

ENVIRONMENTAL FLOWS

Importance of environmental flows

The flow of a river is fundamental to its ecology. Changes to flows can affect the diversity of aquatic and riparian habitats and biota, the linkages between the river and its floodplain and the ecological functioning of the river itself. The flow regimes of rivers across Victoria are inherently variable, in terms of daily, seasonal and interannual time scales, and this variation is critical to the long-term health of a river.

The flow regime of a river can be broken up into a number of components, all of which have some ecological significance for the river, the riparian zone and the floodplain. This is outlined in the following table.

Flow Component	Timing	Ecological significance
Cease to flow	Summer	River flow stops for some period of time. Bank and beds dry out, pools remain in some systems. Aquatic biota concentrated in pools. Can be an important ecological disturbance.
Low flow	Summer	Occur most years, often for extended periods. Restricted area of in-stream habitat available. Provides limited connection between in-stream habitats. Shallow flow can promote algal growth and restrict movement of biota.
Freshes	Summer Spring	Short periods of high flows. Critical during cease to flow and low flow periods. Improves water quality, especially in pools. Links instream habitats temporarily. Allows movement of biota and transport of food and sediment. Provides biological triggers for fish movement and spawning.
High flow	Autumn Winter Spring	Seasonal increase in flows, though still within bank. Lasts weeks to months. Inundates and connects all instream habitats. Replenishes soil moisture in the riparian zone. Allow migration and redistribution of biota. Scouring and transport of organic material and sediment.
Bankfull	Winter Spring	Flows which completely fill the channel for relatively short periods of time. Forms and maintains channel shape. Movement of sediment and organic material.
Overbank	Winter Spring	Flows which spill out from the channel over the floodplain. Connects river and floodplain, interchange of nutrients, sediment, organic material. Fills wetlands. Promotes breeding and regeneration on the floodplain.

As well as being essential to ecological health, flow is also vitally important to other users. Economically, the flow of a river is its single most valuable aspect for communities. The water provided by our rivers supplies drinking water for four million people across Victoria and currently supports \$5.2 billion worth of irrigated agriculture, which will continue to expand.

The competing demands for water mean that it is necessary to provide and manage a share of water to ensure the health of the river is protected i.e. an environmental flow. In Victoria, environmental flows are provided through the water allocation framework. This includes:

- imposing environmental flow conditions on Bulk Entitlements (BEs) for urban and rural water authorities;
- providing Bulk Entitlements for the Environment in special cases, where some flexibility in use is required e.g. wetland watering;
- specifying environmental flow regimes to be provided in Streamflow Management Plans (SFMPs) for priority unregulated rivers; and
- establishing clear management rules for other unregulated rivers which will protect the environment.

The main issues

The major environmental issues involved with the implementation of the water management framework include:

- defining an environmental flow;
- providing and managing water for the environment;
- restoring stressed river systems where the existing levels of extraction are causing environmental damage; and
- protecting river systems by enabling new development to occur in an ecologically sustainable way, integrating surface water and groundwater management and catchment impacts, dealing with uncertainty in water resource management, and defining the roles of water supply and management authorities.

For environmental flows the VRHS:

- Identifies what must be considered in assessing an environmental flow requirement: it addresses all components of the flow regime, is determined using best available scientific knowledge, and must be a flow regime that would maintain an ecologically healthy river system. The Department of Natural Resources and Environment will provide guidelines for assessing environmental flow requirements.
- Sets direction on management of environmental water, including assessing the environmental effectiveness of the current provisions and reviewing the current management arrangements.
- Outlines the mechanisms in Victoria's water allocation framework which protect environmental flows. These include BEs, SFMPs, management rules for other unregulated rivers and the implementation of catchment caps.
- Provides principles and directions for improving the condition of flow stressed rivers. These include such actions as reviewing the operation of water management systems and using trading rules to improve environmental outcomes. If the community identifies a river as being a high priority, a Stressed River Plan will be developed, which will identify, amongst other things, the environmental improvements required and how they will be achieved.
- Sets direction on how to protect environmental flows while still enabling new development. This includes measures like using trade to improve the environmental outcomes, water efficiency and water re-use and recycling. New allocations may still occur, but guidance is provided on the conditions that must be fulfilled first.