

Guidelines

Fencing in flood-prone areas.

July 2021

Glenelg Hopkins



CMA

Purpose of these guidelines

These guidelines have been compiled to minimise flood risks associated with fences constructed on flood-prone land.

Construction of a new or replacement fence on flood-prone land in residential areas usually requires the approval of your local council in the form of a planning permit.

Your application for a planning permit for a new or replacement fence in a flood-prone area is more likely to be successful if your proposed fence complies with these guidelines.

Floodplain management responsibilities

The Glenelg Hopkins Catchment Management Authority (CMA) is the Floodplain Management Authority for the region depicted in Figure 1. As a Floodplain Management Authority the CMA is responsible for identifying where flooding is likely to occur, how high flood water is likely to rise and for advising local government on the appropriateness of development on flood prone land. This last function is undertaken via partnership with Local Government which is the Responsible Authority for permitting land use and development.



Figure 1 - Glenelg Hopkins CMA region

Regulations

The use and development of all land in Victoria is controlled by State and Local Government Authorities under the *Planning and Environment Act 1987*.

Construction of fences in flood prone areas is regulated by Local Government via the planning permit system. Decisions to grant planning permits are made according to the land use and development policies and objectives of the municipal planning scheme. Planning schemes are devised and administered by Local Government and are the key tools used at the local level for controlling how land is used and developed.

Why regulate fencing in flood-prone areas?

Fences in flood-prone areas change the way flood water 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 (Figure 2).

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

Fences that don't respond well to flood risk are also likely to sustain more damage (as illustrated by Figure 2 below) and may cause localised worsening of flood water levels, thereby increasing the overall costs of flooding to individuals and the community as a whole.



Figure 2 - an example of inappropriate fencing in the floodplain

Zones and Overlays

Planning schemes identify land use **zones** which control the way land can be used across a municipality. Land use that does not comply with the zoning applied in the planning scheme is not permitted. Planning schemes also regulate the types of development that can and can't be permitted within each zone. This is done using 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 such additional objectives.

Zones and overlays within local government planning schemes are key tools for the management of floodplains and the control of development in flood prone areas.

The zones and overlays that are 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% 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. This commonly occurs on the fringe of the 1% AEP floodplain. 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 or RFO)

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.

Urban Floodway Zone (UFZ)

The urban floodway zone is applied to land where it is appropriate to fully preserve the natural flood conveyance and storage function of land and therefore restrict land use to compatible forms only (eg. agriculture or public open space).

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 be located where depths and velocities are low, and parallel with the direction of flood flow. Fencing which crosses the main floodway channel should be avoided if possible, or be 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 layflat) or fences with a higher ratio of openings compared to solid structure cause less disruption to flood flow and are therefore more appropriate in locations with a higher 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 the way floodwater behaves.

Is your fence in a flood prone area?

If your property is within an Urban Floodway Zone, Floodway Overlay, Rural Floodway Overlay, Land Subject to Inundation Overlay or Special Building Overlay then it is in a flood prone-area and will require a planning permit for erection of fencing issued by the local council.

Whether your land is covered by a flood related zone or overlay can be checked by using the Planning Maps Online service provided on the Land Victoria website <http://services.land.vic.gov.au/maps/pmo.jsp>.

Some flood-prone areas can be identified using the Glenelg Hopkins CMA Flood Portal available via the CMA website or the following link: <https://flood.ghcma.vic.gov.au/> Alternatively, contact your local council or the Glenelg Hopkins CMA for advice.

How to use these guidelines

1. Determine where your fence line is located in the 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 to your circumstances.
4. Submit your planning permit application to your local council, and make reference to your use of these guidelines in formulating your application.

Floodplain fencing suitability matrix					
Rural Floodway Overlay or Floodway Overlay					
Type	Urban Floodway Zone			Land Subject to Inundation Overlay	
	Main Floodway Channel	Floodway	Floodway Fringe	Land Subject to Inundation	Land Subject to Inundation Fringe
	HIGHEST HAZARD				LOWEST HAZARD
A					
B					
C					
D					
E					
F					

LIKELIHOOD OF APPROVAL	
	unlikely
	likely

Main Floodway Channel is where floodwater is deepest and travelling at the highest speed. This is the highest hazard part of the floodplain and is typically the main channel during average flow conditions.

Floodway is the area adjacent to the main channel that is dry land during average flow conditions. Floodway land is characterised by fast moving and deep floodwaters. Floodway is the high hazard part of the floodplain.

Floodway Fringe is the boundary between Floodway land and Land Subject to Inundation. Floodwater speed is generally lower but the depth of floodwater is still significant presenting high risk. Floodway fringe is the high to medium hazard part of the floodplain.

Land Subject to Inundation is usually dry land but is characterised by relatively shallow and slow moving water in times of flood. Land Subject to Inundation is generally classified as the medium hazard part of the floodplain.

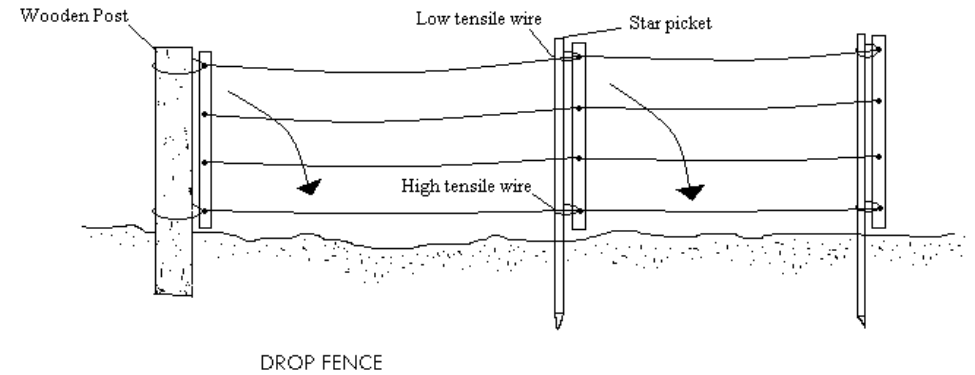
Land Subject to Inundation Fringe is the outermost edge of the land subject to inundation and marks the maximum flood extent. Floodwater is shallow and may be motionless. Land Subject to Inundation Fringe is the lowest hazard part of the floodplain.

Floodplain Fencing Types

Flood proof (drop, swing or layflat) fencing

TYPE A

- 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.
- Use of mesh wire or grid wire is acceptable (chicken wire, cyclone, etc)

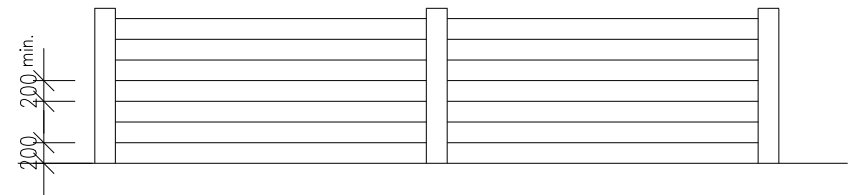


Post & Wire (single strand – wide spacing)

TYPE B

OPTION 1

- Post spacing no less than 3 metres apart
- Single wires spaced no more than one horizontal strand per 200 millimetres



OPTION 2

- Post spacing no less than 2 metres apart
- Single wires spaced no more than one horizontal strand per 150 millimetres



TYPE C

Single Rail or Post & Rail

- Post spacing no less than 3 metres apart
- Rails no more than 150mm wide
- Rails spaced no less than 200mm apart
- Bottom rail no less than 150mm off the ground



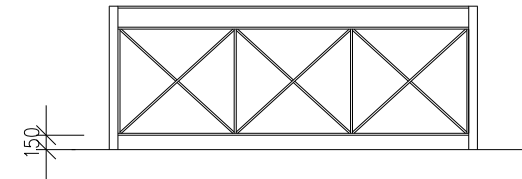
SINGLE RAILING FENCE



TYPE D

Timber Cross

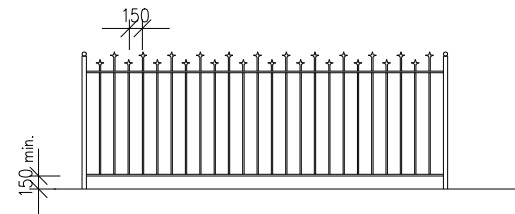
- Minimum 3m post spacing
- Minimum 150mm ground clearance off the ground



TIMBER FENCE

Tubular Steel

- Vertical or horizontal rails spaced no less than 150mm apart
- Bottom rail spaced no less than 150mm off the ground

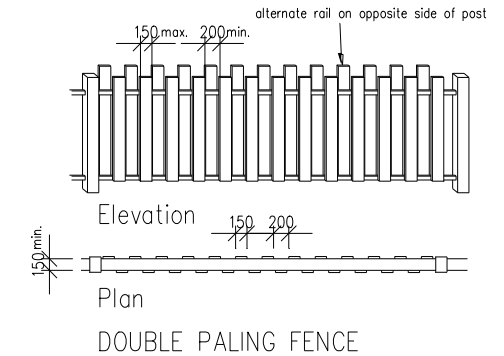
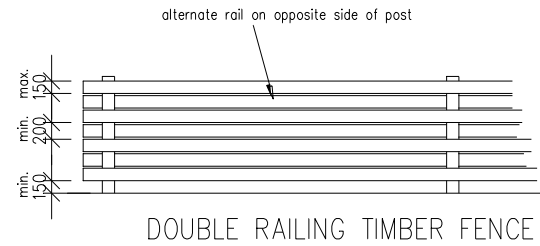


TUBULAR STEEL FENCE



Double railing or double paling

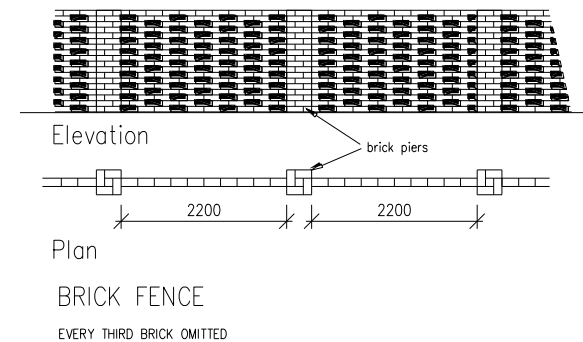
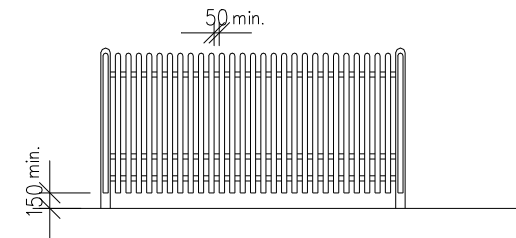
- Vertical or horizontal rails or palings alternating on both sides of the posts/stringers
- 150mm maximum width of rails or palings
- Minimum 200mm spacing between alternate rails or palings
- Minimum 150mm clearance off the ground



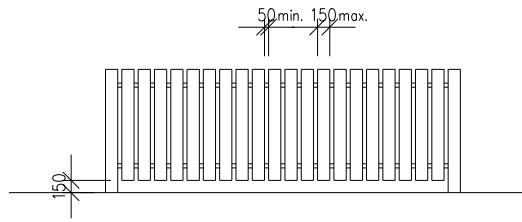
TYPE E

Paling, Picket, Gap Brick and Solid Fence with Clearance Underneath

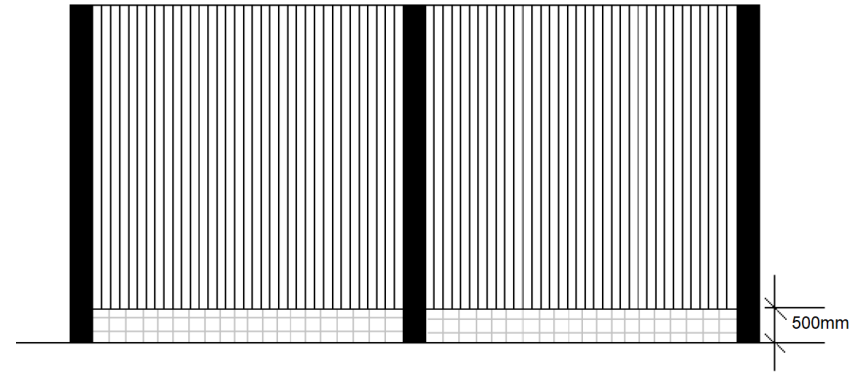
- Minimum of 50mm spacing between pickets or palings
- Pickets or palings spaced a minimum 150mm clearance off the ground
- Minimum of 2200mm between brick piers
- Minimum of every third brick omitted per course
- Solid fences without spacings require a minimum of 500 mm clearance from the ground with wire mesh to fill the gap. Wire mesh gaps shall have a minimum aperture opening of 20 cm squared.



TYPE F



PALING FENCE



SOLID FENCE WITH 500MM GAP UNDERNEATH

MESH MAY BE APPLIED WITH MINIMUM APERTURE OPENINGS OF 20cm SQUARED