




# Reporting on the evaluation of environmental outcomes of delivery of Commonwealth environmental water in the Murray–Darling Basin, Australia

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**Abstract:** In 2007 the Australian Government enacted the *Water Act (Cth)* to provide the legislative framework for ensuring that the Murray–Darling Basin – Australia’s largest water resource – is managed in the national interest. This was in response to the declining condition of the iconic rivers and aquatic ecosystems of the Basin. A key feature of the Act was the establishment of the Commonwealth Environmental Water Holder (CEWH) to manage water purchased by the Australian Government to improve/restore the water-dependent environmental assets of the Basin. The contributions of the CEWH’s environmental watering activities to 6 ‘themes’ – ecosystem diversity, species diversity, vegetation, fish, foodwebs and water quality, and hydrology – are evaluated against environmental objectives stated in the (Murray–Darling) *Basin Plan 2012* and in the *Basin-wide environmental watering strategy* on an annual basis. Each annual evaluation is conducted for the most recent water year and for the period of 2014–15 to the most recent water year. Evaluations are geographically constrained to the 7 areas where the CEWH have established monitoring programs and the 19 (of 25) Basin valleys where the CEWH holds water entitlements.

The CEWH’s environmental water delivery is often undertaken in partnership with other water holders (e.g. State agencies), as single events or as part of multi-event waterings, conducted over varying time periods (days to months) and often with multiple objectives. For example, objectives may be to (1) inundate instream aquatic plants, and (2) to improve fish carrying capacity. In this case, the contribution to (1) is evaluated by the vegetation team and to (2) by the fish team, each team using different analytical methods and reporting metrics. The reporting of these evaluations – data used, methods and models adopted, assumptions and inferences, key messages and findings, and recommendations – provides the evidence behind statements about the efficacy and/or benefits (or not) of the previous year’s watering program and informs the CEWH’s planning for the next water year. In this context, the reporting is as important as the evaluations themselves. Management of the report quality process (including editing, science and consistency review, quality checking) is handled by a separate team who work closely with the theme evaluation teams, and the client, to bring the same level of rigour to the reporting as is provided by the evaluation teams when conducting their evaluations.

This presentation has two components: (1) a brief overview of the models and analyses that are used by the theme evaluation teams; and (2) a discourse on some of the interesting nomenclature and numbers challenges that have arisen in the process of pulling the evaluation reports into a coherent whole. These evaluations are the principal means by which the contributions of Commonwealth environmental water to meeting *Basin Plan* environmental objectives are assessed. As such, the evaluations and how they are reported play a critical role in building the knowledge base required to restore and/or improve the water-dependent environmental assets of the Basin. It is a privilege to be able to contribute to this work.

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