



Australian Government



Explanatory summary of practice notes – floodplain harvesting

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The Murray–Darling Basin Authority pays respect to the Traditional Owners and their Nations of the Murray–Darling Basin. We acknowledge their deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

The guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues is very much valued and appreciated.

Aboriginal people should be aware that this publication may contain images, names or quotations of deceased persons.

Explanatory summary

Background

The Murray–Darling Basin Compliance Compact (Compact) commits Basin governments to develop and implement work plans that commit to improving transparency and accountability of surface and groundwater management in the Basin. All Basin states have agreed to manage water resources based on the best available data, and to take advantage of emerging technology such as remote sensing for measuring non-metered take, modelling and hydrometrics. Metering and measurement is essential for comprehensive water accounting.

The Compact includes the requirement for the Murray–Darling Basin Authority (MDBA) to ‘publish a practice note on floodplain harvesting measurement’ (MDBA Compact Action 3.4).

Historically it has been very difficult to accurately measure how much floodplain water has been ‘harvested’; that is, captured for use. In the northern Basin, on-farm storages are typically used to store water from multiple sources, such as streams, groundwater and floodplain harvesting. The same storage and distribution infrastructure (such as pumps, pipelines and channels) are then used for both harvesting and using the stored water. Consequently, water measurement and accounting in this context is highly complex and several lines of evidence are required to measure floodplain harvesting.

The MDBA, CSIRO and Basin states worked together to develop a set of practice notes to facilitate the transparent, consistent and efficient implementation of the Source modelling platform across the Murray-Darling Basin. These are published on the MDBA’s webpage – Hydrological modelling practice notes.

The MDBA and Basin states have utilised the expertise in this already established group to develop hydrologic modelling practice notes which provide guidance on incorporating and accounting for floodplain harvesting in models. Use of improved models developed utilising the guidance outlined in the practice notes will contribute to improved transparency, consistency and compliance in water management across the basin.

Where direct measurement of floodplain harvesting take is problematic, hydrologic modelling is one approach that can be used to estimate the take, and such modelling will be used to support compliance.

The [Floodplain harvesting and overland flows](#) page on the MDBA website provides further background on floodplain harvesting. It also provides the status of current reforms occurring in both NSW and Queensland to improve the estimation and measurement of floodplain harvesting.

Incorporating Floodplain harvesting into the practice notes

The set of practice notes published on the MDBA's webpage hydrologic modelling practice notes provides high-level principles to follow when developing models. While the practice notes address river system models developed using the eWater Source modelling platform, they are relevant and applicable to model development and application in other modelling environments.

Improved modelling, supported by these practice notes, will assist in producing models which are able to more accurately estimate floodplain harvesting take with improved transparency and consistency.

Scoping of the existing practice notes identified that representing floodplain harvesting take in hydrologic models is complex and it needed to be considered in four of the practice notes. These are:

- 1) Reach conceptualisation (identification of key fluxes)
- 2) Modelling of reach water balance
- 3) Estimation of unmetered irrigation diversions
- 4) Calibration of crop models.

A summary of all four practice notes is provided below. A full copy of each of the practice notes can be found on the MDBA webpage (<https://www.mdba.gov.au/publications/mdba-reports/hydrologic-modelling-practice-notes>).

Reach conceptualisation

The reach conceptualisation practice note provides advice on the features and fluxes of a reach that need to be considered during model calibration. It focuses on the key processes involved in conceptualisation, including decision-making on how the different fluxes, particularly irrigation demands, will be represented in the final reach model.

Modelling a reach water balance

The modelling a reach water balance practice note details how to calibrate a reach water balance model to allow alternative water management strategies or policies for water sharing to be evaluated. This note details the different components of the reach water balance that should be considered when modelling; and provides guidance on fluxes that should be represented in all reaches and those that are only required for particular reach types (such as floodplain harvesting). The components of the water balance that are important will vary between reaches and the fluxes included on a reach will be determined by data availability and processes that are important for water management decisions.

Estimation of Unmetered Irrigation Diversions

The estimation of unmetered irrigation diversions practice note describes the general principles and a suggested method for estimating the total unmetered irrigation diversions from floodwaters. This

practice note aims to detail how a modeller should estimate total irrigation take (and thus estimate unmetered take). This estimate can then be used to constrain the calibration of crop water models or, where crop water models are not used to estimate unmetered take, provide an estimate of unmetered diversions.

Calibration of Crop Water Models

The calibration of crop water models practice note describes the general principles and a high-level method that should be adopted when irrigation demands are to be estimated via crop water models that maintain a soil moisture account.

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