



What does environmental watering involve?

Who is involved in environmental watering?

Environmental water management involves a range of people and organisations. Relationships between local communities, waterway managers (catchment management authorities and Melbourne Water), storage managers (water corporations), environmental water holders, land managers and scientists are the foundation of environmental water management.

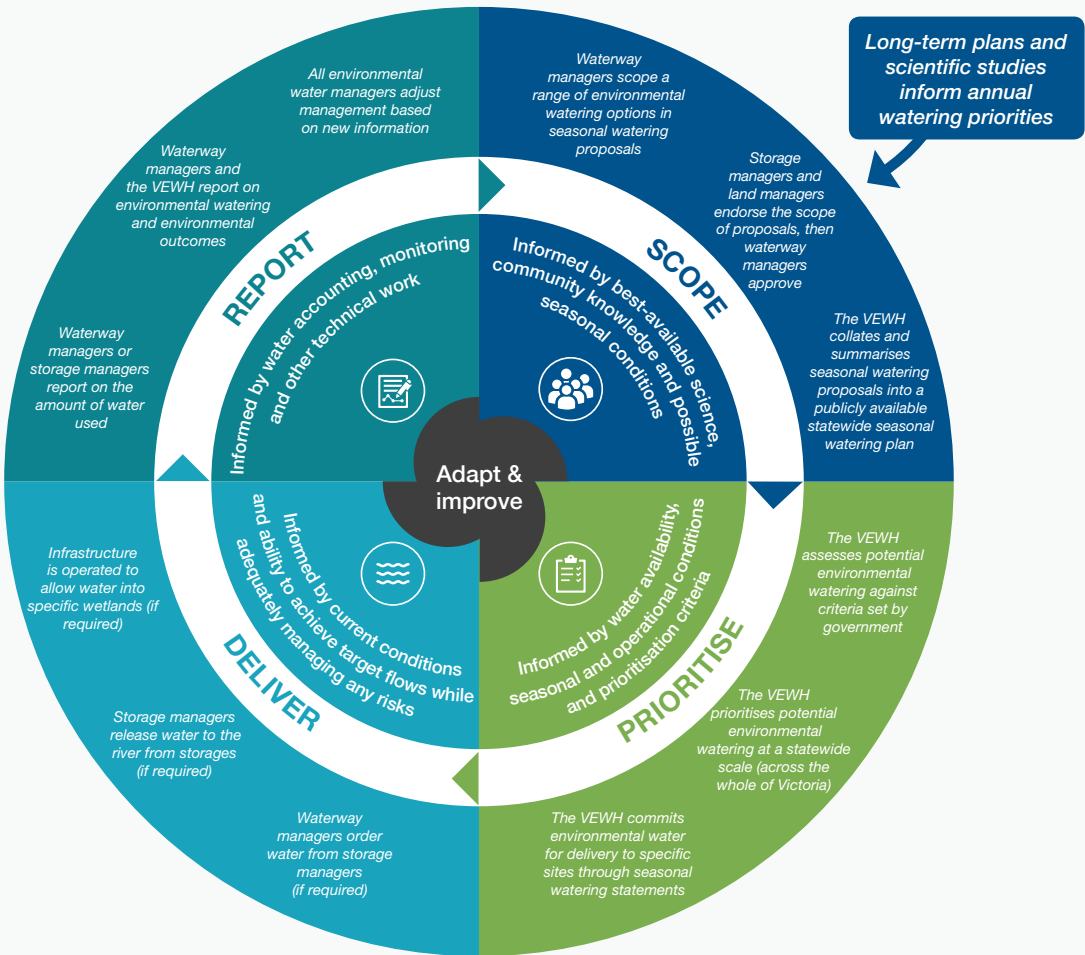
Specific roles are outlined in the Introduction section of the current seasonal watering plan.

Year to year, what does environmental water management involve?

Figure 1 illustrates the four key phases of the annual environmental water management cycle:

► SCOPE ► PRIORITISE ► DELIVER ► REPORT

Figure 1. The annual environmental water management cycle



For the purposes of simplicity, the only water holder represented in this diagram is the Victorian Environmental Water Holder (VEWH). It is important to note that the Commonwealth Environmental Water Holder (CEWH) and the Murray-Darling Basin Authority (MDBA) through the Living Murray program also hold environmental water entitlements in Victoria. The management processes for environmental water held by the CEWH and the MDBA are very similar to those represented above.

- ▶ Every 8–10 years, waterway managers work with communities to develop **regional waterway strategies** identifying the rivers and wetlands of the highest environmental, social, cultural and economic value in their region. In these strategies, long-term management objectives and the possible actions to help achieve them (for example, revegetation, pest control and environmental watering) are identified for each high-value river or wetland.
- ▶ **Scientific studies** provide recommendations on the timing, watering duration and volume of water needed for a particular river or wetland to support native plants and animals at those sites in the short and long terms.
- ▶ If environmental watering is identified as a priority for a particular river or wetland in regional waterway strategies, an **environmental water management plan** is developed. Drawing on scientific studies, these plans describe the long-term environmental watering required (for example, over a period of ten years) to meet environmental objectives for that river or wetland.
- ▶ In northern and western Victoria, environmental water management plans will form the basis for **long-term watering plans** required under the Murray-Darling Basin Plan. These plans will complement long-term watering plans developed by other states to achieve Basin-scale environmental outcomes.



Long-term plans and scientific studies inform annual watering priorities

The annual environmental water management cycle

▶ SCOPE

Each year, waterway managers, generally involving local community representatives, develop **seasonal watering proposals** (which are informed by the priorities determined in the long-term plans and studies previously described). These proposals scope potential environmental watering actions (and associated environmental objectives) in a particular region for that year. They consider lessons learned through previous environmental watering.

In these proposals, potential environmental watering is listed for various planning scenarios: **drought, dry, average** and **wet to very wet**. This is done to provide environmental watering options depending on the seasonal conditions and water availability scenario that eventuates during the year.

As Figure 2 shows, environmental watering objectives can change depending on the scenario. For example, in **drought** conditions, the objective is to protect remaining environmental values and avoid critical loss. In **wet** conditions, the objective is to reconnect rivers to floodplains.

Every June, the VEWB collates and summarises the seasonal watering proposals into a **seasonal watering plan** which previews all potential environmental watering across Victoria for the coming water year under each planning scenario.

Figure 3. A typical flow pattern of a regulated Victorian river

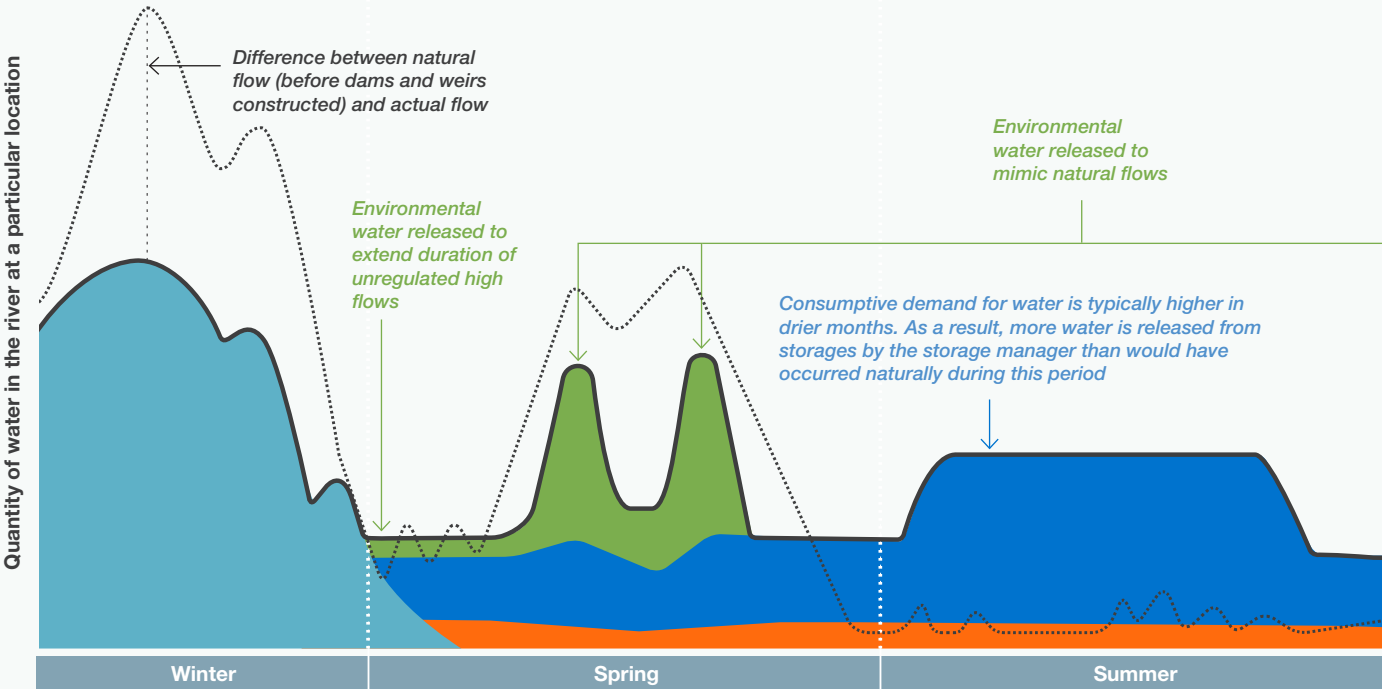
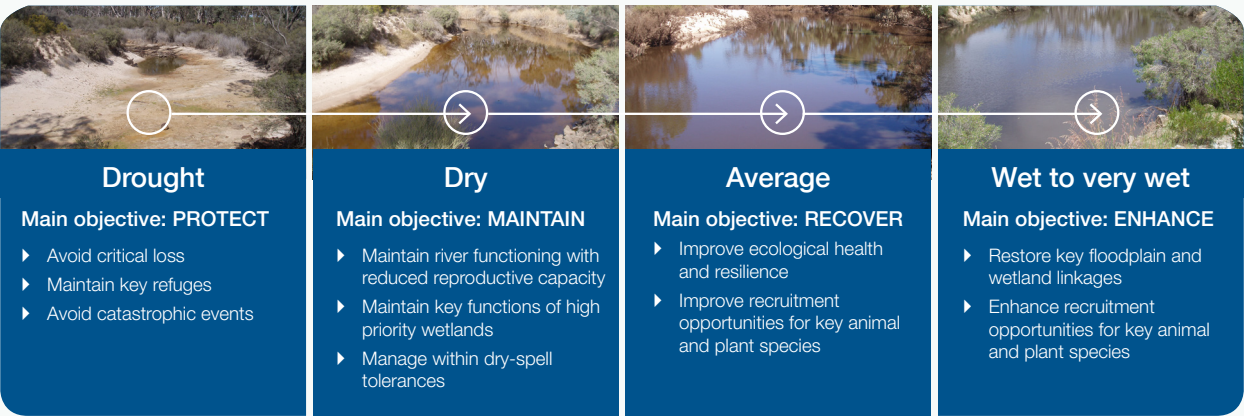


Figure 2. Examples of environmental watering objectives under different planning scenarios



► PRIORITISE

Sometimes the need for environmental water (demand) is higher than the water available to use (supply). It's therefore important to consider where water is most needed and how it can be used most efficiently to achieve the best environmental outcomes.

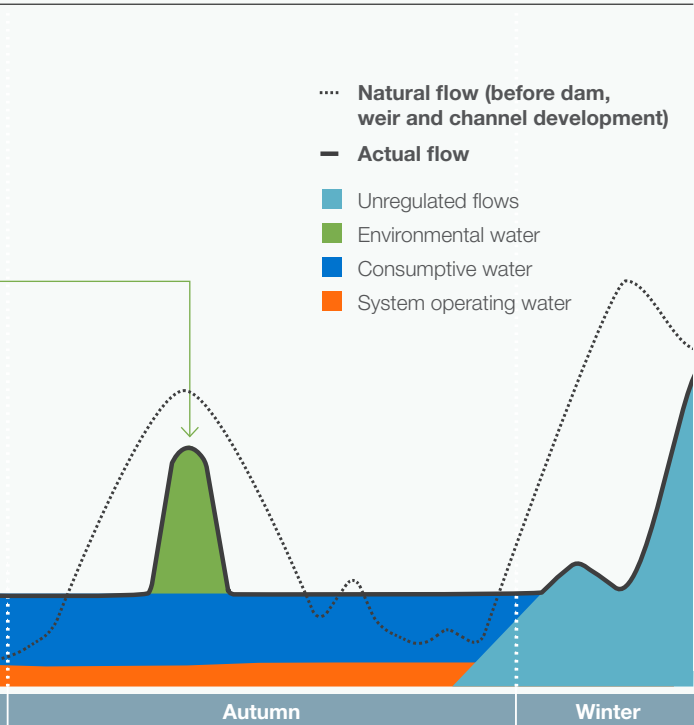
When the demand for environmental water is higher than the supply, environmental water managers may need to make difficult trade-offs between:

- ▶ different regions (that is, deciding to commit water to a river or wetland in one region over a river or wetland in another region)
- ▶ different river reaches or wetlands in one river system (that is, deciding to commit water to one river reach or wetland over another in the same system)
- ▶ different environmental flows in a particular river or wetland (see example on the right)

Each year, these difficult trade-off decisions are influenced by many factors such as previous watering history of the river or wetland, risk considerations in or near the river or wetland, and seasonal conditions in the region.

Prioritising between potential environmental flows in the Goulburn River

The need for environmental water in the Goulburn River can be higher than the anticipated water available to use which requires environmental water managers to prioritise which environmental flows are most important in a given water year. A spring fresh might be prioritised over a winter fresh because it is more important to encourage fish to spawn that year than to provide winter flows for bug habitat, or because climate forecasts indicate there is more likelihood that the winter flow will occur naturally. However, in another year, the priority may change because fish spawning occurred the year before and does not need to occur every year, and forecasted dry conditions mean the winter flow is unlikely to occur naturally.



Types of water in the river

- **Unregulated flows:** occur naturally in a waterway, generally after heavy rainfall, including when storages spill.
- **Environmental water:** owned by environmental water holders, held in storages and actively released at a time and rate designed to provide environmental outcomes. Otherwise known as 'held environmental water' or 'managed environmental water'.
- **Consumptive water:** owned by water corporations or private entitlement holders, held in storages and actively released to meet domestic, stock, town, industry and irrigation needs.
- **System operating water:** managed by storage (reservoir) managers, generally held in storages and actively released to ensure the system can deliver consumptive water, managed environmental water and water to meet other needs.



Wavy marsh wort at the Reedy Lagoon inlet,
by North Central Catchment Management Authority

► DELIVER

After the prioritisation phase, water is committed by environmental water holders for delivery to particular river reaches or wetlands. Where water needs to be released from a storage, the waterway manager responsible for that river or wetland places an order with the relevant storage manager. The order specifies the desired volume of water per day to be delivered through the river reach or into the wetland.

Water is delivered in different ways depending on the river or wetland. Water can be released to a river from a storage or to a wetland through pumps, outlets, gates and channels. For wetlands, it can sometimes be as simple as opening a gate, allowing a river to flow into a wetland. For example, Dowd Morass in Gippsland can receive environmental water when Latrobe River water levels reach a particular height.

Environmental water is only one type of water in a river or wetland system

Storage managers are not only responsible for environmental water delivery. They also release water for other purposes, including consumptive water to supply towns, industry and irrigation or system operating water to ensure the river has enough flow to be able to deliver environmental or consumptive water. As such, storage managers have a big responsibility to balance the needs of all water users.

Figure 3 shows the different types of water in a river or wetland system, including environmental water.

Managing risks

Environmental water deliveries, like consumptive water deliveries, are carefully managed to minimise potential risks. Before any water is delivered, potential risks are considered. These include the risk of flooding private property, or ‘double-booking’ a channel for water delivery, as the example below illustrates.

Timing water delivery to Johnsons Swamp

In years when environmental water is committed to Johnsons Swamp near Kerang, the timing of environmental water delivery is carefully managed to ensure the delivery does not conflict with the delivery of consumptive water to irrigators who rely on exactly the same channels for their water supply.

Using other types of water to meet environmental objectives

Sometimes environmental objectives can be met by other types of water. Heavy rainfall (resulting in unregulated flows) can naturally meet an environmental objective, so environmental water is not needed. Similarly, the timing and route for delivery of consumptive water can sometimes be altered to achieve environmental objectives without using environmental water.

Figure 3 shows an example year in a regulated river. It illustrates the challenge storage managers face when managing the needs of all water users. The thick line represents the actual flow of the river.

Using consumptive water en route to meet environmental objectives

In 2014, environmental objectives were achieved without using environmental water when the timing of consumptive water delivery from the Campaspe River to the River Murray was slightly altered to protect fish nursery habitat.

► REPORT

Reporting on the water used

Depending on how or where the water was delivered, storage managers or waterway managers report on the actual volumes of water delivered to a particular river reach or wetland. Each year, water used for environmental water deliveries is ‘debited from’ the environmental entitlements held by the VEWL.

Reporting on the benefits of environmental watering

The benefits achieved from environmental watering and the lessons learned are reported by waterway managers and environmental water holders on their websites.

Monitoring enables environmental water managers to report on the environmental benefits achieved. For more information about monitoring, see the *How do we know if environmental watering is successful?* fact sheet.