Instream vegetation and flooding

Instream vegetation grows in the water and along the lower banks of rivers, estuaries and wetlands (waterways). Some species may have roots attaching them to the bed and banks while others float on the water surface. Some of the attached plants may be completely submerged while others emerge from the water (emergent vegetation).

In the past, instream vegetation (particularly emergent vegetation like reeds) was removed from waterways to improve drainage and increase channel capacity.

However, it is now well recognised that there are significant benefits to instream vegetation.

Instream vegetation and flood risk

The concern

Reeds and other instream vegetation that extend across the river channel can impede river flows and lead to increased flooding.

What we know

During low flows, the resistance of the reeds slows the water down. Once flows reach about a quarter of the height of the reeds, their resistance is significantly reduced as they are swept over by the flow and lie flat on the bed.

Instream vegetation has many benefits for the waterway. Phragmites in the Wimmera River.
Photograph: Wimmera CMA

Partial removal of native instream vegetation (before and after photographs) in Seven Creeks at Euroa. A two metre buffer strip was maintained. Photographs: Goulburn Broken CMA

Instream vegetation and sedimentation

The concern

Instream vegetation collects sediment, reducing the capacity of river channels to hold floodwaters.

What we know

Sedimentation occurs because land has been cleared of the vegetation that held the soil in the landscape and stopped it from being washed away. This has increased the supply of sediment to waterways.

In some streams, the flow of water has been reduced because of pumping, diversions or regulation to supply water for irrigation and other purposes. The change in flow and land use has often resulted in more sediment entering waterways and reduced movement of sediment through streams. This can result in more favourable conditions for instream vegetation growth.

Managing instream vegetation

Instream vegetation provides an important food source, shelter and nest sites for many animals, including fish and birds, and provides a corridor for wildlife moving between areas. Instream vegetation also reduces bed and bank erosion.

The location and extent of instream vegetation depends on many factors e.g. its ability to cope with drying out and/or flooding, the amount of shade or light provided by riparian vegetation, water temperature, water velocity, water quality, water depth and soil characteristics.

For these reasons, it is important to identify the factors enabling instream vegetation to proliferate at a site and manage these causes rather than just treating the symptom.

Native instream vegetation

Removing native instream vegetation is generally not supported, as it is detrimental to waterway health. In fact, the *Victorian Waterway Management Strategy*[1] states that, unless it can be demonstrated that instream vegetation poses a serious threat to public safety or infrastructure, it should be left within waterways.

The general approach to applications to remove instream vegetation is to identify the impacts and understand the causes of the claimed excessive instream vegetation. An assessment of the likely impacts of selective removal of vegetation then needs to be made for both minor and flood flows.

Partial removal of native instream vegetation is sometimes recommended where it is limiting recreational access to a waterway or occasionally for aesthetic reasons in urban parklands.

Exotic instream vegetation

Removing exotic instream vegetation is generally beneficial to waterway health, particularly new infestations before they become a problem. For example, extended droughts can create ideal conditions for willows to establish in the stream bed. Without early intervention, these juvenile willows can grow to mature trees, causing serious erosion and flooding problems.

Your local catchment management authority (CMA) can provide advice on appropriate techniques. A works on waterways permit will be required from your local CMA for the removal of any instream vegetation. Any application for removal would need to specify the removal method and arrangements for the disposal of the vegetation removed. For some species, such as willows, it is recommended that removal works are staged, to prevent having long lengths of channel exposed. Further information about obtaining a works on waterways permit is provided in the first fact sheet of this series.

1 Department of Environment and Primary Industries. 2013. *Improving our waterways. Victorian Waterway Management Strategy*.

Removal of instream exotic vegetation (before and after photographs) in Creswick Creek at Clunes.
Photographs: North Central CMA

Further information about managing weeds is available on the Agriculture Victoria weeds web pages.

More information on managing willows is available on the DELWP's willow management web pages.

Approvals

Several authorities are responsible for administering legislation and regulations for the management of vegetation in and around waterways.

Planning permits

In Victoria, planning approval is usually required to remove, destroy or lop native vegetation. The permitting is governed by the native vegetation removal regulations which are implemented through local planning schemes administered by local government. If you plan to remove native vegetation your first contact is local council which can help you understand the requirements involved. Information is also available on the DELWP native vegetation web pages.

Works on waterways permits

CMAs also have a regulatory role in authorising individuals and organisations to carry out works and activities in and affecting waterways[2]. Works and activities such as instream vegetation removal will generally need a CMA works on waterways permit[3,4].

If flood risk is the primary reason for wanting to remove instream vegetation, a flood study may be required to assess the influence of the instream vegetation (and its potential removal) on local water levels and flood duration. You would need to demonstrate that the flood benefits associated with removing the vegetation (i.e. in terms of reduced damage) are greater than any costs to waterway health. As a general principle, the onus of proof in removing vegetation to mitigate flood risk lies with those wanting to make the change.

If you would like further information on how to obtain a works on waterways permit, please contact your local CMA.

Other permits and approvals

The granting of a works on waterways permit does not exempt an applicant from the need to comply with other legislation, e.g. to comply with Aboriginal cultural heritage legislation. Further information about Aboriginal cultural heritage requirements can be found on the Aboriginal Victoria website.

The Department of Environment, Land, Water and Planning (DELWP) will also need to give approval if the proposed works and activities occur on Crown land. Most beds and banks of Victorian waterways and nearly 30,000 kilometres of riparian land are Crown land. If you are uncertain whether the riparian land is your private property or Crown land, you can contact DELWP, which can advise you if Crown land abuts your property.

The requirement to obtain other approvals is ultimately the responsibility of the applicant.

2 Melbourne Water is the manager of designated waterways for the Port Phillip region so should be contacted for advice about waterway and riparian management matters in that region. References to CMAs in this fact sheet mean Melbourne Water for the Port Phillip and Westernport region.

3 The Glenelg Hopkins CMA (GHCMA) does not issue works on waterways permits. It authorises works through issuing a licence under the Water Act. The types of works or activities that can be authorised by the GHCMA and the authorisation process differ from other CMAs.

4 Works on waterways permits are only required for 'designated' waterways. These are most waterways in a CMA's region, but your local CMA will be able to advise whether your waterway is designated.

Irrigation and drainage channels

Irrigation and drainage channels are a special case. They are managed for a specific purpose – for the delivery and drainage of water.

For more information about managing vegetation in irrigation and irrigation drainage channels contact your regional water corporation.

Dryland (i.e. non-irrigation) drainage channels are managed by a range of other authorities and individuals. Your local council is your first point of contact for dryland rural drainage inquiries. The *Victorian Rural Drainage Strategy*[5] also provides strategic guidance for matters relating to rural drainage.

5 Department of Environment, Land, Water and Planning. 2018. *Victorian Rural Drainage Strategy.*

Further information

This is one of four fact sheets available to provide information about the relationship between waterway vegetation and flooding. The series includes information about managing the vegetation and approvals that may be required for its management:

- **Managing vegetation and large wood in and around waterways**
- **Large wood (snags) and flooding**
- **Instream vegetation and flooding**
- **Riparian (streamside) vegetation and flooding.**

CMAs and Melbourne Water, as the floodplain and waterway manager for their regions, are the key point of contact to assist with information in this fact sheet and to provide advice and information in relation to local waterways and floodplains.

East Gippsland CMA	**5152 0600**
West Gippsland CMA	**1300 094 262**
Corangamite CMA	**5232 9100**
Glenelg Hopkins CMA	**5571 2526**
Wimmera CMA	**5382 1544**
Mallee CMA	**5051 4377**
Melbourne Water	**131 722**
North Central CMA	**5448 7124**
Goulburn Broken CMA	**5822 7700**
North East CMA	**1300 216 513**

Authorised and published by the Victorian Government , Department of Environment Land Water and Planning, 8 Nicholson Street East Melbourne, 2019

ISBN 978-1-76077-540-7 (pdf/online/MS word)

Accessibility

If you would like to receive this publication in an alternative format, telephone the DELWP Customer Service Centre on 136 186, or email customer.service@delwp.vic.gov.au, or via the National Relay Service on 133 677, www.relayservice.com.au. This document is also available on the internet at www.delwp.vic.gov.au