

Understanding flows – timing, frequency, extent and duration



Murrumbidgee River near Collingullie

The management of water for river health is a complex and collaborative process.

Water managers work with community advisory groups and technical experts to consider a range of factors when planning flows to support river and wetland outcomes.

The timing, frequency, extent and duration of these flows has a powerful effect on the landscape and the thousands of species calling it home.

Healthy river systems provide habitat, food and shelter

By delivering the flows our river systems need, we can boost river productivity and provide food for native fish, waterbirds and other wildlife. We can also support the conditions needed for native plants and animals to complete their breeding cycles.

Understanding the needs of native plants and animals allows water managers to plan environmental flows to support the health of rivers and benefit plants, animals and people.

The Reconnecting River Country Program is developing information on the expected timing, frequency and duration of different flow options at key river gauges, which will be made available to stakeholders.

This will enable stakeholders to see the different flow limit options over the land and environment near them, allowing them to provide feedback to the program.



Southern Bell frog. Photo Carmen Amos.

Timing of flows

To maximise the environmental benefit of flows, water managers schedule water deliveries to support specific ecological outcomes, such as native fish breeding, waterbird nesting and river productivity.

The timing of environmental flows needs to align with the lifecycle requirements of these native plants and animals.

Environmental flows are scheduled to:

- trigger native fish and other wildlife to breed
- encourage food production in rivers and wetlands
- open additional habitat for nesting, foraging and feeding
- provide essential nursery habitat for a variety of wildlife.

Flows can also be delivered to provide drought refuge (i.e. river or wetland environments providing habitat for wildlife during extended dry spells).

When planning the delivery of water for the environment, environmental water managers and holders consider the:

- availability of water in dams and river systems
- condition of the target site and catchment prior to a proposed event
- current health of the native plants and animals in the target ecosystem
- current river flows which may influence delivery of water for the environment
- forecasted weather events with the potential to influence river flows
- needs and input of landholders whose properties are located along the flow path.

Watering events are generally planned in response to a natural trigger, such as rainfall or inflows from tributaries downstream of major dams.

Water for the environment may be released soon after rain or a natural inflow event to build on the event (if there is little risk of exceeding the flow limit), or later when the peak has passed to slow the rate of fall (recession) and maintain water in core wetland areas.

The management of water for the environment is adaptive, meaning flows are closely monitored as they progress, and adjustments are made to accommodate changes in weather, inflows or other factors.



Wagga Wagga Murrumbidgee River levee bank

Frequency

The frequency of water for the environment flows is guided by the needs of the environment. These needs are reflected as environmental water requirements detailed in *Long Term Water Plans*. The plans help inform the management of water for the environment over the longer term.

The frequency of flows depends on a range of factors. Water managers work closely with river operators, researchers, community advisory groups, landholders and other stakeholders to decide where and when water for the environment can deliver the best possible outcomes.

For instance, water for the environment may be added to a natural event to extend the area or duration of inundation.

Another factor is the landscape itself. The lowest lying wetland and floodplain areas may require a period of inundation almost every year or every second year. Alternatively, areas of slightly higher ground may require inundation less often (i.e. every second or third year).

While natural high flow events meet some of these needs, in many cases smaller sized events are required more often to support wetland plants and provide regular opportunities for native fish and other aquatic life to move between rivers and wetlands to breed and grow.

The frequency of higher flows is targeted at supporting the natural cycle of floodplain forests and woodlands and are important for waterbird breeding. They also boost aquatic food webs, which are key to making sure native fish, waterbirds and other animals have enough food to thrive.

These higher flows are in the mid to upper range of the flow limit options being considered by the program.

The frequency of managed events and inundation also depends on climate and water availability.

In dry times, the natural events often mean less need for environmental flows. As a result, managed events (in response) are likely to occur less often. Alternatively, during wetter times managed events are likely to occur more often.

The delivery of frequent flow events during wet times is important to building resilience in ecological communities, so they can survive through the next dry period or drought.

Reconnecting River Country Program



Managed flow events and the associated inundation of private land may follow an irregular pattern. For example, events may occur over consecutive years followed by a break of one or several years, depending on factors such as when the natural triggers occur, environmental watering priorities and water availability.

Extent of flows

Relaxing constraints will allow water managers to periodically deliver flows to floodplain areas further from the main river channel. By increasing the extent (or area) of managed floodplain flows we can increase ecological outcomes and help to rehabilitate struggling areas that have not seen the frequency of flows needed to support healthy and resilient habitat.

Before river regulation, these areas received more frequent flows supporting the health of extensive areas of wetlands, river red gum and black box forests and woodlands and other wildlife.

Duration of flows

The duration of managed flow events in rivers varies. The program is preparing information on the expected duration of different sized flows at key river gauges so stakeholders can see the expected pattern of flows near them under a range of flow limit options.

Actual event durations will be guided by water requirements established in *Long Term Water Plans* but will also depend on water availability, the time of year, existing catchment and ecological conditions and watering requirements at the time of the event.

The length of time private property is inundated during these events varies depending on the elevation and geography of the land.

Acknowledgement

The Department of Planning and Environment acknowledges we stand on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.



Reed Beds Bird Hide near Mathoura

Find out more

To find out more about upcoming consultation opportunities please contact us or get in touch with your local engagement officer.

- visit dpie.nsw.gov.au/reconnecting-river-country-program
- phone **1300 081 047**
- email winsw.engagement@dpie.nsw.gov.au
- sign up for [program updates](#)