



I N L A N D  
R I V E R S  
N E T W O R K

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## SUBMISSION

### **Floodplain Harvesting licence rules in the water sharing plans for Gwydir Regulated and Unregulated Rivers**

#### **Introduction**

The Inland Rivers Network (IRN) is a coalition of environment groups and individuals that has been advocating for healthy rivers, wetlands and groundwater in the Murray-Darling Basin since 1991.

IRN welcomes the opportunity to engage in the process of regulating access to floodplain flows in the Gwydir River catchment.

The management of NSW water resources is the most important responsibility of the NSW and Federal Governments. Water is a scarce resource in Australia, more than any other inhabited continent on earth. The Gwydir River system is significant in that it supports the internationally significant Gwydir Wetlands, with associated obligations under the Ramsar Treaty.

This submission will cover a number of key concerns with the process for assessing and regulating Floodplain Harvesting (FPH) in the Gwydir River.

We consider the proposed rules for managing FPH in the Gwydir River will not protect sufficient flood flows to improve connectivity with the Barwon-Darling or to the Ramsar listed Gwydir Wetlands, will not protect small or medium size flood flows and will not mitigate the damage caused by the last 30 years of free, unregulated take of FPH.

We do not support the NSW Government position that access rules for flood flows in the Gwydir system cannot be implemented. The access rules for supplementary water licences could also apply to FPH licences based on water sharing plan Schedule 1 flow targets.

## **Summary Recommendations for rules:**

### **Regulated Rules:**

#### **1. Account management rules**

One year account management with no carryover

#### **2. Initial Available Water Determination**

Initial allocation 1ML per share unit

#### **3. Adaptive Management**

Support adaptive management rules to ensure that FPH is within the Plan Limit

#### **4. Trading zones**

Support the prohibition of permanent trade into areas with sensitive environmental and cultural values

#### **5. Active management**

Support the protection of Held Environmental Water releases under active management rules

#### **6. Amendment provisions**

Support amendment provisions to enable adaptive management

### **Unregulated Rules:**

#### **1. Account management rules**

One year account management with no carryover

#### **2. Initial Available Water Determination**

Initial allocation 1ML per share unit

#### **3. Active management**

Support the protection of Held Environmental Water releases under active management rules

#### **4. Trading zones**

Support the prohibition of permanent trade into areas with sensitive environmental and cultural values

#### **5. Amendment provisions**

Support amendment provisions to enable adaptive management

### **Additional Rules:**

For both Regulated and Unregulated Water Sharing Plans (WSP)

#### **1. End of System Flow Rules**

The Gwydir Regulated WSP has specific rules that govern access to supplementary flows.

These could be replicated for access to flood flows under FPH licenses.

The end-of-system flow targets in Schedule 1 of the Gwydir Regulated WSP should be met before access to FPH is announced.

## **Discussion of proposed rules:**

### **1. Account management**

IRN strongly supports annual accounting for FPH with no carryover. We do not agree with DPIE-Water position that this method of account management will lead to greater environmental impacts and growth in use. The environmental outcomes report is based only on modelling using the five year accounting framework. There has been no information provided to support the argument that larger entitlements granted through a one year accounting system will cause more harm to floodplain, wetland, river and groundwater health.

The targeted consultation with environment groups identified that flood flows enabling FPH in the Gwydir occur, on average, once every five years. Therefore, the proposed five year accounting system with unlimited carryover means that maximum take will be possible when a flood occurs.

The argument that water trading into areas with more frequent flooding will cause a growth in use is equally applicable to the one year accounting system and the five year accounting system.

In fact, under the proposed five year accounting system with unlimited carryover, growth in use through permanent trading is likely to be greater than under a one year accounting system.

Growth in use must be managed under the Plan Limit. The purpose of having adaptive management rules and amendment provisions in water sharing plans allows for better management of growth in use.

IRN considers that the five year accounting system with unlimited carryover is more favourable to the extraction industry and demonstrates NSW Government bias, as identified in the recent ICAC Report on water management in NSW.

### **2. Initial Available Water Determination**

IRN strongly opposes an initial available water determination of 5 ML per unit share. This is a bonus to the irrigation industry that will deprive downstream communities and environment from access to important flood flows.

IRN supports an initial available water determination of 1 ML per unit share to maintain consistency across all Northern Valleys.

The unit shares being proposed for licencing, 97,000, are based on very poor data inputs to the model. This is a significant volume of water, with current FPH take estimated to be more than one third of all surface water take in the Gwydir catchment.<sup>1</sup>

The addition of a rainfall runoff exemption adds a further approximate 30 GL of unaccounted for and unlicensed take.

Any consideration of bringing FPH take in the Gwydir Valley under the Plan Limit can only be achieved through conservative available water determinations.

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<sup>1</sup> DPIE-Water, September 2020. Draft Gwydir Regional Water Strategy p 12

### **3. Adaptive Management**

IRN supports flexibility in available water determinations to facilitate management of growth in use and to ensure compliance with the extraction limit. The lack of actual measured volumes of FPH in the model is problematic. This source of information will only be available once metering is in place. We do not support any increase in water access above 1ML per unit share on an annual account.

### **4. Trading zones**

While IRN does not support trading of FPH licences, we understand that trade of water entitlements is required under the Basin Plan. We support that only permanent trades of FPH licenses is allowable.

We support the proposed trading restrictions into floodplain management zones A & D to protect areas of high ecological and cultural values.

There needs to be particular attention paid to any likely trade impacts on flood flows to the Gwydir Wetlands.

IRN considers that all zones on the floodplain contain important ecological and cultural values. Trading into any zone will increase the level of flood flow interception in that zone.

### **5. Active Management**

IRN fully supports rules to protect both Held Environmental Water (HEW) and Planned Environmental Water (PEW) in the Gwydir River system. This is a requirement under the toolkit measures agreed to in the Northern Basin Review of the Basin Plan.

Any decision by environmental water managers to piggy-back HEW and PEW onto natural flows in the system must be recognised and protected for best environmental outcomes.

Environmental water licenses must be afforded the same level of flexibility and adaptive management approach when water is being delivered to key environmental and cultural places of significance.

IRN does not support the proposed amendment to the Gwydir Surface Water Resource Plan (WRP) to clarify under 10.09 (1) of the Basin Plan that the rules applying in unregulated rivers to protect PEW do not apply to floodplain harvesting.

We note that an amendment provision has been proposed in both the Gwydir Regulated and Unregulated WSP to include environmental water being used to create overbank flows.

This provision should be included in access rules for FPH at the commencement of licensing.

### **6. Access Rules**

IRN supports FPH access announcements at the beginning of a flood event, similar to access announcement rules made for supplementary water licences under the Gwydir Regulated WSP clause 44.

Schedule 1 of the Gwydir Regulated WSP requires that the following flow targets are met, these rules should be included in both the Regulated and Unregulated WSP for FPH access:

Flow targets

(1) Flows of each of the following:

- (a) 150 ML/day in the Darling River at Wilcannia gauge (425008),
- (b) 280 ML/day in the Darling River at Louth gauge (425004),
- (c) 390 ML/day in the Darling River at Bourke gauge (425003),
- (d) 550 ML/day in the Darling River at Brewarrina gauge (422002),
- (e) 700 ML/day in the Barwon River at Dangar Bridge gauge (422001).

**Note.** This subclause is intended to protect flows for basic landholder rights requirements along the Barwon-Darling River.

(2) Between 1 September and 28 (or in leap year, 29) February, inclusive, a flow for five consecutive days of (a) or (b), provided two such flow events have not already occurred during that period in that water year:

- (a) 14,000 ML/day in the Darling River at Brewarrina gauge (422002),
- (b) 10,000 ML/day in the Darling River at Bourke gauge (425003).

**Note.** This subclause is intended to provide opportunity for the passage of fish across the major weirs in the Barwon-Darling River.

(3) Between 1 October and 30 April, inclusive, a flow for five consecutive days of 2,000 ML/day in the Darling River at Wilcannia gauge (425008), provided this target has not been reached during the preceding three months.

**Note.** This subclause is intended to protect flows needed to suppress blue-green algae

IRN notes that the Independent Panel Assessment of the Management of the 2020 Northern Basin First Flush Event recommended a reduction in reliance on temporary water restrictions made under Section 324, to provide certainty and clarity to all water users and communities. This should be achieved by embedding protection of flows for critical water needs into the regulatory and policy framework.<sup>2</sup>

IRN does not accept the argument that DPIE-Water has no power under the *Water Management Act 2000* (WMA) to include rules in WSP to limit access to FPH licences.

The fact that proposed access rules for active management are being considered demonstrates that there is power under the WMA to limit access to FPH.

Access rules in both the Gwydir Regulated and Unregulated WSP should include provision to protect HEW and PEW applications aimed at creating overbank flows for improvement of floodplain connectivity, watering important cultural sites, enhancing native fish breeding opportunities and increasing inundation of wetland areas.

## 7. Amendment provisions

IRN supports the proposed amendment provisions for FPH in the Gwydir regulated and unregulated water source as outlined below.

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<sup>2</sup> Craik W & Claydon G. 2020. Independent Panel Assessment of the Management of the 2020 Northern Basin First Flush Event. NSW Department of Planning, Industry and Environment.  
[https://www.industry.nsw.gov.au/\\_data/assets/pdf\\_file/0007/321649/final-report.pdf](https://www.industry.nsw.gov.au/_data/assets/pdf_file/0007/321649/final-report.pdf)

However, as stated above, the protection of HEW and PEW used to create overbank flow should be included in the access rules at the commencement of FPH licensing.

1. An amendment provision to allow for access rules to be introduced:
  - (a) to allow flexibility should environmental flows be targeted to create overbank flow, or
  - (b) in response to monitoring, evaluation and reporting outcomes of environmental benefits from licencing floodplain harvesting, or
  - (c) in response to improved understanding of the influence of floodplain harvesting on downstream flows
  - (d) in response to improved integration of hydrologic and hydrodynamic model systems.

2. An amendment provision to allow for trade rules to be modified based on any review undertaken of the existing trade rules in the Gwydir Regulated and Unregulated River Water Sources.

## **Modelling**

IRN considers that the model used to calculate the volume of FPH in the Gwydir River is not fit for purpose due to lack of data.

Serious data deficiencies are identified in the Model Build Report creating a high level of uncertainty in the modelling results.

The data deficiencies include lack of reliable records on actual volumes harvested, uncertainties in measurement of metered diversions, verification of rainfall runoff parameters and a number of other key parameters. This lack of data impacts on the accuracy of the modelling results.

This is a major problem for a process aimed at granting new compensable, private property rights in the form of FPH licences.

## **Caveats**

Two caveats identified in the Model Build Report in regard to the model being suitable for entitlement estimation reinforce the above concern. These are:

*1. the model is best suited to modelling at whole-of-valley and river reach scale, and increasing the spatial resolution to farm-scale requires very detailed understanding and characterisation of flow pathways and farm management at that scale; and*

*2. that the lack of actual harvested volumes data reduced our ability to minimise uncertainty in the model and thus our ability to verify the accuracy of the modelling.*<sup>3</sup>

## **Model uncertainty**

The key sources of uncertainty in the models have been identified as follows:

- input and calibration data

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<sup>3</sup> DPIE-Water, February 2021. Building the river system model for the Gwydir Valley regulated river system p 94.

- model representation of processes including physical processes and management arrangements
- model parameter values.

### **High level of uncertainty**

The Model Build Report identifies a number of high significance uncertainties that affect the accuracy of floodplain harvesting outputs in a long-term model assessment. These include:

#### 1. The accuracy of measurement of river diversions

Meters used to measure regulated and supplementary diversions have known uncertainties of  $\pm 1-25\%$ . There needs to be further meter testing and validation data through the Metering Framework

#### 2. Sparsity of records on harvested volumes

The lack of reliable records on actual volumes harvested from overbank flow events or rainfall–runoff makes it difficult to validate both the valley total and individual variability in floodplain harvesting.

#### 3. Rainfall–runoff parameters for within farm runoff model

It is not possible to verify and account for individual variation in irrigation practice and runoff generation due to limited data to characterise differences in runoff between undeveloped, developed and irrigated areas. Particularly high for some properties where rainfall–runoff is the dominant form of take

#### 4. Relationships between river flow and overbank flow and access to that flow

In small to medium floods the actual volume harvested will be sensitive to the breakout relationship and access to this flow. More information is needed to understand this.

The model has low sensitivity as the rate of release from the virtual storage is matched to the assumed take rates. If more detailed information were known about conveyance of water across the floodplain and represented in the model, then the assumed take rates would likely be more significant.

This is a significant problem with the modelling accuracy that leaves little confidence in the process.

### **Landscape losses, return flows**

The other key issue with the model is the lack of information about the losses in the landscape between the farm and river gauge. Analysis of on farm capacity and flow records of downstream gauges is the key tool to estimate volumes of FPH take.

The accuracy of river gauges is another key concern in this process.

There is no guarantee that unknown landscape losses and return flows are not being attributed to FPH take and will therefore be included in FPH licences.

### **Peer Review**

IRN is concerned that only a summary of the independent review on the NSW Gwydir River Model Build, Scenarios and Environmental Outcomes reports is publicly available, and that consultants did not have access to the models themselves but only reviewed the reports.

## **Rainfall Runoff Exemption**

IRN strongly objects to the changes to FPH policy that allows for the exempt capture of rainfall runoff when no water is being harvested from outside the farm.

This is free, unaccounted for water that is not available to any landholder or farming business in NSW other than those with irrigation development.

All rainfall runoff should be managed under the 10% harvestable rights rule. Any capture above that volume must be licenced to ensure equity across the state.

The limited data available to model rainfall runoff and characterise differences between undeveloped, developed and irrigated areas is a key identified problem with the FPH modelling process.

The release of a modelling report on the granting of rainfall runoff exemptions in the Gwydir Valley on 9 March, three days before close of submissions on the proposed Gwydir FPH management rules, is unacceptable. There has been no consultation on this process and no time to absorb the information.

This is yet another demonstration of poor process in regard to the regulation of FPH in NSW.

The new report shows that exempt rainfall runoff under current conditions is 36.3 GL.<sup>4</sup> This is a substantial volume of water to be given freely to the irrigation industry and must be recorded as water take

The new report demonstrates that the rainfall runoff exemption will have a negative impact on environmental and downstream outcomes.

IRN considers that all water above the 10% harvestable right that is captured for commercial benefit must be licenced, so that all water take is accounted for under the Plan Limit.

## **Environmental Outcomes**

The significance of flood flows to the maintenance and improvement of the health of the Ramsar listed Gwydir Wetlands has not been adequately assessed in the methodology adopted to calculate volumes for FPH licenses in the Gwydir Valley.

The NSW and Commonwealth Government have obligations under the Ramsar and Migratory Bird Treaties to provide adequate flows to wetland habitats considering seasonality and duration.

The significance of flood flows for recharging groundwater systems has not been considered.

The provision of inflows to the Barwon-Darling is an important environmental and social function that will be impacted by the provision of a rainfall runoff exemption.

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<sup>4</sup> DPIE-Water, March 2021. Rainfall runoff exemption & modelling outcomes. Table 1 p 3



All water take previously not covered by a water access licence in the Gwydir WSPs was calculated as PEW. The estimated annual volume of FPH in the 2004 Gwydir Regulated WSP was 79 GL. The new estimate of current FPH take is 174 GL.

Approximately 50GL is proposed to be returned to the environment. Therefore, there is a shortfall of approximately 50 GL of PEW from the system.

The health of the Gwydir Wetlands, cultural values, groundwater sources and downstream connectivity has not had priority consideration in the FPH policy or its implementation.

This is a failing to meet the objects of the WMA.

## **Carryover**

IRN objects to the use of the term carryover in the management of FPH water accounts. Volumes of water that are not available cannot be carried over. This is a misrepresentation of the term. The concept of carryover comes from actual water in licenced accounts that hasn't been used in the year it was allocated.

The FPH policy is promising water from the river system that has not yet arrived. It is proposing to commit access to an increasing share of future flood flows by up to 500% of unit shares thus putting the river and the environment in debt to the irrigation industry.

This approach is entirely unacceptable and weighted towards the irrigation industry at the expense of First Nation communities, downstream water users, groundwater recharge and important ecological values and functions of the river system.

## **Consultation**

IRN believes that the recent findings of the Independent Commission Against Corruption (ICAC) into management of water in NSW mirrors the deficiencies in consultation throughout the development and implementation of FPH policy.

The ICAC recommendations concern the undue focus on irrigators' interests within water agencies and deal with the identified failures of the department.

These include a lack of transparency, balance and fairness in consultation processes undertaken by water agencies in relation to external stakeholders, and a practice of sidelining public officials undertaking environmental roles within the NSW government.

DPIE-Water staff and modellers have had regular meetings with the irrigation industry while implementing the FPH policy. There has only been one environmental stakeholder briefing during the exhibition period for the Gwydir FPH process and one environmental group consultation with the independent model expert to discuss failings in the modelling process.

## Conclusion

IRN strongly objects to the proposed very generous volume of FPH to be granted as windfall compensable, private property rights and to the proposed rules for accessing flood waters for extraction. The information provided demonstrates that the model used as the basis for these decisions is not fit for purpose.

The addition of a rainfall runoff exemption is a further gift to the irrigation industry that is not enjoyed by any other farming enterprise across the state and at a cost to cultural, environmental and downstream outcomes.

IRN considers the proposed volumes to be licensed and the preferred draft rules under the current policy will in real terms mean a very limited return of water to the environment,

It stands to reason when put in context of the findings of the recent ICAC investigation into management of water in NSW, that "...a misguided effort to redress a perceived imbalance caused by the Basin Plan's prioritisation of the environment's needs" has resulted in a bias within the Department towards irrigation, that the Department has more work to do to consider the needs of the environment as a stakeholder in the licencing of FPH.

The outcome of the proposed licenced volume of FPH in the Gwydir River will cause the continued decline of in-valley river health and of the Barwon-Darling and downstream connected water sources.

Yours sincerely

Brian Stevens

Secretary  
Inland Rivers Network