PORT FAIRY

LOCAL FLOODPLAIN DEVELOPMENT PLAN

Incorporated under the
Schedule to Clause 72.04 of the Moyne Planning Scheme
pursuant to section 6(2)(j) of the *Planning and Environment Act 1987*

December 2021

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LOCAL FLOODPLAIN DEVELOPMENT PLAN 2021

1.0 PURPOSE OF THE PLAN

This Local Floodplain Development Plan (the Plan) is an Incorporated Document at Clause 72.04 of the Moyne Planning Scheme.

The Plan, combined with the Floodway Overlay (FO) and Land Subject to Inundation Overlay (LSIO), supports a performance-based approach to decision-making that reflects best practice in minimising the risks associated with development of land in the floodplains of the Moyne River and the Southern Ocean.

Flood risk at Port Fairy will continue to increase into the future as a result of the effects of climate change. The Plan and overlays are key elements of Port Fairy's climate change risk mitigation and adaptation strategy.

The Plan and overlays are based on the best estimate of the level of flood risk posed by a 1.2 metre (1.2m) increase in mean sea level (relative to 1990 level). The Plan also provides a mechanism for adapting the planning response to the level of risk that will exist when the 1.2m higher mean sea level (relative to 1990 level) threshold is met and exceeded.

The Plan establishes minimum performance criteria for development applications for land that is affected by the FO and LSIO in Port Fairy and surrounding areas.

All applications to develop land within the FO or LSIO in Port Fairy must comply with this Local Floodplain Development Plan.

2.0 PURPOSE OF THE OVERLAYS

The FO and the LSIO reflect the level of risk to life and property posed by 1% AEP floods in different parts of the floodplain. Factors that influence flood risk include:

- the frequency, duration or flood events;
- the extent, depth and velocity of floodwater affecting a site and its access pathway(s);
- the available flood warning time; and
- the danger to occupants of the site (present and future), other floodplain residents, and emergency service personnel, if the site or access pathway(s) is flooded.

The permit application and referral requirements of the FO and the LSIO ensure risks associated with the use, development, and subdivision of floodplain land are recognised and responded to appropriately.

In general, the FO applies to areas in the floodplain where the depth and/or speed of moving floodwater is likely to be hazardous to people, and where more significant damage to buildings and infrastructure is likely to be inflicted. Placement of buildings and other structures on land within the FO can substantially increase the risk to life,

the economic cost of flooding and the impacts on community wellbeing, and should therefore be avoided.

The LSIO generally applies to land on the outskirts of the 1% AEP flood extent where the level of flood hazard is likely to be lower relative to land within the FO, due to shallower depth and slower water movement.

In Port Fairy:

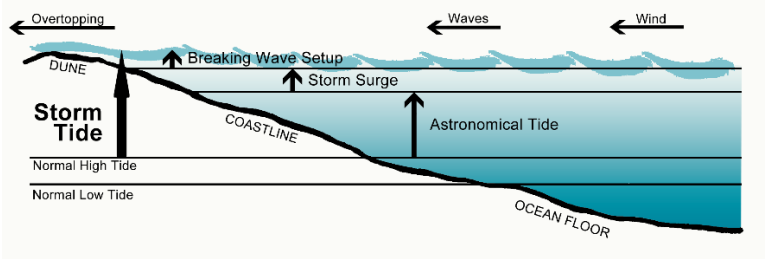
- The FO shows where the level of flood hazard and damage to buildings is likely to be highest during a 1% AEP Riverine or Storm Tide floods when mean sea level is 1.2m higher than the mean sea level during the period between 1995 and 2014.
- The LSIO shows the furthest extent of 1% AEP floods caused by Riverine or Storm Tide Floods when the mean sea level is 1.2m higher than the mean sea level during the period between 1995 and 2014.

Within the FO and LSIO, a permit is required to construct a building, to carry out works (subject to limited exceptions as stated in schedules to the overlays), and/or subdivide land. Any permit application must be consistent with this Local Floodplain Development Plan.

3.0 GLOSSARY/ABBREVIATIONS

For the purpose of this incorporated document, a term or abbreviation listed in the first column of the following table has the meaning set out beside that term or abbreviation in the second column:

AEP	Average Exceedance Probability, the probability or risk of a flood of a given size occurring or being exceeded in any given year. For example, a 90% AEP flood has a high probability of occurring or being exceeded, and would be relatively small flood event. A 1% AEP flood has a low probability of occurring or being exceeded, and would be a relatively large flood event. Note: A 1% AEP event would formerly have been known as a 100-year ARI event. Average Recurrence Interval (ARI) measures the average or expected period between flood events of a nominated flood size. However, AEP gives a more accurate indication of the risk level on a year by year basis.
AHD	Australian Height Datum, the official vertical height datum for Australia, to which all height measurements are referred.
CMA	The relevant Catchment Management Authority for a specified region, as established under the *Catchment and Land Protection Act 1994.* The Floodplain Management Authority function is delegated to CMAs under the *Water Act 1989*.
Design Flood Event	An estimate of flood magnitude generally based on a statistical analysis of flood and/or rainfall data which is attributed with a probability of occurrence defined as an AEP.
Floodplain Management Authority	In Victoria, the Floodplain Management Authority function is delegated to CMAs under the *Water Act 1989.*

FO	The Floodway Overlay at Clause 44.03 of the Moyne Planning Scheme.
Freeboard	A factor of safety above design flood levels, typically used in relation to the setting of floor levels. It is usually expressed as a height above the level of the design flood event.
LSIO	The Land Subject to Inundation Overlay at Clause 44.04 of the Moyne Planning Scheme.
Mean Sea Level	The average height of oceans around the world.
NFPL	Nominal Flood Protection Level, the flood protection level adopted by the Floodplain Management Authority and Moyne Shire Council. For the purposes of this Local Floodplain Development Plan, the NFPL is the 1% AEP flood level estimate for the 1.2m mean sea level rise scenario.
Non-habitable building	A building that is not used for accommodation, as defined in the Moyne Planning Scheme. Does not include outbuildings normal to a dwelling unless otherwise stated.
IPCC	Intergovernmental Panel on Climate Change, a United Nations body for assessing the science related to climate change.
VxD	The product of depth (metres) and velocity of flow (metres per second) is an indicator of flood hazard; also referred to as square metres per second. This factor provides for consideration of circumstances where flood depth may be relatively low, but floodwater is hazardous due to the speed of water flow.
Riverine Flood or Riverine Flooding	The flooding of land caused by water overtopping the banks of inland rivers and creeks as a result of a large rainfall event.
Storm Tide Flood or Storm Tide Flooding	The flooding of land by the ocean, caused by the relatively infrequent concurrence of Astronomical Tide (highest predicted tide) plus Storm Surge plus Breaking Wave Setup, as shown in the diagram below. 

4.0 BASIS OF THE PLANNING CONTROLS

4.1 Flood History

Few reliable records exist for historical flooding in Port Fairy. One extreme event occurred in March 1946, resulting in five deaths and widespread damage across southwest Victoria. The event was driven by an East Coast Low weather system more typical of eastern Victoria than the southwest. The best available information indicates the 1946 flood was in the order of a 0.2% AEP event or larger. The business centre of Port Fairy was fully inundated, and major damage was sustained in and around the township. This included complete destruction of the Princes Highway bridges at Rosebrook and Reedy Creek, and partial destruction of the Moyne River footbridge and the Port Fairy wharf.

A number of minor to moderate Riverine floods have occurred in Port Fairy since 1946. The October 2020 flood is the most significant of recent events, resulting in over-floor flooding in two Griffiths Street residences and several units at the Gardens Caravan Park; Skenes Road was also flooded at the Port Fairy Golf Course.

4.2 Effect of Climate Change on Flood Risk

Climate change is increasing the frequency of extreme weather events, including those which cause flooding. The severity and frequency of both Riverine and Storm Tide floods in Port Fairy are therefore likely to increase.

Further, climate change is causing the mean sea level to rise (confirmed by the mean sea level records from the Portland tide gauge), causing increasingly frequent wave 'overtopping' events along Port Fairy's southern coastline and erosion of the East Beach dune. Conservative estimates show that sea level rise is likely to continue for centuries, worsening the impacts of large Riverine and Storm Tide flood events in the coming decades. Parts of the township are already susceptible to these risks, and other areas will become increasingly vulnerable.

The Plan, combined with the FO and LSIO, responds to Port Fairy's worsening flood risk profile, and provides for minimisation of flood impacts in Port Fairy, up to the level of risk posed by a 1.2m increase in mean sea level.

4.3 Flood Information

The Plan and overlays are based on the likely extents and impacts of flooding that have been determined by the *Flood Summary Report 2021,* prepared by Hydrology and Risk Consulting Pty Ltd. The report incorporates and builds on the following:

- *Translation of Port Fairy Coastal Hazard Assessment,* Cardno, 2019.
- *Port Fairy Coastal Hazard Vulnerability Assessment*, Water Research Laboratory of the University of NSW, 2013.
- *Port Fairy Regional Flood Study – Sea Level Rise Modelling,* Water Technology, 2010.
- *Port Fairy Regional Flood Study,* Water Technology, 2008.

The application of the overlays in and around Port Fairy represents the estimated maximum flood extent envelope for both 1% AEP Riverine and Storm Tide flood events with a 1.2m increase in mean sea level.

In general, the extent of the overlay coverage does not suggest 1% AEP Riverine and Storm Tide floods will occur at the same time. Rather, the extent of the overlays shows the maximum likely extent of flooding that will result from either a 1% AEP Riverine flood or a 1% AEP Storm Tide flood with a 1.2m increase in mean sea level. The extent of the FO shows the area likely to be susceptible to more hazardous flooding caused by either mechanism with a 1.2m increase in mean sea level.

However, the extent of the overlays does consider that both Riverine and Storm Tide flooding may occur at the same time in the Moyne estuary portion of the floodplain (including Belfast Lough), where river flows meet the ocean. The overlays account for a 1% AEP Riverine flood coinciding with a 5% AEP Storm Tide flood and vice versa.

4.4 Flood Impacts

Flood impacts in FO areas will be greater than LSIO areas, as the velocities, depths, frequency, and durations of flooding are generally greater.

Flood impacts can include:

- loss of life;
- impacts on health, safety and wellbeing, including high and prolonged stress;
- isolation from essential services and supplies as a result of loss of access/egress;
- loss of personal property;
- immediate damage to or destruction of buildings and infrastructure;
- long term damage to buildings and infrastructure via waterlogging and salt-water damage; and
- economic costs of property damage.

Flood impacts in the Port Fairy area and its surrounds, particularly Belfast Lough, can be significant. Floods pose significant risks to life and property.

4.5 Nominal Flood Protection Level (NFPL) & Adaptation To Increasing Flood Risk Due To Sea Level Rise

Unless advised otherwise by the Floodplain Management Authority, the NFPL applicable to Port Fairy is the estimated maximum flood level accounting for both 1% Riverine (where relevant) and 1% Storm Tide floods with a 1.2 metre increase in mean sea level.

As noted above, only the Moyne River estuary (including Belfast Lough) portion of the floodplain is subject to both flood mechanisms.

To account for future increase in sea level, the application of a NFPL must be adaptable, and the Floodplain Management Authority may adopt a higher NFPL in the future.

5.0 APPLICATION REQUIREMENTS

All applications for a planning permit to construct a building, to carry out works, or to subdivide land under Clause 44.03 (FO) or Clause 44.04 (LSIO) of the Moyne Planning Scheme must be accompanied by the following information, as relevant to the proposal, and to the satisfaction of the responsible authority.

a) Site plans showing:
   - the boundaries, dimensions, shape, size, orientation, slope, and elevation of the site;
   - the location of all existing and proposed buildings or works; and
   - the use and development of surrounding sites and buildings.

b) Elevation plans prepared by or under the direction and supervision of a licensed land surveyor showing:

- natural ground level, finished ground level and the floor levels of any existing and proposed buildings in relation to both the AHD and the NFPL as nominated by the relevant Floodplain Management Authority;
- existing and proposed ground levels of the site to AHD;
- floor levels of all existing and proposed buildings to AHD;
- the difference in ground and building levels between the site and surrounding properties to AHD;
- the levels of adjoining roads, internal driveways, and access tracks to AHD; and
- construction details of all buildings, fences, driveways, and other works.

c) Documents providing:

- A written response to Clause 13.03-1S of the Moyne Planning Scheme, *Floodplain Management*, including demonstration that the proposed development could not be located on land not subject to flood risk, and a response to relevant decision guidelines.
- An outline of any actions or measures required to reduce the risk to individuals, property, infrastructure, and the environment, over the predicted life of the buildings or works, including those applying to the siting and design of the buildings or works, and/or to the use and occupation of all aspects of the proposal.
- For proposals including fencing, a statement of compliance with the *Glenelg Hopkins CMA Guidelines for Fencing in Flood-prone Areas,* or evidence demonstrating that the fence does not significantly obstruct flood flows.
- For proposals involving cut-and-fill earthworks, a statement of compliance with the *Glenelg Hopkins CMA Guidelines for Floodplain Cut and Fill*, including:
    - plans prepared by or under the direction and supervision of a licensed land surveyor showing ground levels to AHD of all fill and borrow areas, depths of cut and height of fill, and calculations showing the net level for level cut and fill volume balance.
    - modelling of flood behaviour demonstrating impacts of proposed works.

d) A flood risk report is required for proposals to develop land located within the FO if the application does not comply with this Local Floodplain Development Plan in full.

6.0 PERFORMANCE CRITERIA

The following performance criteria apply to all land within the FO and LSIO.

6.1 All applications

Applications for development must not:

- reduce the capacity of the floodplain to store and convey floodwater;
- divert or impede the flow of floodwater; or
- adversely impact downstream or neighbouring land.

6.2 Subdivision

Applications to subdivide land that is either partly or wholly within the FO or LSIO must not create new lots entirely within these overlay areas unless it is demonstrated to the satisfaction of the responsible authority and the Floodplain Management Authority that:

- each new lot contains an existing dwelling; or
- there is an adequate building envelope on each lot (which must be formally defined on the plan of subdivision) where the inundation depth is estimated to be no more than 300mm during a 1% AEP flood level under the 1.2m sea level rise scenario; and
- access to the building envelope does not traverse land where the inundation depth is estimated to exceed 300mm during a 1% AEP flood under the 1.2m sea level rise scenario.

6.3 New or replacement buildings

New or replacement buildings (excluding outbuildings and sheds) must have a floor level finished at or above the NFPL, which is the estimated 1% AEP flood level for the 1.2m mean sea level rise scenario.

New or replacement buildings (excluding outbuildings and sheds) should:

- be sited on the highest available natural ground, unless it can be demonstrated to the satisfaction of the responsible authority and the Floodplain Management Authority that this is not viable;
- have an accessway to the building envelope that:
  - does not traverse land where the flood depth is estimated to exceed 300mm during a 1% AEP flood event under the 1.2m sea level rise scenario; and
  - is not subject to flooding where the product of depth and velocity (VxD) exceeds 0.4 metres squared per second during the 1% AEP flood event;
- be constructed to minimise potential for disrupting floodwater flow;
- be constructed on stumps (or piers) and bearers, unless the Floodplain Management Authority has advised otherwise in writing within three (3) months of lodgement of the application;
- be aligned with the longest wall parallel to the dominant direction of floodwater flow, unless:
  - it can be demonstrated that this cannot be practically achieved, to the satisfaction of the Floodplain Management Authority and the responsible authority; or
  - the Floodplain Management Authority has advised in writing that an alternative alignment is acceptable, no more than three (3) months prior to lodgement of the application;
- be constructed of water and salt resistant building materials up to the NFPL;
- be designed and constructed so that:

  - the ground surface under raised building floors is sloped or mounded to ensure floodwater freely drains away from the sub floor area; and
  - any subfloor structure cladding is of an open style (such as spaced timber boards) to allow entry and exit of floodwater; and
- have building fill pads constructed in accordance with the *Floodplain Management Authority Guidelines for Floodplain Cut and Fill*, where deemed acceptable by the Floodplain Management Authority.

New or replacement outbuildings, sheds or standalone garages (excluding open sided outbuildings or sheds) should:

- be sited on the highest available natural ground, unless it can be demonstrated to the satisfaction of the Flood Management Authority and the responsible authority that this is not viable;
- be designed to minimise potential structural damage caused by flooding, such as by providing openings (doors or vents) in external walls to allow free entry and drainage of floodwater, using water and salt resistant building materials, and installing electrical fittings above the NFPL; and
- have a floor level finished no higher than 150mm above the lowest natural ground surface within the building footprint unless the application is accompanied by written advice that an alternative floor level is acceptable, issued by the Floodplain Management Authority no more than three (3) months prior to lodgement of the application.

New or replacement commercial or industrial buildings must have a floor level finished at or above the NFPL unless the application is accompanied by written advice that an alternative floor level is acceptable, issued by the Floodplain Management Authority no more than three (3) months prior to lodgement of the application.

6.4 Extensions to existing habitable buildings

Applications for extensions to existing habitable buildings must:

- be constructed on stumps (or piers) and bearers unless:
  - it can be demonstrated to the satisfaction of the Floodplain Management Authority and the responsible authority that this requirement cannot be practically achieved; or
  - the application is accompanied by written advice that an alternative construction method is acceptable, issued by the Floodplain Management Authority no more than three (3) months prior to lodgement of the application.
- be aligned with the longest wall parallel to the dominant direction of floodwater flow;
- be constructed of water resistant material up to the NFPL; and
- Have a finished floor level that is not less than the applicable level in the following table:

Size of habitable building extension (footprint in square metres)	For existing finished floor levels below the adopted 1% AEP flood level. If the difference is:		For existing floor levels above the adopted 1% AEP flood level. If the difference is:	
	greater than 300mm	between 0 and 299mm	between 1 and 299mm	greater than 300mm
	the finished floor level of the extension must not be lower than :			
Up to 20m²	Existing floor level	Existing floor level	Existing floor level	Existing floor level
20 to 40m²	NFPL	Existing floor level	Existing floor level	Existing floor level
40 to 80m²	NFPL	NFPL	Existing floor level	Existing floor level
Greater than 80m²	NFPL	NFPL	NFPL	Existing floor level

6.5 Extensions to existing non-habitable buildings

Extensions to existing non-habitable buildings must

- not divert or impede the flow of floodwater to the detriment of other property;
- be aligned with the longest wall parallel to the dominant direction of flood water flow, as far as practicable;
- be constructed with water resistant material up to the NFPL; and
- have a finished floor level that is not higher than the floor in the existing building.

6.6 Fences

Fences must:

- be designed and constructed to minimise the likely effects of flooding;
- not unduly divert or obstruct floodwater; and
- minimise the potential for debris to be trapped.

Any application for the construction of a fence must demonstrate compliance with the *Glenelg Hopkins CMA Guidelines for Fencing in Flood-prone Areas*.

6.7 Earthworks

Earthworks must not:

- divert or impede the flow of floodwater to the detriment of other property; or
- reduce the capacity of the floodplain to store floodwater to the detriment of other property.

Applications for cut and fill must be accompanied by plans which demonstrate compliance with the *Glenelg Hopkins CMA Guidelines for Floodplain Cut and Fill.*

Applications for the construction of earthworks, including a dam or an in-ground swimming pool, must:

- demonstrate that excavated material will be removed off-site and away from land within the FO or LSIO, and
- ensure that the finished surface level of land surrounding the earthworks, including embankments, does not cause a net decrease in flood storage capacity.

6.8 Swimming Pools (permanent)

Permanent swimming pools must be fully in ground with no protrusion of pool walls above natural ground surface, unless the application is accompanied by written advice that an above ground protrusion is acceptable, issued by the Floodplain Management Authority no more than three (3) months prior to lodgement of the application.

6.9 Bulk Chemical Storage

Vessels, containers, or tanks for bulk storage of hazardous chemicals (e.g. fuels, oils, herbicides, insecticides) must:

- be located on land outside the FO; or
- if located on land within the LSIO, be fixed on a suitably engineered structure and raised a minimum of 1 metre above the NFPL.

6.10 Water Tanks (other than slimline tanks against and aligned with building walls)

Multiple on-ground water tanks must not be placed in a line unless the line is parallel to the direction of floodwater flow.

Water tanks must be suitably fixed to the ground and secured to prevent floatation and transport downstream.

Within the LSIO, on-ground water tanks must be fixed on a fill/pad that is sized as closely as practicable to the footprint of the water tank.

Within the FO:

- water tanks with a capacity of less than 4500 litres may be located at ground level provided the water tank is fixed on a fill/pad that is sized as closely as practicable to the footprint of the water tank;
- water tanks exceeding a capacity of 4500 litres must be placed underground or be fixed on a suitably engineered fixed post and bearer stand and raised to a minimum of 600mm above the NFPL.

7.0 DECISION GUIDELINES

Before deciding on an application, the responsible authority must consider (as appropriate) whether the proposed development:

- can be located on land outside the FO and LSIO, to prevent increased vulnerability of persons and structures to potential flood damage;
- minimises risk of negative impacts from flooding on persons, property, and/or infrastructure, particularly in relation to existing residents or other properties

(includes generating risk where none previously existed, and intensifying existing risk by exacerbating flood characteristics);

- minimises the risk of residents becoming isolated from essential services and supplies during a flood event, and the danger to emergency personnel;
- maintains free passage and temporary storage of floodwaters, and otherwise avoids altering flood behaviour;
- is designed and uses appropriate materials and constructions methods to minimise the likelihood of damage by water (including salt water); and
- maintains a vegetated buffer to drainage corridors to minimise erosion of stream banks and verges during large floods and maintain the natural drainage function, stream habitat, and wildlife corridor and landscape values.

8.0 RELATED DOCUMENTS

Consider as relevant:

- *Flood Summary Report 2021* (HARC).
- *Translation of Port Fairy Coastal Hazard Assessment 2019* (Cardno).
- *Port Fairy – Sea Level Rise Modelling Report 2012* (Water Technology).
- *Port Fairy Regional Flood Study Addendum Report 2010* (Water Technology).
- *Port Fairy Regional Flood Study* (various reports) 2008 (Water Technology).
- *Guidelines for Development in Flood Affected Areas 2019* (Department of Environment Land Water and Planning).
- *Guidelines for Coastal Catchment Management Authorities: Assessing Development in Relation to Sea Level Rise 2012* (Department of Sustainability and Environment).
- *Port Fairy Coastal and Structure Plan 2018* (Hansen Partnership).
- *Building Code of Australia – Australian Building Codes Board – Construction of Buildings in Flood Hazard Areas – Information Handbook and Standard*.
- *Glenelg Hopkins CMA Guidelines for Fencing in Flood-prone Areas.*
- *Glenelg Hopkins CMA Guidelines for Floodplain Cut and Fill.*

9.0 NOMINAL AREA OF APPLICATION