The NSW Border Rivers catchment and the Long Term Water Plan explained

Cover photo: Lemon Tree Flat, Severn River. Photo. N Foster

Published by:

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ISBN 978-1-925755-04-6
OEH 2018/0605
December

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Severn River. Photo: N Foster

The NSW Border Rivers catchment

Macintyre River near Holdfast
Photo: N Foster

The Border Rivers catchment covers 49,500 square kilometres in northern New South Wales (NSW) and southern Queensland. The catchment, which forms part of the Murray–Darling Basin, extends from the western slopes of the Great Dividing Range to downstream of the NSW township of Mungindi on the Barwon River.

The traditional owners of the Border Rivers are the Kamilaroi and Bigambul Aboriginal people. They maintain their connection with the region. Many of the catchment's billabongs have special significance, including the Morella Watercourse/Boobera Lagoon/Pungbougal Lagoon complex.

Today, more than 50,000 people live in the Border Rivers catchment. Within NSW, the population is concentrated in Glen Innes, Inverell, Tenterfield and Boggabilla.

The catchment's freshwater assets

The NSW Border Rivers consists of the catchments of the Dumaresq, Severn, Macintyre and Barwon rivers.

The main tributaries draining from Queensland are Pikes Creek and Macintyre Brook, which enter the Dumaresq River, and the Weir River which enters the Macintyre River. The Macintyre River joins the Weir River to become the Barwon River north-east of Mungindi. Downstream, the catchment is characterised by numerous anabranches and distributary channels, including the Boomi River.

Water storages in the catchment include Glenlyon Dam on Pikes Creek (Qld), Coolmunda Dam on Macintyre Brook (Qld) and Pindari Dam on the Severn River (NSW).

The waterways and aquifers of the NSW Border Rivers are important water resources for agriculture and urban needs.

The region is also characterised by waterholes, billabongs and wetlands that support the iconic Murray cod and threatened purple-spotted gudgeon, silver perch and eel-tailed catfish, as well as internationally and nationally significant waterbirds including brolgas, Australian painted snipe, black-necked stork and magpie geese.

Managing water in an altered catchment

Boomi Regulator
Photo: E Wilson

River flow in the NSW Border Rivers catchment has been altered by headwater dams, weirs, river modifications and large-scale irrigation development of the floodplain. The nature of the change to river flow varies depending on the location within the catchment.

River regulation has had the greatest impact on the lowland region of the NSW Border Rivers system. Baseflows and small fresh-sized flows have increased in areas downstream of major dams and upstream of the major extraction points, while larger freshes and bankfull events have decreased in frequency. The seasonality of river flows has also changed.

The condition of the catchment's riverine and floodplain ecosystems, and the plants and animals they support, has declined considerably because of this development.

Recognising this, water for the environment in the NSW Border Rivers is provided through rules in water sharing plans that cover the region's regulated and unregulated surface water sources and groundwater sources (planned environmental water) and as a small volume of Commonwealth-owned environmental water entitlement (held environmental water).

Barwon River at Mungindi. Photo: E Wilson/OEH

Introducing the NSW Border Rivers Long Term Water Plan

Eel-tailed catfish
Photo: G Schmida

The NSW Government's Long Term Water Plan (LTWP) for the NSW Border Rivers is an important step: identifying the requirements for maintaining and improving river, wetland and floodplain health in the catchment, and recognising its connection and contribution to the overall health of the Murray-Darling Basin.

Background to Long Term Water Plans

The Basin Plan establishes a framework for managing environmental water at the Basin and catchment-scale. The framework is designed to ensure environmental water managers work collaboratively to prioritise water use to meet the long-term needs of native fish, water-dependent native vegetation and waterbirds and co-ordinate water use across multiple catchments to achieve Basin-scale outcomes.

The *Basin-wide Environmental Watering Strategy* (BWS) and LTWPs are central features of this framework. The BWS establishes long-term environmental objectives and targets for the Basin and its catchments.

Catchment-scale surface water LTWPs identify strategies that can be applied locally that will contribute to the achievement of the expected BWS environmental outcomes.

Development of the NSW Border Rivers Long Term Water Plan

The NSW Border Rivers LTWP is one of nine plans being developed to cover the NSW portion of the Murray-Darling Basin. Its development included five main steps.

- A catchment-wide stocktake of water-dependent environmental assets and ecosystem functions that are recognised internationally; natural or near-natural; provide vital habitat; and/or can support threatened species or communities, or significant biodiversity.
- Determining specific objectives and targets for key native fish, water-dependent birds and vegetation species and ecosystem functions in the NSW Border Rivers.
- Defining the environmental water needed to sustain and improve the health and/or extent of priority environmental assets and ecosystem functions.
- Identifying potential management strategies to meet environmental water requirements.
- Identifying other investments to address risks and constraints to meeting the long-term water requirements of priority environmental assets and ecosystem functions.

Water for the environment

The NSW Border Rivers LTWP contains ecological objectives and targets for priority environmental assets and ecosystem functions. The Basin Plan defines priority assets and functions as those that can be managed with environmental water.

Ecological objectives have been identified for native fish, native vegetation, waterbirds and ecosystem functions such as river connectivity as they respond to flow and are good indicators of river, wetland and floodplain systems health. The objectives reflect the current scientific understanding of environmental outcomes that might be expected from implementation of the Basin Plan in the NSW Border Rivers catchment (Table 1).

Targets for each ecological objective are set at five, 10 and 20-year milestones to provide a transparent means of evaluating the long-term success of management strategies.

All water in the NSW Border Rivers river systems has a role to play in enhancing the health of the catchment: whether it is water delivered specifically for the environment, water delivered for irrigation, town water supply or stock and domestic purposes, or natural flows.

Table 1 A summary of the environmental outcomes sought by the NSW Border Rivers LTWP

Broad outcomes	Example objectives	Example targets
Maintain current species diversity, extend distributions, improve breeding success and numbers of native fish	Increase native fish distribution and abundance, and ensure stable population structures	Ongoing use of the stimulus flow to boost productivity and, if possible promote spawning In dry times, replenish refuge waterholes for native fish
Maintain the extent and improve the condition of native vegetation	Maintain and improve the viability and extent of river red gum, black box and coolibah communities, lignum shrublands and non-woody wetland vegetation	Limit any reduction in flood size, frequency and changes to flow paths
Maintain the current species diversity, improve breeding success and numbers of waterbirds	Restoration of habitat for waterbirds to contribute to recovery of waterbird populations across the Murray-Darling Basin	Maintain connection and disconnection of anabranches
Improve connections along rivers and between rivers and their floodplains for improved river system health	Improve ecosystem functioning to provide healthy ecosystems capable of supporting native biota	Maintain connection and disconnection of anabranches

Dumeresq River
Photo: NSW Department of Primary Industries–Fisheries

Management strategies and complementary investments

The LTWP identifies management strategies and investments that will complement the ecological objectives and targets it aims to achieve. They include addressing cold water pollution from the region's dams, improving fish passage, conserving riparian, wetland and floodplain vegetation, and screening irrigation pumps to protect fish.

Monitoring and evaluation

Monitoring of river flows will help improve the way available water resources are managed to benefit native plants, animals and river functions. In recent years, monitoring of environmental water outcomes in the NSW Border Rivers has detected positive ecological outcomes such as fish spawning and recruitment, and end-of-system flows to the Barwon–Darling.

The NSW and Australian Governments will continue to monitor the health of river and wetland ecosystems in the NSW Border Rivers in response to environmental watering, with a focus on native fish outcomes.

Monitoring will:

- demonstrate progress towards achievement of the LTWPs objectives and targets
- inform the use and management of environmental water
- contribute to periodic reviews of the LTWP
- provide new knowledge about the NSW Border Rivers ecology that is relevant to environmental water.

To ensure the LTWP remains relevant and up-to-date, it will be reviewed and updated no later than five years after implementation.

Severn River. Photo: N Foster

How will the Long Term Water Plan be used?

The NSW Border Rivers LTWP describes the flow regimes that are required to maintain or improve environmental outcomes in the NSW Border Rivers. The Plan identifies water management strategies for maintaining and improving the long-term health of the NSW Border Rivers riverine and floodplain environmental assets and the ecological functions they perform. This includes detailed descriptions of ecologically important river flows and risks to water for the environment.

The LTWP will help water managers make decisions about where, when and how water can be used to achieve agreed long-term ecological objectives. This recognises that the Murray-Darling Basin Plan (Basin Plan) specifically requires environmental water managers to act adaptively by making timely decisions based on the best-available knowledge, and from monitoring and evaluating the outcomes from water use.

Importantly, the LTWP does not prescribe how environmental water should be managed in the future, but looks at management of all water to promote environmental outcomes in the catchment.

Boomi River. Photo: E Wilson/OEH