

BURRUMBEET CREEK CATCHMENT
LOCAL FLOODPLAIN DEVELOPMENT PLAN 2015
INCORPORATED DOCUMENT

Incorporated within clause 81 of the Ballarat Planning Scheme

Pursuant to Section 6(2)(j) of the *Planning and Environment Act 1987*

1.0 PURPOSE

This Local Floodplain Development Plan is an Incorporated Document at Clause 81 of the Ballarat Planning Scheme.

The plan establishes criteria for buildings, works and subdivision and provides a performance-based approach to the assessment of applications for all land affected by the Land Subject to Inundation Overlay (LSIO) and Floodway Overlay (FO) upstream of Lake Burrumbeet) in the Ballarat Planning Scheme. The land is included on planning scheme maps 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 16, 17 and 18 affecting urban and rural areas of Invermay, Mt. Rowan, Mitchell Park, Miners Rest, Learmonth, Windermere and Cardigan Village as shown on the attached map.

An application for a planning permit to develop or subdivide land affected by the FO (Clause 44.03) and LSIO (Clause 44.04) of the Ballarat Planning Scheme must demonstrate compliance with the performance criteria established by this Local Floodplain Development Plan.

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

2.0 GLOSSARY/ABBREVIATIONS

| | |
|--|--|
| FO | Floodway Overlay (Clause 44.03, Victoria Planning Provisions) |
| LSIO | Land Subject to Inundation Overlay (Clause 44.04, Victoria Planning Provisions) |
| Floodplain Management Authority | The floodplain management authority function is assigned in Victoria under the <i>Water Act 1989</i> . The Victorian Planning Provisions Practice note ' <i>Applying for a Planning Permit under the Flood Provisions</i> ' identifies the floodplain management authorities in Victoria. |
| ARI | Average Recurrence Interval (ARI) - the average or expected value of the period between events of a nominated size. A 100-year ARI event would occur on average, once every 100 years and can also be expressed as Annual Exceedance Probability (AEP). |
| AEP | Average Exceedance Probability (AEP) - 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 fairly rare but it would be a relatively large event. 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. |
| Design flood event | A probabilistic or statistical estimate of flood magnitude generally based on some form of probability analysis of flood and/or rainfall data. An ARI or AEP is attributed to the estimate. |
| NFPL | Nominal Flood Protection Level – The level above the 1% AEP flood level that includes freeboard. For the purposes of this Local Floodplain Development Plan the NFPL is 0.3 metres above the 1% AEP flood level. |
| VxD | The product of depth (metres) and velocity of flow (metres per second), also referred to as m^2/s , is an indicator of flood hazard. 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. |

3.0 BASIS OF THE PLANNING CONTROLS

3.1 Flood History

No rare or extreme flood event has been recorded in the Burrumbeet Creek catchment. Anecdotal information indicates minor floods have occurred on a number of occasions most notably downstream of Lake Learmonth in 1993 and in Miners Rest sometime during 1997 and 2000.

The most significant floods recorded for this area occurred in September 2010 and January 2011. The January 2011 flood is considered to have been in the order of a 1 in 60 year ARI event and is the largest recorded flood event for the area. (See Note 1)

Prior to this, the September 2010 flood was the largest recorded event and it was preceded by another slightly smaller event in August 2010. The magnitude of the September 2010 event has been estimated to be in the order of a 1 in 15 year ARI event (Note 2).

3.2 Flood impacts

Flood impacts can be significant. The total potential damage cost of a 1 in 100 year ARI event occurring under the climate, catchment and development conditions in 2013 was estimated to be in the order of \$3,000,000. This figure includes potential damage to buildings and roads and indirect costs associated with things such as emergency response, alternative accommodation and business disruption. Large floods pose significant risks to life, health and wellbeing of residents, and emergency service personnel through impacts such as road closures, loss of access/egress for residents, property isolation and damage to buildings and infrastructure.

Significant damage resulted from the January 2011 flood. Around 19 residential properties were flooded with at least 9 dwellings affected by over-floor flooding – mainly in low lying portions of Miners Rest including Albert Streets and Dundas Place. Dwellings in Creek and Hamlin Streets narrowly escaped over-floor flooding. Roads were cut for 12 hours or more in several locations.

The 2013 investigation identified a total of 36 dwellings as subject to over-floor flooding during 100 year ARI floods. The floors of an additional 23 dwellings were identified as above, but within, 100mm of the 100 year ARI flood level (Note 3).

A number of roads in the area are subject to inundation during 10 year ARI and larger floods including the following:

| | | |
|-------------------------|---------------|------------------|
| Slatey Creek Road North | Gillies Road | Albert Street |
| Rose Hill Road | Cummins Road | Howe Street |
| Frasers Road | Creek Street | Miners Rest Road |
| Midland Highway | Hamlin Street | Glenanes Road |

3.3 Flood information

The extent and likely impacts of flooding have been determined by the 2013 Burrumbeet Creek Flood Investigations Project completed by *Water Technology*. This followed the 2003 Floodplain Management Plan for Lake Burrumbeet and Burrumbeet Creek Catchment completed by *Lawson and Treloar* and earlier studies undertaken across the area in a piecemeal fashion.

The results of the 2013 Burrumbeet Creek Flood Investigations Project are documented in the reports included in Clause 9 of this Plan (Reference Documents).

3.4 Purpose of the overlays

The Ballarat Planning Scheme (BPS) includes a number of planning controls that address issues of flooding.

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

The Floodway Overlay (FO) and Land Subject to Inundation Overlay (LSIO) are based on the degree of hazard identified in different parts of the floodplain. They consider factors such as flood depth, velocity, natural storage, flood duration and warning time during the 1% AEP design flood event.

The FO within the Planning scheme denotes 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. Floodway land is generally the high hazard portion of the floodplain where deep and fast flowing floodwater can be expected. Placement of buildings and other structures on floodway land substantially increases risk to life and community wellbeing and should therefore be avoided.

The LSIO generally denotes the fringe of the floodplain where flooding is shallower than the FO and slower moving. The level of hazard in this part of the floodplain is lower relative to the FO.

Development (buildings and works) and subdivision on land within the LSIO and, to a lesser extent, the FO and can be considered provided permit applications meet the flood risk minimisation criteria stipulated by this Local Floodplain Development Plan.

4.0 APPLICATION REQUIREMENTS

Unless the Floodplain Management Authority has advised otherwise in writing, every application for a planning permit to construct a building, to carry out works, to amend a permit or to subdivide land under Clause 44.03 (FO), or Clause 44.04 (LSIO) of the Ballarat Planning Scheme must be accompanied by plans and supporting documents (as appropriate and to the satisfaction of the responsible authority) including the following information:

- A Flood Risk Report for land located within the Floodway Overlay if it does not comply with the Burrumbeet Creek Local Floodplain Development Plan 2015.
- The existing use and development of the site.
- The boundaries, dimensions, orientation, and slope of the site.
- Location, layout, size and use of existing buildings and works on the site and on adjoining properties.
- Location, layout, size and use of all proposed development.
- Elevations of all proposed buildings drawn to scale.
- A plan of survey to Australian Height Datum (AHD) showing:
 - existing and proposed ground levels of the site;
 - floor levels of all existing and proposed buildings;
 - the difference in levels between the site and surrounding properties;
 - the levels of adjoining roads, internal driveways and access tracks;
 - the layout of any proposed subdivision, including a plan indicating the location of existing buildings.
- An assessment of whether the proposed development could be located on flood-free land or land with a lesser flood hazard.
- Details of the measures to be used to reduce the susceptibility of the development to flood damage.

- An explanation as to how any proposed fence complies with the *Floodplain Management Guidelines for Fencing in Flood Prone Areas* or evidence demonstrating that the fence will not significantly obstruct flood flows.
- An explanation as to how any proposed earthworks (including cut and fill) complies with the *Floodplain Management Authority Guidelines for Floodplain Cut and Fill* including plans 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 floodwater storage volume balance.

5.0 REFERRAL REQUIREMENTS

Referral of an application to the relevant Floodplain Management Authority pursuant to Section 55 of the *Planning and Environment Act 1987* is required unless:

- it is accompanied by written approval for the proposal from the Floodplain Management Authority granted no more than three months prior to the application date (quoting the reference; date of the advice; the applicable flood level; and any flood related building design requirements).

Notwithstanding the above, every application that is accompanied by a Flood Risk Report must be referred to the relevant Floodplain Management Authority pursuant to Section 55 of the *Planning and Environment Act 1987*.

6.0 FLOOD RISK REPORT

If an application does not comply with this Local Floodplain Development Plan then:

- the applicant must submit a Flood Risk Report consistent with the requirements set out under clause 44.03-3 of the Ballarat Planning Scheme and any other requirements of the Floodplain Management Authority.

7.0 PERFORMANCE CRITERIA

When deciding on an application for buildings, works or subdivision in the area covered by either the FO or the LSIO, the responsible authority must consider (as appropriate) the following performance criteria.

7.1 Subdivision

Subdivision applications for land that is either partly or wholly within the FO or LSIO should not create new lots wholly within the overlay areas, unless it can be demonstrated 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 100 year ARI flood depth is determined to be 300 mm or less; and
- access to the building envelope does not traverse land where the 100 year ARI flood depth is determined to be more than 300 mm; and
- the building envelope and the road access to it should not be subject to flooding where during the 100 year ARI flood, the product of depth and velocity exceeds 0.4 metres squared per second

7.2 New or replacement buildings

Applications for new or replacement buildings including outbuildings and sheds (other than open sided) **must** satisfy the following criteria:

- New or replacement dwellings must have a floor level finished at least 300 mm above the 100 year ARI flood level (the Nominal Flood Protection Level (NFPL)).

- New commercial or industrial buildings must have a floor level finished at least 300 mm above the 100 year ARI flood level (the Nominal Flood Protection Level (NFPL)) unless a lower floor level has been accepted and is the subject of written advice from the Floodplain Management Authority.

Applications for new or replacement buildings including outbuildings and sheds (other than open sided) **should** satisfy the following criteria:

- New buildings should be on the highest available natural ground, unless it can be demonstrated that this is impracticable.
- The access way to the building envelope should not traverse land where the 100 year ARI (or 1% AEP) flood depth is determined to be more than 300 mm; and should not be subject to flooding where during the 100 year ARI flood (or 1% AEP), the product of depth and velocity exceeds 0.4 metres squared per second.
- New or replacement buildings should be constructed to minimise potential for disrupting flood water flow.
- New or replacement dwellings should be constructed on stumps (or piers) and bearers unless the Floodplain Management Authority has advised otherwise in writing.
- New or replacement buildings should be aligned with the longest wall parallel to the direction of flood 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.
- New or replacement buildings should use water resistant building materials from ground level up to the NFPL.
- The ground surface under raised building floors should be sloped or mounded to ensure flood water freely drains away from the sub floor area following recession of a flood.
- Cladding to the subfloor structure of dwellings should 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.
- Outbuildings associated with a new or existing dwelling, including sheds and garages should:
 - be designed to minimise damage caused by flooding to the structure, such as by providing openings (doors or vents) in external walls to allow free entry and draining of flood water, using water resistant building materials and raising electrical fittings above the 100 year ARI flood level.
- Building fill pads should be constructed in accordance with the level for level flood storage and conveyance maintenance principles of the *Floodplain Management Authority Guidelines for Floodplain Cut and Fill*.

7.3 Extensions to existing habitable buildings

Extensions to existing habitable buildings should be constructed on stumps (or piers) and bearers unless it can be demonstrated that this requirement cannot be practically achieved or the Floodplain Management Authority has advised that an alternative construction method is acceptable.

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

7.4 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 assessing an application for a fence on land within the FO or LSIO, the responsible authority must consider (as appropriate);

- whether the proposed fence design is consistent with the *Floodplain Management Authority Guidelines for Fencing in Flood-prone Areas*.

7.5 Earthworks

Earthworks should be designed and constructed to minimise the likely effects of flooding. Earthworks should not:

- reduce the capacity of the floodplain to store and convey floodwater; or
- divert or impede the flow of floodwater.

An application for the construction of earthworks including a dam or an in-ground swimming pool, should:

- ensure that excavated material is removed off site and away from land within the FO or LSIO; and
- ensure that the surface level of land surrounding the dam or pool, including embankments, does not cause a net decrease in flood storage volume.

An application proposing fill on flood prone land should:

- be consistent with the *Floodplain Management Authority Guidelines for Floodplain Cut and Fill*; and
- demonstrate how level-for-level floodplain storage compensation will be achieved; or
- demonstrate that there will be no worsening of flood impacts on neighbouring property via hydraulic modelling approved by the Floodplain Management Authority.

7.6 Bulk Chemical Storage

Vessels, containers or tanks for bulk storage of hazardous chemicals (e.g. fuels, oils, herbicides, insecticides) should be located on land that is outside the FO.

Vessels or containers or tanks for bulk storage of hazardous chemicals (e.g. fuels, oils, herbicides, insecticides) on land within the LSIO should be fixed on a suitably engineered structure and raised a minimum of 1 metre above the 100 year ARI flood level.

7.7 Water Tanks

Water tanks should not obstruct flood water flow or be located so that they may float away and become battering rams or obstructions to flow downstream (e.g. when trapped against bridges or fences).

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.

Fill/pads must only be developed within the LSIO and should be restricted as close as practicable to the footprint of on-ground water tanks.

Water tanks within the FO exceeding 4500 litres capacity should be raised on a stump and bearer tank stand to a height of at least 300 mm above the 100 year ARI flood level to prevent floatation and transport downstream.

8.0 DECISION GUIDELINES

When deciding on an application in the area covered by this Local Floodplain Development Plan, the responsible authority must consider (as appropriate) whether:

- the proposal minimises the risk to life, health and wellbeing associated with flooding.
- any development permitted on floodplain land ensures that it:
 - 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.
- the construction of new buildings and works can be encouraged on land outside the FO and LSIO.
- the construction of new buildings on land within the FO can be avoided.
- the filling of the floodplain can be avoided unless it can be demonstrated that:
 - the level for level floodplain storage and conveyance compensation can be achieved consistent with the Floodplain Management Authority Guidelines for Floodplain Cut and Fill; or
 - there will be no adverse impacts on neighbouring property as verified by hydraulic modelling approved by the Floodplain Management Authority.
- the construction of private levees can be avoided.
- the subdivision of parcels that could lead to intensification of development on flood prone land can be avoided.
- the subdivision of parcels that could lead to intensification of development on land not prone to flooding but significantly isolated from flood refuge facilities or essential and emergency services by flooding over roads can be avoided.
- the retention of drainage corridors with vegetation buffer areas along waterways can be encouraged so as to minimise erosion of stream banks and verges during large floods and maintain the natural drainage function, stream habitat, wildlife corridor and landscape values.

9.0 REFERENCE DOCUMENTS

Water Technology (2013), Burrumbeet Flood Investigation Reports as follows:

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| Data Review (July 2013) |
| Methodology Outline (July 2013) |
| Flood Warning Report (May 2013) |
| Hydrology & Hydraulics (October 2013) |
| Mitigation Options Report (October 2013) |
| Summary Study Report (December 2013) |

Lawson and Treloar (2003), Floodplain Management Plan for Lake Burrumbeet and Burrumbeet Creek Catchment. Report RM2049 Ver. 1.0 / J5350 prepared for Glenelg Hopkins Catchment Management Authority and Ballarat City Council.

Building Code of Australia (2012)– 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.

Floodplain Management Authority Guidelines for Floodplain Cut and Fill.

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

VPP – Practice Note 11 – Applying for a Planning Permit under the flood provisions.

VPP – Practice Note 12 – Applying the Flood Provisions in Planning Schemes.

10.0

NOTES

(1) Figure 1-3, Water Technology, Burrumbeet Flood Investigation Summary Study Report, Dec. 2013.

(2) Figure 1-3, Water Technology, Burrumbeet Flood Investigation Summary Study Report, Dec. 2013.

(3) Water Technology, Burrumbeet Flood Investigation Summary Study Report, Dec. 2013.

