to ensure the practices are working effectively, and to seek opportunity for improvements.

**Recommendation 3: There needs to be a tool to demonstrate what the baseline level of farm storage capacity is, for monitoring to be accurate.**

NSWIC understands that the Healthy Floodplains Project (HFP) 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; and that the HFP will undertake the initial verification of any existing storage monitoring equipment.

The current drought provides an opportunity to survey land and water storages in an empty state to most accurately and cost-effectively determine storage capacity.



**Recommendation 4: NSWIC supports the proposed strategy to monitor storage volumes to determine FPH Take. NSWIC recommends the inclusion of compulsory reporting periods as an alternative to the frequency and timing of reporting.**

It is reasonably well accepted that the permanent on-farm storage is the most appropriate monitoring point for FPH.

#### *Gauge Boards (calibrated storage curves) and Automatic Storage Monitoring*

The most practical option and the minimum requirement should be calibrated storage curves and gauge boards to enable changes in storage volumes to be calculated when overland flow events occur. The take of FPH regardless of monitoring system and reporting frequency will not be determined until the end of the water year where all other forms of metered take, water use of farm, losses/tailwater, rainfall can be quantified, and the volume of overland flow take is balanced. We maintain this remains the most effective way to determine volumes of FPH that currently exists.

Automatic storage monitors are a useful tool. The problem with them is the current lack of confidence in their ability to differentiate or extract data which portion of the inflows are FPH and which are:

- Transfers from other on-farm storages which may be partially used for irrigation during transmission;
- Inflow from other metered sources that may be partially used in irrigations during transmission;
- Rainfall runoff from irrigation areas.

#### *Report Period Criteria*

The timing and frequency of reporting was a significant concern in the draft strategy for stakeholders. In this regard the system must be fit for purpose and recognise the episodic nature of overland flow. The difficulty of timing and frequency of reporting relates to the distinct differences of reliability and capacity to take overland flow between individual farm locations. An additional measure to provide community confidence is to require periods of compulsory reporting of overland flow events. It is suggested that for large known events across the catchment compulsory reportable periods should be provided by the department to ensure accurate record keeping.

Water users would be required to prepare a water balance when report period criteria are met. These criteria could be:

- Stream gauges reach designated levels
- Flow of water across property boundary outside of:
  - Designated watercourses;
  - Irrigation channels and/or drains.

#### *Report Period Process*

In the report period user would be required to report (provide evidence of gauge board heights or extract from automatic storage records):

- Volume of water on-farm at start of period;
- Volume of water at end of period;



- Any other sources of water that were captured in this period.

By having criteria for the reporting period, requiring higher monitoring standards over a shorter period, there is a greater chance of higher accuracy in the estimation of other components (rainfall runoff, tailwater, general security, groundwater etc). There is also less chance these other sources of water (except rainfall runoff) will be being pumped in these periods.

NSWIC supports that the choice of monitoring system above the minimum requirements will be at the discretion of the licence holder. Any new or additional monitoring must be fit for purpose, cost effective and produce data through methodology that is repeatable, auditable and fosters confidence and integrity.

NSWIC does not support daily recording during a floodplain harvesting event. Reporting is required to capture the extent of the floodplain harvesting event, and thus, reporting at the conclusion of the event would be sufficient to capture the full extent.

Daily recording (where conducted manually) may risk the safety of employees who are required to check gauges during severe weather events. The Occupational Health and Safety of employees is a large concern.

Note: you cannot deliver a FPH number without disaggregation undertaken by the licence holder through the self-reporting.

**Recommendation 5: The NSWIC strongly encourages investment in technologically advanced systems of monitoring which have greater accuracy and have less onus on water users. Greater investments in technology allow improved, and more accurate modelling, monitoring and enforcement; and improved confidence. NSWIC encourages the Department to investigate avenues for more technologically advanced inputs, including investing in research and development to ensure continual improvements in monitoring.**

Recent media coverage and community concern shows how important it is for the reputation of both Government and industry to ensure that policy is accountable, and compliance can be enforced through robust processes equitably applied across all water users. The proposed system relies heavily on the judgement call of water users to distinguish between floodplain harvesting and rainfall runoff (particularly when they are determining the reason for the change in volume under the proposed recording requirements). With a highly complex system of modelling, the proposed system may also be perceived as non-transparent. NSWIC believes that investments in technology will assist to make the process more accurate, reliable, transparent and foster greater confidence. NSWIC understands that implementation of the NSW Floodplain Harvesting Policy includes a stage whereby “the Department will evaluate the performance of the approach and explore alternative approaches (including remote sensing and continuous storage monitoring). This is critically important.

New advances in technology may be able to increase the accuracy and certainty of monitoring, whilst reducing the burden on farmers and Government Departments. Use of technology for monitoring will not only contribute to more efficient practices, but greater accuracy, and

greater public perception and confidence. Using gauge boards, rather than electronic metering, is perceived as less accurate and has room for human error (see Recommendation 4). It should also be noted that the proposed monitoring strategy is very time intensive for farmers. Automation would not only improve accuracy but reduce the burden on farmers.

As noted previously, there are current concerns about the capacity for new technologies to effectively differentiate data. To increase confidence, any trial of new technology must be undertaken through concurrent use of existing accepted methodologies to compare data, ease of use and cost effectiveness.

NSWIC is aware of technologies being developed by Telstra and other companies that use telemetry and sensor monitors. There is also research being led by the Australian National University utilising satellites. NSWIC encourages the Department to investigate all options through consultation with stakeholders including water users.

NSWIC notes that the Natural Resources Access Regulator (NRAR) will verify reported floodplain take using “other sources of data including remote sensing and aerial imagery”. NSWIC supports this approach to ensure verification. However, NSWIC believes that these data sources should be used working with water users to identify accurate data at the point of reporting, rather than to target water users. NSWIC also requests that this NRAR aggregate data is made public. NSWIC believes the use of remote sensing and aerial imagery should play more of a leading role in monitoring, to reduce the onus on water users to self-report. This would also foster community confidence.

NSWIC understands that the Murray-Darling Basin Water Compliance Review (November 2017) recommended improving confidence in the measurement of take by floodplain harvesting in the Northern Basin by ensuring that NSW (and Queensland) accurately measures 95% of take by non-metered floodplain harvesting. In order to achieve this high percentage, NSWIC believes it is critical to adopt and/or invest in the research and development of more technologically advanced systems, which have greater accuracy, accountability and confidence than self-reporting from gauge boards.

**Recommendation 6: The Strategy must be equitable between floodplain and non-floodplain areas.**

In the previous submission to the Independent Review of Floodplain Harvesting, NSWIC emphasised that equity is an important consideration between all users. Equity in monitoring and auditing is also vitally important, as well as the ability for the monitoring and auditing strategy to be suitable to the unique characteristics of each valley. The implementation of the policy must not lead to inequities in water access and use across the State, based on whether a landholding is on a declared floodplain or otherwise.

**Recommendation 7: Irrigation farmers need clarity around the process for assessment and accreditation of structures, and calibration methodology prior to receiving an entitlement.**



The process must be clear and accountable, given that compliance cases go before courts of law. It is vital that this process is clear to ensure consistency of policy interpretation.

Irrigation farmers need clarity around the process for assessment and accreditation of structures and calibration methodology to understand exactly what is being monitored.

Irrigation farmers have previously agreed to report annually on floodplain harvesting take through agreed methods, maintain records and have all floodplain harvesting structures assessed for volume storage capacity by the most appropriate agreed mechanism. Changes to these historic agreements must be fully explained prior to implementation.

**Recommendation 8: Discharging of additional take requires clarification.**

In NSW, it is not legal to return water to the system after it has been pumped from the waterway.

In the Draft Floodplain Harvesting Monitoring and Auditing Strategy, it is stated that “take in excess of account limits can be discharged (for example, via a blow-out point)”. However, given other forms of take cannot be discharged, it is vital for appropriate compliance that further guidance on this point is provided. Floodplain harvesting licence holders seek clarification regarding who will be responsible for discharged water if it results in environmental contamination.

**Recommendation 9: Calculations for tailwater return need to be determined as part of the licencing process to enable accurate estimation of volumes as part of the whole farm water balance and apply accurate monitoring processes.**

NSWIC supports the use of farm water balance models to determine volumes of water attributed to tailwater return. We support the requirement for record keeping requirements regarding how volumes have been calculated.

As noted previously a water storage may contain a combination of overland flows, rainfall runoff, tailwater or other forms of take. It is near impossible, and certainly impractical, to accurately distinguish between the various types of water when they are managed within the same system/infrastructure. NSWIC is concerned, given the complexity of the modelling and calculations which would be required to distinguish between these water sources, that development of whole farm water balance tools over time will be important to provide increased accuracy in apportioning the various sources of water captured within the farming system. It is this aspect of the strategy that should evolve as part of the staged approach in line with technological tools to provide independent verification processes.



**Recommendation 10: There is limited support for trade.**

As stated in the Draft Strategy, 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 problematic. NSWIC supports the principle of trade where possible but shares the concerns with the Department about how this would work in practice.

Trade is only necessary if the licencing of FPH does not result in equitable outcomes. NSWIC understands that the evaluation and review of this strategy will inform the development of the trading framework. Trade of FPH entitlement would practically involve remediation of works, time consuming assessment and expensive modelling processes. NSWIC requires further information about the risks and benefits of a trading framework (when developed) before a position from NSWIC can be formed. NSWIC notes there is limited support for trade, however if it is progressed, we request proper consultation during the development of any framework.

Central to a trading framework is the need to ensure compliance and ensure operational practicalities where the water can be transferred between parties, so the market functions effectively.

**Recommendation 11: Technical corrections require amendment.**

On Page 2 of the proposed strategy, it is stated that “there is currently no monitoring of floodplain harvesting diversions”. This statement is misleading and should be corrected to say: “there is currently no formal legislative framework for monitoring of floodplain harvesting diversions”.

The definition of permanent storages should be clarified, as “routinely” and “more than a few weeks” are unclear.

## **Conclusion**

NSWIC supports the implementation of the floodplain harvesting policy to recognise historic practice. In converting to a volumetric measure, irrigation farmers state-wide must be no worse off than under current arrangements.

Industry will promote technologies to monitor storage volumes to licence holders through events and fact sheets as appropriate. Industry will also assist licence holders with understanding the terms and requirements of monitoring.

Kind regards,  
NSW Irrigators’ Council.