GLENELG SHIRE LOCAL FLOODPLAIN DEVELOPMENT PLAN

REVISED MARCH 2022

INCORPORATED DOCUMENT

Incorporated within Clause 72.04 of the Glenelg Shire Planning Scheme Pursuant to Section 6(2)(j) of the *Planning and Environment Act* 1987

1.0 APPLICATION

This local floodplain development plan has been prepared under the Glenelg Planning Scheme.

The plan establishes minimum design & development criteria for use, buildings and works, and subdivision in the following areas:

- Urban and rural areas of Portland affected by the Urban Floodway Zone (UFZ), Floodway Overlay (FO1) and Land Subject to Inundation Overlay (LSIO1).
- Urban and rural areas of Casterton affected by the FO1 and LSIO1.
- Rural areas of Narrawong and the Surrey River and estuary affected by the FO1 and LSIO1.
- Urban and rural areas of Heywood, Drumborg, Condah, Breakaway Creek, Tyrendarra, and Homerton affected by the FO1 and LSIO1.

The locations of these areas are shown under zoning and overlay maps forming part of the Glenelg Planning Scheme.

This plan provides a performance-based approach to the assessment and determination of planning permit applications. An application for a planning permit to use or develop land affected by the UFZ (Clause 37.03) and to develop land affected by the FO (Clause 44.03) or LSIO (Clause 44.04) of the Glenelg Shire Planning Scheme must be consistent with the performance criteria established by this Local Floodplain Development Plan.

In addition to the decision guidelines in Clauses 37.03-6, 44.03-6, 44.04-6 and Clause 65, the responsible authority must also consider the Performance Criteria of this Local Floodplain Development Plan as appropriate.

2.0 BASIS OF THE PLANNING CONTROLS

2.1 Flood History

One extreme flood event has been recorded in the Glenelg Shire. This occurred in March 1946 and impacted significantly on Casterton. It also affected Portland and Narrawong. The 1946 flood was a major event driven by an East Coast Low weather front. East coast lows mainly affect eastern Victoria and are seldom observed as far west as Glenelg Shire.

Riverine flooding in Portland is mainly associated with Wattle Hill and Finn Creeks. Extensive flooding occurs at the confluence of these creeks, starting at Fawthrop Lagoon spreading as far north as Otway Street and in the case of Wattle Hill Creek, westward beyond the Henty Highway. Flood depth in the 100 year ARI[1] event exceeds 2m in a majority of the

[1] Average Recurrence Interval (ARI) refers to the average or expected value of the period between exceedances of a given discharge or event. A 100-year ARI event would occur, on average, once every 100 years and can also be expressed as Annual Exceedance Probability (AEP). AEP refers Refers to the probability or risk of a flood of a given size occurring or being exceeded in any given year. A 90% AEP flood has a high probability of occurring or being exceeded; it would occur quite often and would be relatively small. A 1% AEP flood has a low probability of occurrence or being exceeded; it would be

Portland floodplain. Given the influence of the lagoon, flow velocities are generally low downstream of the Henty Highway until water reaches the canal at the downstream end of the lagoon. Properties between Smith Street and Henty Street, including residences in Portland Court, are some of the most at risk. Two properties in this area almost flooded over-floor in the August 2013 flood which is the second largest recorded in Portland and considered to have approximated a 50 year ARI event.

Flooding in Casterton is associated with the Glenelg River. A number of significant floods have been recorded, including events in 1893, 1906, 1946, 1950, 1975, 1983, 1991, 1992, 1996, 2008, 2010 and 2011. Significant anabranches to the main Glenelg River channel are a feature of the Casterton floodplain. High hazard (deep and fast moving) floodwater is a feature of these anabranches during large floods. The topography at Casterton is such that the floodplain is broad upstream of the Glenelg Highway (Henty St) bridge but narrows substantially at the highway bridge. This brings about deep flooding over the residential land in and around Murray Street which extends up into the commercial centre of the town - over Henty Street, ultimately cutting the Glenelg Highway.

Flooding at Narrawong is associated with the Surry River. The impact of the 1946 flood at Narrawong was not documented in any detail - stream flow was not recorded at this time. The August 2013 Surry River flood flow (coincided with flooding in Portland) is the largest recorded. This caused widespread rural flooding but there were no significant impacts recorded at Narrawong. The October 1976 flood flow is the next largest on record. This event was slightly smaller than the August 2013 event.

2.2 Flood impacts

Flood impacts in the Shire can be significant. Large floods pose significant risks to life, health and wellbeing of residents and emergency service personnel, causing road closures, loss of access/egress for residents, property isolation and damage to buildings and infrastructure.

The 2011 Casterton Flood Investigations show that a total of 166 Casterton properties are subject to flooding during 100 year ARI floods. Dwellings on 80 of these properties are subject to over-floor flooding during events of this magnitude. Over-floor flooding in Casterton begins to occur when flows in the river reach 5 year ARI levels.

The 2011 Portland Flood Study has estimated that 23 residential properties are likely to be flooded during 100 year ARI events, with 10 dwellings likely to experience over-floor flooding. Given observations from the August 2013 event, over-floor flooding in Portland begins to occur in the Henty Street – Portland Court area when floods approach the 50 year ARI event.

The effects of flooding on Narrawong are limited. Impacts on the caravan park are most significant. This lies very close to sea level and can be impacted on by both wet weather flooding and flooding that occurs in relatively dry conditions as a consequence of natural closure of the river mouth by a sand bar. Land immediately west and east of the estuary is also impacted by direct inundation and loss of access due to both dry and wet weather flooding. Flooding at Narrawong occurs on an annual basis due to the periodic closure of the river mouth.

2.3 Flood information

The extent and likely impacts of flooding have been determined by the following flood studies and investigations

- *Surry River Flood Study* (Water Technology, 2008)
- *Portland Flood Study* (CARDNO, 2011)
- *Casterton Flood Investigations* (CARDNO, 2011)

fairly rare but it would be relatively large. A 100-year ARI event is equivalent to a 1%AEP event. A 1%AEP event has a 1% chance of occurring in any year.

- *Fitzroy River, Darlot Creek and Heywood Regional Floodplain Mapping Study* (Water Technology, 2017)

The flood studies for Portland and Narrawong have also investigated the impacts of rising mean sea level on future riverine and coastal storm surge flood levels. Flood levels and flood extent maps have been produced showing the estimated impact of projected increase in mean sea level on riverine flooding, coastal storm surge flooding and a combination of the two. Scenarios assessed include a 0.8 metre rise in mean sea level and a 0.2 metre rise in mean sea level.

For Narrawong, the *Surry River Flood Study* determined that a 0.8 metre rise in mean sea level will result in a very minor increase flood extent and levels due to characteristics of the estuary. The extent of the LSIO at Narrawong therefore includes assessment of a 0.8 metre rise in mean sea level.

For Portland, both a 0.8 and 0.2 metre rise in mean sea level have been modelled. The results of this show that the extent and depth of flooding in Portland can be expected to increase noticeably along with rising mean sea level and the most significant impact will occur when a riverine flood occurs at the same time as a coastal storm surge or king tide. Given that the majority of Portland's undeveloped floodplain land is within the UFZ, infill development is the most significant planning challenge from a flood risk perspective. The extent of the LSIO within Portland therefore reflects the modelled impact of a 0.2 metre increase in mean sea level consistent with State Policy at the time the controls were inserted into the Glenelg Planning Scheme.

2.4 Purpose of the zone and overlays.

The planning controls ensure that risks associated with the use and development of floodplain land are recognised and responded to appropriately via the planning permit application process.

The UFZ, FO and LSIO areas are based on the relative flood risk assessed for different parts of the floodplain, considering factors such as flood depth, velocity, natural storage, flood duration and warning time.

The UFZ and FO within the Glenelg Planning Scheme denote floodway land. Floodway is the component of the floodplain required to provide adequate flood conveyance and storage and should remain free from obstruction during major flood events. Furthermore, floodway land is generally the high hazard portion of the floodplain where deep and fast flowing floodwater can be expected. Placement of buildings on floodway land substantially increases risk to life and community wellbeing and should therefore be avoided.

In general, the UFZ in Portland applies to wetlands forming the northern extension of Fawthrop Lagoon and serves to protect the natural values and function of the floodplain through prohibition of most forms of development - including residential, commercial and industrial. The FO recognises existing use of floodway land that may already be developed. Further development can be considered provided strict criteria are applied to approvals for buildings and works to minimise flood risks.

The LSIO within the Glenelg Planning Scheme generally denotes land where flooding is likely to be relatively shallow and slow moving. The level of hazard in this part of the floodplain is relatively low. This land is often on the fringe of the floodplain and development is possible provided strict criteria are applied to building and works approvals to minimise flood risks.

3.0 LAND USE AND DEVELOPMENT OBJECTIVES

The following objectives seek to guide decision making with respect to future use and development in the area covered by this local floodplain management plan:

- Minimise risk to life, health and wellbeing associated with flooding.

- Ensure that any use and development permitted on floodplain land:
    - does not increase the risk to existing residents, property and community infrastructure from flooding.
    - maintains to the maximum possible extent the free passage and temporary storage of floodwaters.
    - uses materials and is designed and constructed so that the likelihood of damage by floodwater is minimised.
    - will not cause any significant rise in flood level or flow velocity to the detriment of other land holders or property.

- Ensure that future flood damage costs are not compounded unduly.

- Ensure existing flood-prone development is maintained in ways that will minimise future impacts and costs associated with flooding.

- Discourage subdivision of land that would result in the intensification of development in areas affected by flooding and inundation.

4.0 EXERCISING DISCRETION

When exercising discretion in assessing and determining a planning permit application:

- Encourage construction of new buildings and works on land outside the UFZ, FO and LSIO.

- Discourage filling of the floodplain within the UFZ unless it can be demonstrated that balanced cut and fill can be achieved consistent with the Glenelg Hopkins CMA Guidelines for Floodplain Cut and Fill.

- Discourage the construction of private levees within the UFZ.

- With the exception of normal residential gardening activities, strongly discourage filling of the floodplain in all areas within the LSIO and FO unless it can be demonstrated that balanced cut and fill can be achieved consistent with the Floodplain Management Authority Guidelines for Floodplain Cut and Fill.

- Discourage subdivision of parcels that could lead to intensification of development on flood prone land.

- Encourage the retention of natural drainage corridors with indigenous vegetation buffer areas along waterways. This will minimise erosion of stream banks and verges during large floods and maintain the natural drainage function, stream habitat, wildlife corridor and landscape values.

5.0 PERFORMANCE CRITERIA

5.1 Urban Floodway Zone

A dwelling or non-habitable building with a floor area exceeding $10m^2$ may be constructed on land in this zone, only if it is to replace such a building that has an existing use right and will not (in the opinion of the Floodplain Management Authority) pose an unacceptable threat to:

- the orderly flow of flood waters across the subject land and either upstream or downstream land.

- the safety of persons who are resident on the land (having regard to flood depth, the velocity of flood waters, and the means of access available to the dwelling from non-flood prone land).

Any dwelling that is totally replaced must:

- be constructed on stumps or piers and bearers.
- have its lowest floor level set at least 600 mm above the 100-year ARI flood level (i.e. at or above the nominal flood protection level); and
- must be aligned with its longest axis parallel to the dominant direction of flood water flow.

If not more than 50% of an existing dwelling has been damaged or destroyed:

- a replacement ground floor area may be constructed with a floor level matching that of the existing building; and
- the replacement floor area may be up to $20m^2$ greater than the damaged or destroyed ground floor area of the original building.

5.2 Floodway Overlay and Land Subject to Inundation Overlay

Buildings

Applications for new or replacement buildings and works including outbuildings and sheds with floor areas exceeding:

- $20m^2$ within the LSIO; and
- $10m^2$ within the FO

must satisfy the following criteria:

- New buildings must be on the highest available natural ground.
- New or replacement buildings must be constructed to minimise potential for disrupting flood water flow.
- New or replacement buildings must be constructed on stumps or piers and bearers unless the Floodplain Management Authority has advised otherwise in writing.
- New dwellings (excluding replacement dwellings) must be sited on land where the 100 year ARI flood depth is less than 500 mm above the natural surface level, and have an access way to the dwelling site from a main road that has a 100 year ARI flood depth not more than 500 mm.
- The floor level in a new dwelling must be finished at least 600 mm above the 100 year ARI flood level. This level is known as the Nominal Flood Protection Level (NFPL).
- New or replacement buildings must be aligned with their longest axis parallel to the direction of flood water flow unless it can be demonstrated that this cannot be practically achieved and/or the floodplain management authority has advised in writing that an alternative alignment is acceptable.
- Dwellings must use water resistant materials up to NFPL.
- Outbuildings including sheds and garages should be:
    - Aligned with their longest axis parallel to the direction of flood water flow.
    - Designed to minimise damage caused by flooding to the structure and its contents, such as by raising floor levels, using water resistant materials and raising electrical fittings above flood level.
- Cladding to the subfloor structure must have openings or be of an open style (such as spaced timber boards) to allow automatic entry and exit of flood water for all floods up to the 100 year ARI event.

- The size of building fill pads must be limited to as near as practicable to the building exterior.
- Building fill pads must be constructed in accordance with the balanced cut and fill principles of the Floodplain Management Authority *Guidelines for Floodplain Cut and Fill*, unless the Floodplain Management Authority has advised otherwise in writing.

Fences

- Fences should be designed and constructed to minimise the likely effects of flooding. Fences should not divert or obstruct floodwater unduly. The potential for fences to trap debris should be minimised.
- When considering an application for a fence on land within the FO or LSIO, consideration will be given to flood depth and flow velocity and ensure that the proposed fence is consistent with the Floodplain Management Authority *Guidelines for Fencing in Flood-prone Areas*.

5.3 Extensions to existing dwellings in the Urban Floodway Zone, Floodway Overlay and Land Subject to Inundation Overlay

Extensions must be constructed on stumps and bearers unless it can be demonstrated that this requirement cannot be practically achieved.

Where practicable, extensions should be aligned with their longest axis parallel to the direction of flood water flow.

The floor level of extensions must be finished at least 600 mm above the relevant 100 year ARI flood level except that if an existing dwelling has a ground floor level below the nominated flood protection level (i.e. 600 mm above the 100 year ARI flood level) it may be extended provided it is:

- within the UFZ or FO and the total floor area of the extension does not exceed $20m^2$ and the total floor area of multiple extensions does not exceed this limit.

- within the LSIO and the total floor area of the extension does not exceed $40m^2$ and the total floor area of multiple extensions does not exceed this limit.

5.4 Earthworks in the Urban Floodway Zone, Floodway Overlay and Land Subject to Inundation Overlay

Earthworks should not reduce the capacity of the floodplain to store and convey floodwater.

Earthworks should not divert or impede the flow of floodwater. The applicant may seek a formal advice letter from the Floodplain Management Authority as to the potential for impacts on floodwater flow and attach this letter in support of the application.

Any planning permit application for the construction of a dam or in-ground swimming pool should ensure that excavated material is removed off-site and away from land within the UFZ, FO or LSIO. The surface level of land surrounding the dam or pool, including embankments, should not cause a net decrease in flood storage volume.

Any planning permit application proposing filling of floodplain land must be consistent with the Floodplain Management Authority *Guidelines for Floodplain Cut and Fill*.

5.5 Subdivision in the Urban Floodway Zone, Floodway Overlay and Land Subject to Inundation Overlay

Subdivision applications for land that is either partly or wholly within the UFZ or FO must not create new lots wholly within the zone or overlay areas unless each new lot contains an existing dwelling.

Subdivision applications for land that is either partly or wholly within the LSIO or FO, must not create new lots wholly within the overlay areas, unless it can be demonstrated that:

- There is an adequate building envelope on each lot (which must be formally defined on the plan of subdivision) where the inundation depth is determined to be less than 300 mm.

- Access to the building envelope does not traverse land where the inundation depth is determined to be more than 300 mm.

Neither the building envelope nor the defined access route to it may be subject to a hazard rating more than 0.4 metres squared per second.[2].

5.6 Chemical Storage in the Urban Floodway Zone, Floodway Overlay and Land Subject to Inundation Overlay

Any planning permit application for the storage of chemicals within the UFZ, FO or LSIO should ensure chemicals are stored at a height of at least 1 metre above the 100 year ARI flood level.

5.7 Water Tanks in the Urban Floodway Zone, Floodway Overlay and Land Subject to Inundation Overlay

Water tanks can obstruct flood water flow and may float away and become battering rams or obstructions to flow downstream (e.g. when trapped against bridges or fences). Consequently, water tanks must comply with the following guidelines:

- Within the LSIO - fill/pads must be restricted as close as practicable to the footprint of on-ground water tanks.

- Within the UFZ or FO - water tanks exceeding 4500 litres capacity should be placed underground or raised on a stump and bearer tank stand to a height of at least 300 mm above the 100 year ARI flood level.

Where the above is demonstrated to be impracticable then:

- Fill/pads must be restricted as close as practicable to the footprint of on-ground water tanks.

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

- On-ground water tanks within the UFZ or FO must be secured in place to prevent floatation and transport downstream.

6.0 APPLICATION REQUIREMENTS

Unless the Floodplain Management Authority has advised otherwise in writing, every application for primary or secondary consent to construct a building, to construct or carry out works, or to subdivide land under Clause 37.03 (UFZ), Clause 44.03 (FO), or Clause 44.04 (LSIO) of the Glenelg Planning Scheme must be consistent with this Local Floodplain Development Plan.

[2] The product of depth (m) and velocity of flow (metres squared per second is also referred to as m^2/s)

Applicants may attach a valid formal advice letter from the Floodplain Management Authority in support of their application.

All applications must be accompanied by plans and supporting documents, including photographs, that contain, to the extent that in the opinion of the responsible authority is relevant, the following information:

- Whether the proposed development could be located on flood-free land or land with a lesser flood hazard.
- The boundaries, dimensions, orientation, and slope of the site.
- Location, layout, size and use of existing buildings and works on the site and on surrounding properties.
- Location, layout, size and use of all proposed development.
- Elevations of all proposed buildings, drawn to scale.
- Floor levels of all existing and proposed buildings to Australian Height Datum.
- Relevant existing and proposed ground levels of the site, to Australian Height Datum, and the difference in levels between the site and surrounding properties.
- Details of existing and proposed internal driveways and pathways and their height in relation to the nominated flood level for the site.
- Adjoining roads, internal driveways, and access tracks.
- The layout and relevant provisions of any proposed subdivision, including a plan indicating the location of existing buildings.
- Details of the measures to be used to reduce the susceptibility of the development to flood damage.
- In the case of fences, a statement of compliance with the Floodplain Management Authority *Guidelines for Floodplain Fencing* or evidence demonstrating that the fence does not significantly obstruct flood flows.
- For proposals involving cut-and-fill earthworks, a statement of compliance with Floodplain Management Authority *Guidelines for Floodplain Cut and Fill* is required. The statement must include plans showing ground levels to Australian Height Datum 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.
- Consideration and assessment of the decision guidelines where relevant that are outlined under Clauses 37.03-6, 44.03-6, 44.04-6 and 65 of the Glenelg Shire Planning Scheme and Section 5.0 in this Incorporated Document.

6.1 Flood Risk Report

Unless the Floodplain Management Authority has advised otherwise in writing, in addition to the minimum application requirements stated above, any application that is not consistent with this Local Floodplain Development Plan must be accompanied by a Flood Risk Report consistent with the requirements set out under Clause 37.03-4 and Clause 44.03-3 of Glenelg Shire Planning Scheme.

7.0 REFERENCES

Fitzroy River, Darlot Creek and Heywood Regional Floodplain Mapping Study (Water Technology, 2017)

Portland Flood Study (CARDNO, 2011)

Casterton Flood Investigations (CARDNO, 2011)

Surry River Estuary Flood Study (Water Technology, 2008)

Guidelines for Coastal Catchment Management Authorities: Assessing Development in Relation to Sea Level Rise (Department of Sustainability and Environment, June 2012)

Building Code of Australia – Australian Building Codes Board - Construction of Buildings in Flood Hazard Areas – Information Handbook and Standard.

Floodplain Management Authority Guidelines for Fencing in Flood-prone Areas (Glenelg Hopkins CMA).

Floodplain Management Authority Guidelines for Floodplain Cut and Fill (Glenelg Hopkins CMA).

Floodplain Management in Australia – Best Practice Principles and Guidelines, Standing Committee on Agriculture and Resource Management [SCARM] (CSIRO, 2000).

Victoria Planning Provisions – Practice Note – Applying for a Planning Permit under the flood provisions.

Victoria Planning Provisions – Practice Note – Applying the Flood Provisions in Planning Schemes.