

HAMILTON & COLERAINE

LOCAL FLOODPLAIN DEVELOPMENT PLAN 2020

INCORPORATED DOCUMENT

Incorporated within clause 72.04 of the Southern Grampians 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 72.04 of the Southern Grampians 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) within the townships of Hamilton and Coleraine in the Southern Grampians Planning Scheme. The land is included on planning scheme maps 16LSIO-FO, 17LSIO-FO 25LSIO-FO, 27LSIO-FO, 28LSIO-FO, 29LSIO-FO 30LSIO-FO, 31LSIO-FO, 32LSIO-FO and 33LSIO-FO affecting urban and rural areas of Hamilton and Coleraine 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 Southern Grampians Planning Scheme must demonstrate compliance with the performance criteria established by this Local Floodplain Development Plan.

In addition to the decision guidelines in Clauses 44.03-7, 44.04-8 and Clause 65, Southern Grampians Shire 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)
FDTP	Previous mapping data – 2001 Flood Data Transfer Project
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

The City of Hamilton is situated near the floodplain of the Grange Burn and other minor tributaries in and around Hamilton. It has a history of flooding with records of at least 7 significant events occurring since settlement in the years of 1946, 1983, 1984, 2004, 2010, 2011 and most recently in September 2016. The March 1946 event is considered to be the largest flood yet recorded in Hamilton and is estimated to have been in the order of a 500yr ARI. September 1983 is second largest on record and was in the order of a 50yr ARI (Note 1). A number of minor events have occurred in the intervening periods including August 2010 and January 2011 however September 2016 is the 3rd largest event recorded at Hamilton and was in the order of a 10yr ARI.

The township of Coleraine is situated on the floodplain near the confluence of the Bryan Creek and Konong Wootong Creek. It has a history of flooding with records of at least 8 significant events occurring since settlement in the years of 1870, 1893, 1946, 1975, 1983, 1991 and most recently in September 2016 which inundated a number of residential, commercial and industrial buildings. The September 2016 event is not the largest event in living memory; that honour belonging to the March 1946 flood event. However, it is the largest event in recent history. The magnitude of the September 2016 event has been estimated to be in the order of a 50 year ARI event. The 1870 Coleraine flood event is possibly the largest flood yet recorded in Coleraine and resulted in 11 deaths, however only anecdotal information exists as to the flood level this event reached.

3.2 Flood impacts

Large floods in Hamilton and Coleraine 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 and property isolation. The number of buildings identified as being subject to above-floor flooding during 100yr ARI floods in Hamilton and Coleraine is 49 and 41 respectively. Damage to buildings and infrastructure can be significant resulting in major recovery/reconstruction costs. The annual average damages (AAD) estimates for Hamilton (relative to 2012) and Coleraine (relative to 2018) are in the order of \$208,912 and \$216,800 per annum respectively. As evidenced in September 2016, damages sustained in Coleraine can be particularly severe given the location of much of the CBD within the floodplain and the high hazard (depth and velocity) nature of large floods. The total potential damage cost of a 100 year ARI event occurring in Coleraine under the climate, catchment and development conditions that existed in 2018 was estimated to be 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.

3.3 Flood information

The extent and likely impacts of flooding have been determined by the *Hamilton Flood Investigation 2012 (Cardno Victoria Pty Ltd)* and the *Coleraine Flood Investigation 2018 (Venant Solutions Pty Ltd)*.

The results of these *Flood Investigations* are documented in the reports listed in Section 9 of this Plan (Reference Documents).

3.4 Purpose of the overlays

The Southern Grampians Planning Scheme (SGPS) includes a number of planning controls to address flood risk associated with land use and development.

These 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 100 Yr. ARI (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.

3.0 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 Southern Grampians 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 Hamilton and Coleraine Local Floodplain Development Plan 2020.
- 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 Authority 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.

4.0 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 44.03-4 of the Southern Grampians 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 (1% AEP) 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 (1% AEP) 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 (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 (1% AEP) 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 (1% AEP) 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 (1% AEP) 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 (1% AEP) 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

Cardno (2012), Hamilton Flood Investigation Report.

Venant Solutions (2019), Coleraine Flood Investigation Summary Report.

Venant Solutions (2018), Coleraine Flood Investigation Final Hydraulic Model Report.

Venant Solutions (2019, Coleraine Flood Investigation Flood Damages and Mitigation report

Building Code of Australia (2019) – 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.

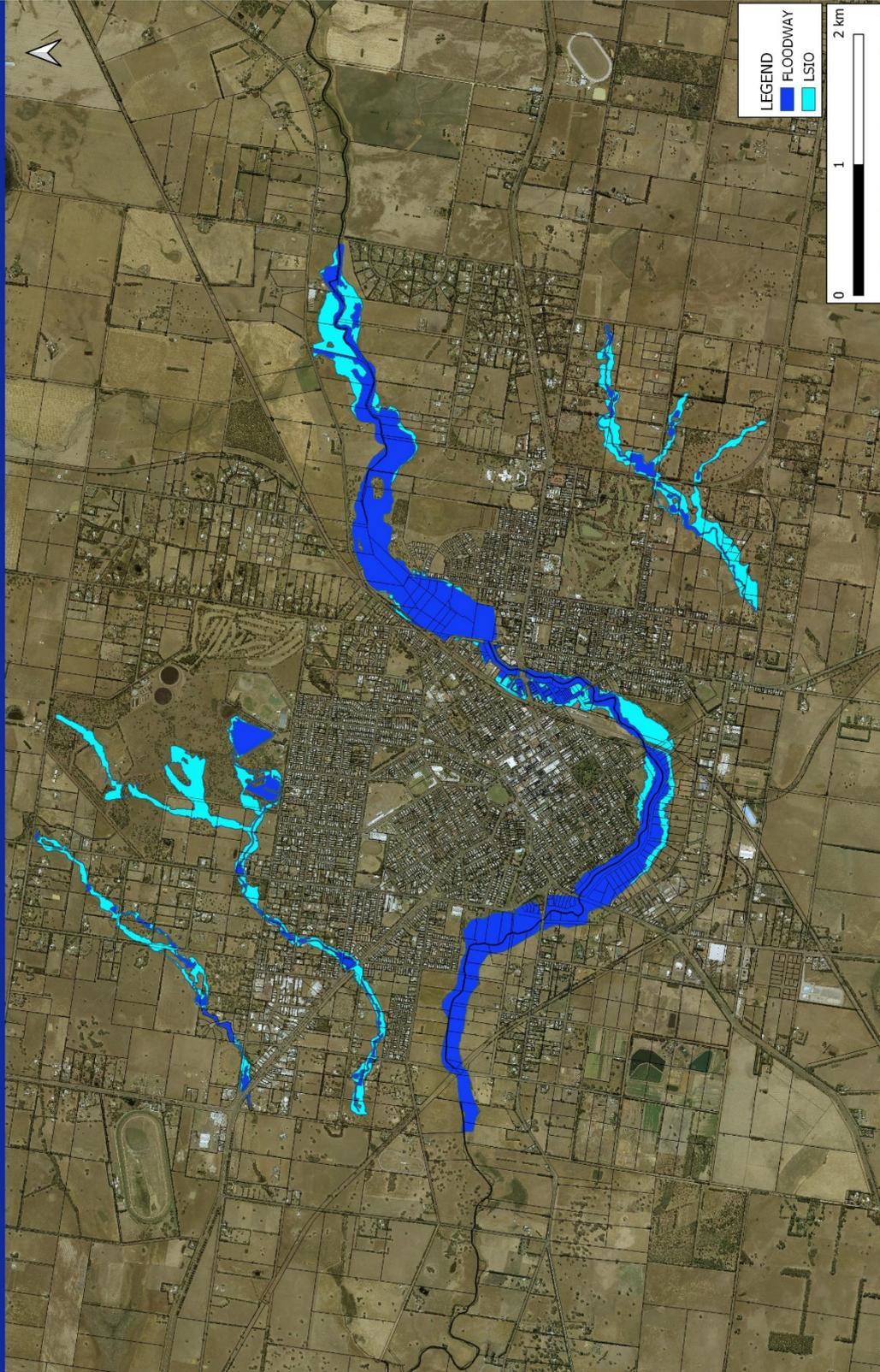
VPP – Practice Note 11 – Applying for a Planning Permit under the flood provisions.

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

NOTES

- (1) Table 4.18, CARDNO, Hamilton Flood Investigation Report, August 2012
- (2) Figure 3-5, 3-6, 3-7, 3-8, Venant Solutions, Coleraine Flood Investigation Final Hydraulic Model Report, May 2018.
- (3) Table 3.2, Venant Solutions, Coleraine Flood Investigation Final Hydraulic Model Report, May 2018.

HAMILTON FLOOD INVESTIGATIONS



SOUTHERN GRAMPIANS PLANNING SCHEME
 LOCAL FLOODPLAIN DEVELOPMENT PLAN- HAMILTON AND COLERAINE

