



# Fencing Guidelines for Flood-Prone Areas

*Report prepared for:*  
Wimmera Catchment Management Authority  
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## Wimmera CMA

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## Acronyms

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AEP Annual Exceedance Probability

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FO Flood Overlay

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LSIO Land Subject to Inundation Overlay

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SBO Special Building Overlay

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## Purpose of these guidelines

Wimmera CMA has compiled these guidelines to minimise flood risks associated with fence construction on flood-prone land.

Construction of a new or replacement fence on flood-prone land in residential areas usually requires local-council approval in the form of a planning permit. An application for a planning permit for a new or replacement fence in a flood-prone area is more likely to be successful if a proposed fence complies with these guidelines.

## Floodplain management responsibilities

The Wimmera CMA is the Floodplain Management Authority for the region (Figure 1). Wimmera CMA plays a role in reducing flood risk by using the combination of planning controls, flood mitigation works and maintenance measures, managing flood-warning systems, and predicting flood severity following heavy rainfall. It is also responsible for advising local Government on the appropriateness of development on flood-prone land. Local Government is the Responsible Authority for land use and development.



Figure 1. Wimmera Catchment

## Regulations

Victorian and Local Government authorities control the use and development of all land under the *Planning and Environment Act 1987*.

Local Government regulates fence construction in flood-prone areas via the planning permit system. Local Governments make decisions to grant planning permits according to the land use and development policies and objectives of a municipal planning scheme.

Local Government devises and administers planning schemes, which are the key tools used at the municipal level to control land use and development.

## Why regulate fencing in flood-prone areas?

Fences in flood-prone areas change the way floodwater moves across the landscape. During floods fences can:

- act as a flow boundary and cause changes in localised flood levels
- redirect the direction of flow
- collect flood debris and cause blockages
- be damaged by floodwaters and subsequent fence debris may cause damage to other structures.

These changes can be minor when a fence on a single property boundary is considered, however, the impact of many fences can have a significant effect on floodwaters (a cumulative impact). Inappropriate fencing can cause significant disruption to the passage of floodwater, particularly when fences are aligned across the direction of floodwater flow.

Fences that don't respond well to floods are also likely to be vulnerable to damage and can increase floodwater levels, thereby increasing overall flooding costs to individuals and the community.

## Zones and Overlays

Planning schemes identify land-use zones, which control land use across a municipality. Planning schemes also regulate the types of development that can and can't be permitted within each zone. This is done with planning scheme overlays which establish additional objectives for development of land, beyond the type of land use prescribed by the zone.

Minimisation of flood risk to life and property, maintenance of the character of heritage areas or protection of significant environmental values are examples of additional objectives. Zones and overlays within local government planning schemes are key tools for floodplain management and the control of development in flood-prone areas.

The zones and overlays most relevant to development of flood-prone land are:

## Land Subject to Inundation Overlay (LSIO)

The land subject to inundation overlay identifies land prone to relatively low-hazard flooding during floods ranging up to and including the 1% Annual Exceedance Probability (AEP) flood.

A 1% AEP flood refers to the size of a flood that has a 1% chance of occurring in any year. Floodwater is expected to be relatively shallow and slow moving according to the best

available information. Development of land covered by this overlay can be permitted provided development proposals respond appropriately to the degree of flood risk.

## **Floodway Overlay or Rural Floodway Overlay (FO)**

The floodway overlay identifies land prone to relatively high-hazard flooding during floods ranging up to and including the 1% AEP flood.

This land is likely to be flooded by relatively deep and fast-moving water that poses a significant hazard to people according to the best available information. The FO commonly applies to the main flow path areas of the floodplain where development should be avoided (if possible) to avoid future flood damage costs. Development can be permitted in some circumstances, provided development proposals respond appropriately to the degree of flood risk.

## **Special Building Overlay (SBO)**

The Special Building Overlay identifies land in urban areas prone to flooding when the water-flow capacity of urban drainage infrastructure is exceeded. Development can be permitted in some circumstances, provided development proposals respond appropriately to the degree of flood risk.

## **Guiding principles for design and approval**

### **1. Impact on flood behaviour**

Fencing in flood-prone areas can affect flood behaviour by altering flood levels, flow velocity and flow direction. These changes can result in increased risk to life, safety and wellbeing. Therefore, changes to flood behaviour should be minimised as far as is practicable.

### **2. Damages**

Fencing in flood-prone areas is susceptible to damage during flood events and may exacerbate flood damage to other structures by causing localised increases in flood levels. Future damage costs should not be unduly increased by inappropriate design of fencing on flood-prone land.

### **3. Location and Orientation**

Appropriate location and orientation of fencing can minimise the associated flood risk. Where possible, fencing should occur where depths and velocities are low, and parallel with the direction of flood flow. Fencing that crosses the main floodway channel should be avoided if possible or designed to minimise disruption to the passage of floodwater.

### **4. Design**

Fences should be designed to minimise disruption to the passage of floodwater. Flood-proofed (swing, drop or lay flat) or fences with a higher ratio of openings compared to solid structures cause less disruption to flood flow and are therefore more appropriate in locations with high flood risk. Appropriate fence designs can be found under Floodplain Fencing Types below.

## 5. Cumulative Impacts

The cumulative impact of fences in the floodplain is a key consideration in the approval of fencing in the floodplain. While one solid fence may have a minor localised effect on flood behaviour, multiple fences can act as a major barrier to flood flow and cause significant changes to how floodwater behaves.

### **Is your fence in a flood prone area?**

If a property is within an FO, LSIO or SBO it is in a flood prone-area and may require a local government planning permit for the erection of fencing. To check if a property is covered by a flood-related zone or overlay visit [Vicplan \(mapshare.vic.gov.au\)](http://Vicplan.mapshare.vic.gov.au).

Alternatively, advice is available from the relevant local council or Wimmera CMA.

## How to use these guidelines

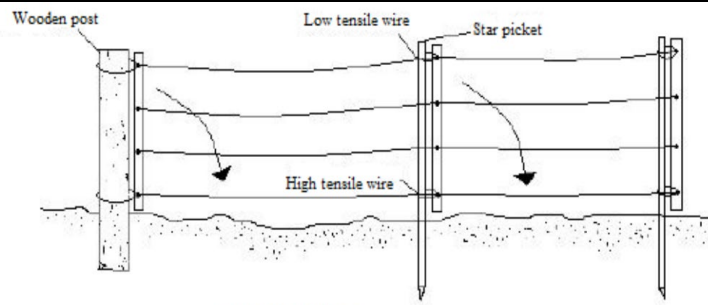
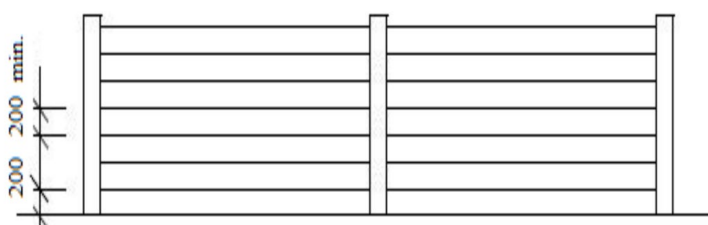
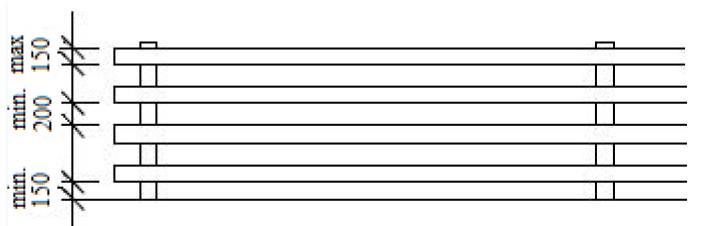
1. Determine the location of a fence line in a floodplain by using one of the information sources described above.
2. Using the definitions and matrix below, work out which type of fence is likely to gain planning approval at your location.
3. Refer to the Floodplain Fencing Types below to select the type and design of fence that is most suited.
4. Submit a planning permit application to the relevant municipal council and refer to the use of these guidelines in formulating an application.

Table 1: Floodplain Fencing Suitability Matrix

Type	Rural areas		Urban areas		
	Floodway	Land Subject to Inundation	Floodway	Land subject to inundation >300mm	Land Subject to Inundation <300mm
	Highest hazard			Lowest hazard	
A					
B					
C					
D					
E					
F					

Likelihood of Approval	
	Unlikely
	Likely

# Floodplain Fencing Types

Type A	Flood Proof (drop, swing or layflat) fencing	 <p><b>DROP FENCE</b></p>
	<p>Designed to collapse automatically under the pressure of floodwaters without causing damage to the fence. Once the floodwaters have receded it may simply be re-erected.</p> <ul style="list-style-type: none"> <li>• Use of mesh wire or grid wire is acceptable (chicken, cyclone etc.)</li> <li>• Must be built to drop with the direction of the water flow</li> <li>• Electric fences with one or two wires are permissible</li> </ul>	
Type B	Post and Wire (single strand- wide spacing)	 <p><b>POST &amp; WIRE FENCE</b></p>
	<p>Option 1</p> <ul style="list-style-type: none"> <li>• Post spacing no less than 3 metres apart</li> <li>• Single wires spaced no more than one horizontal strand per 200 mm</li> </ul> <p>Option 2</p> <ul style="list-style-type: none"> <li>• Post spacing no less than 2 metres apart</li> <li>• Single wires spaced no more than one horizontal strand per 150 mm</li> </ul> <p>We advise against installing wire mesh or rabbit proof (netting) fences in flood-prone areas, they are likely to be destroyed during flood events.</p>	
Type C	Single Rail or Post & Rail	 <p><b>SINGLE RAILING FENCE</b></p>
	<ul style="list-style-type: none"> <li>• Post spacing no less than 3 metres apart</li> <li>• Rails no more than 150 mm wide</li> <li>• Rails spaced no less than 200 mm apart</li> <li>• Bottom rail no less than 150 mm off the ground</li> </ul>	

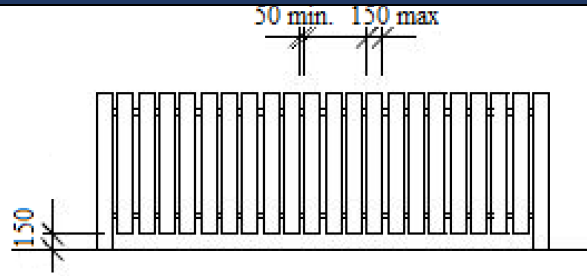


Type D	<b>Timber Cross</b>	<ul style="list-style-type: none"> <li>• Minimum 3 metre post spacing</li> <li>• Minimum 150 mm ground clearance off the ground</li> </ul>	<p style="text-align: center;"><b>TIMBER FENCE</b></p>
	<b>Tubular steel</b>	<ul style="list-style-type: none"> <li>• Vertical or horizontal rails spaced no less than 150 mm apart</li> <li>• Bottom rail spaced no less than 150 mm off the ground</li> <li>• When using tubular steel for pool fences these standards are superseded by the Australian Standards for pool fencing</li> </ul>	<p style="text-align: center;"><b>TUBULAR STEEL FENCE</b></p>
	<b>Double railing or double paling</b>	<ul style="list-style-type: none"> <li>• Vertical or horizontal rails or palings alternating on both sides of the posts/stringers</li> <li>• 150 mm maximum width of rails or palings</li> <li>• Minimum 200 mm spacing between alternate rails or palings</li> <li>• Minimum 150 mm clearance off the ground</li> </ul>	<p style="text-align: center;">Alternate rail on opposite side of post</p> <p style="text-align: center;"><b>DOUBLE RAILING TIMBER FENCE</b></p>
			<p style="text-align: center;"><b>DOUBLE PALING FENCE</b></p>

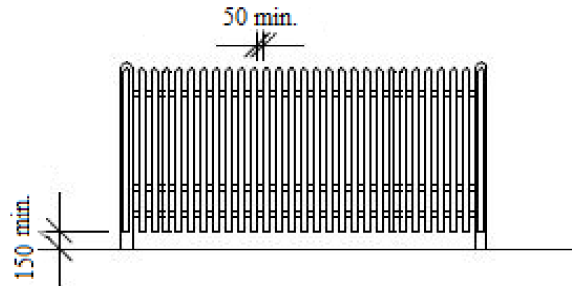
**Paling, Picket, Gap Brick and Corrugated Iron**

Type F

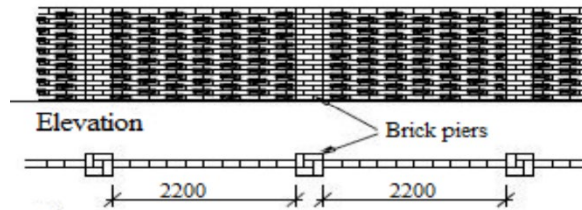
- Minimum of 50 mm spacing between pickets or palings
- Pickets or palings spaced a minimum 150 mm clearance off the ground
- Minimum of 2,200 mm between brick piers
- Minimum of every third brick omitted per coarse
- Corrugated fence requires a 150 mm clearance off the ground and wire mesh (100 mm x 100 mm) used to fill the gap



**PALING FENCE**



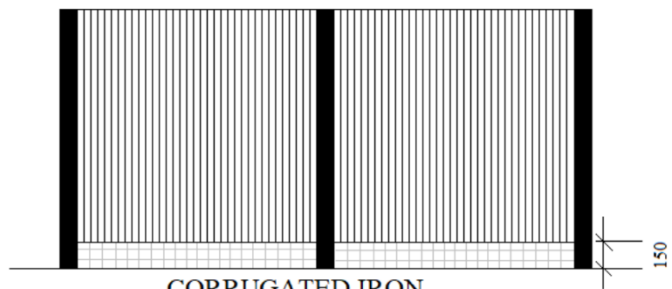
**PICKET FENCE**



**Plan**

**BRICK FENCE**

Every Third Brick Omitted



**CORRUGATED IRON**

150 mm gap with steel mesh to be supported, wooden plinth to be avoided