

# Macquarie Cudgegong Environmental Flows Reference Group

## Summary of Annual Watering Plan 2020-2021 outcomes

September 2020

For EFRG members

This document summarises the key outcomes proposed in the September 2020 version of the **Annual Watering Plan for the Macquarie-Castlereagh Water Resource Plan Area 2020-2021** as prepared by the *Department of Planning, Industry and Environment – Environment Energy and Science Group* in consultation with the *Macquarie-Cudgegong Environmental Flows Reference Group*.

### The task of drought recovery has begun

The record three-year drought of 2017 to 2020 severely impacted the catchment landscape. The Macquarie Marshes did not receive flows beyond December 2018. The regulated Macquarie River was cut at Warren from April 2019, with native fish downstream becoming reliant upon drying refuge pools.

The initial tributary flows in February and March 2020 offered a welcomed respite, however they resulted in major fish kills near Dubbo as a result of poor water quality. Downstream of Warren, where the river had stopped flowing since larger-scale fish deaths were also observed.

As at mid-September 2020, the Macquarie River is flowing through to the Barwon River, with a total of approximately 45,000 hectares of the Macquarie Marshes inundated at some point within the period March to August 2020. Regulated system carryover that was quarantined in 2019-20 has been made available, and a 12% Annual Water Allocation announced on 8 September 2020. There are very positive 3-month rainfall predictions from the Bureau of Meteorology, particularly for October.

### Objectives for 2020/21

The overall objective of planned activities for spring 2020 is to boost drought recovery of the river system, particularly of native fish numbers in the mid-Macquarie River and wetland vegetation within core areas of the Macquarie Marshes.

Three key priorities are identified to support this overall objective (not in any order):

1. **Native fish populations in the regulated mid-Macquarie River:** provide breeding and dispersal opportunities for native fish in September, October and November 2020, particularly Murray cod and small-bodied native species like carp gudgeon and un-specked hardyhead.
2. **Macquarie Marshes wetland vegetation:** extend the duration of inundation within 9,000 to 19,000 hectares of wetland vegetation in the Macquarie Marshes. This is approximately 10% of the total Marshes area. A duration of 90 to 150 days is desirable for seed-set, replenishment of biomass and helping to make waterbird colony sites 'event-ready' should colonies form with further rainfall.
3. **Flow connectivity:** support flows in the Macquarie River through to the Barwon River to assist with recovery of golden perch populations in the Macquarie River. Data indicates their local population is likely to be dependent on movement into the catchment from the Barwon-Darling River system where they breed.

**Other key benefits:** Actions to meet the above priorities will also support a variety of river processes and flora and fauna including macroinvertebrates, frogs, platypus, mussels, rakali and riparian vegetation. We also expect watering actions to provide cultural and recreational benefits to communities along the river system.

## Adaptive watering strategy to achieve objectives

The strategy for watering actions for drought recovery needs to be adaptive, maximise multiple benefits and seek efficiency with the limited volume of water available. It is proposed to:

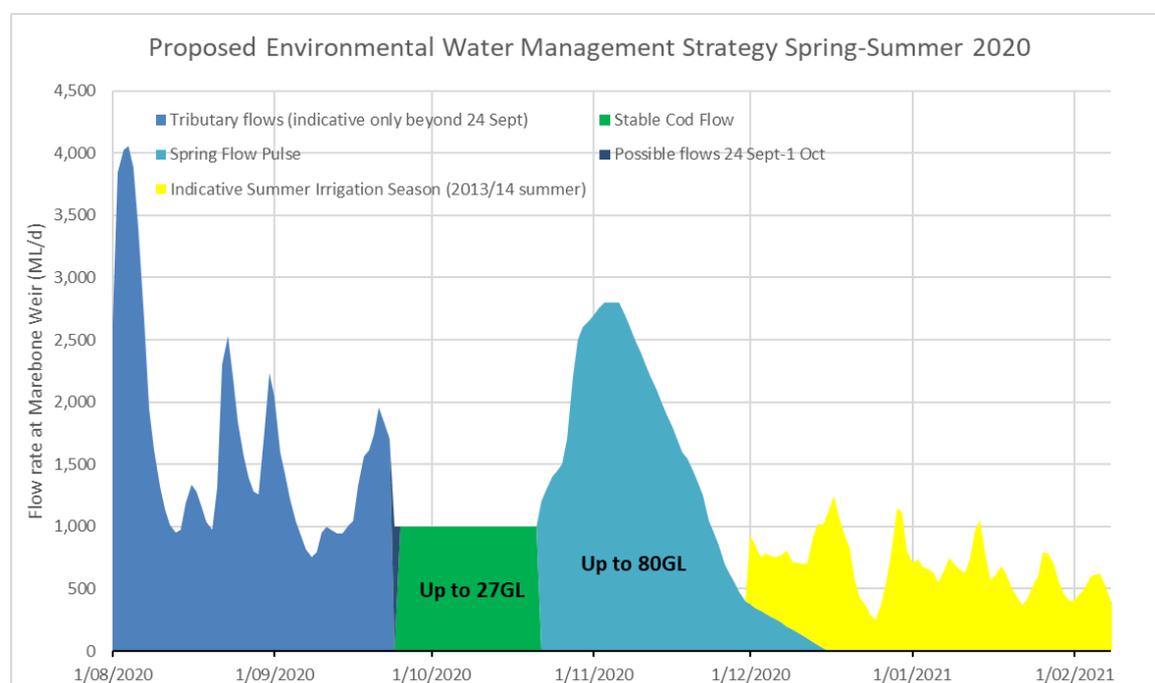
1. **Adapt to ongoing tributary events:** use Water Sharing Plan 'Translucent' Environmental Water Allowance (EWA) and held Supplementary water licences to secure flows when available.
2. **If required, use discretionary 'Water for the Environment' held by NSW and the Commonwealth to continue flows until early December 2020.**

This would be targeting two main outcomes:

- a. **A relatively stable flow** of approximately 1,000ML/day during the key Murray Cod nesting time of late September and October. This target is informed by recent recruitment research by DPI-Fisheries.
  - b. **A 'Large Fresh' flow event** at Marebone Weir during October and November 2020 to extend inundation duration within 9,000 to 19,000ha of reedbeds, water couch meadows, 'mixed Marsh' and River Red Gum woodlands in the Macquarie Marshes.
3. **Secure water for future use** from additional *Available Water Determinations* and any savings from tributary flow and Translucent EWA contributions.

## Target hydrograph

The target hydrograph at Marebone Weir on the Macquarie River is shown below. This is indicative only and may change subject to rainfall and tributary flows.



**Figure 1: Proposed hydrograph and flow types for total Marebone Weir inflows, August 2020 to February 2021. An 'indicative' summer irrigation demand is included as a placeholder for irrigation use, illustrating 2013-2014 water year flows at Marebone Weir from December onwards.**