

**Warrnambool Planning Scheme Amendment C205warr
Merri River and Russells Creek Catchments**

Panel Report

Planning and Environment Act 1987

7 July 2022

How will this report be used?

This is a brief description of how this report will be used for the benefit of people unfamiliar with the planning system. If you have concerns about a specific issue, you should seek independent advice.

The planning authority must consider this report before deciding whether or not to adopt the Amendment.
[section 27(1) of the *Planning and Environment Act 1987* (the PE Act)]

For the Amendment to proceed, it must be adopted by the planning authority and then sent to the Minister for Planning for approval.

The planning authority is not obliged to follow the recommendations of the Panel, but it must give its reasons if it does not follow the recommendations. [section 31 (1) of the PE Act, and section 9 of the *Planning and Environment Regulations 2015*]

If approved by the Minister for Planning a formal change will be made to the planning scheme. Notice of approval of the Amendment will be published in the Government Gazette. [section 37 of the PE Act]

Planning and Environment Act 1987

Panel Report pursuant to section 25 of the PE Act

Warrnambool Planning Scheme Amendment C205warrwarr

Merri River and Russells Creek Catchments

7 July 2022



Geoff Underwood, Chair



Alison McFarlane, Member

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Glossary and abbreviations

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
the Amendment	Warrnambool Planning Scheme Amendment C205warr
Amendment C78	Warrnambool Planning Scheme Amendment C78
Council	Warrnambool City Council
DELWP	Department of Environment, Land, Water and Planning
Floodplain Strategy	<i>Victorian Floodplain Management Strategy, 2016</i>
FO	Clause 44.03 Floodway Overlay
GHCMA	Glenelg Hopkins Catchment Management Authority
GRZ	Clause 32.08 General Residential Zone
GRZ1	Clause 32.08 General Residential Zone Schedule 1
LSIO	Clause 44.04 Land Subject to Inundation Overlay
PE Act	<i>Planning and Environment Act 1987</i>
Planning Scheme	Warrnambool Planning Scheme
PPRZ	Clause 36.02 Public Park and Recreation Zone
RGP	Great South Coast Regional Growth Plan, 2014
UFZ	Clause 37.03 Urban Floodway Zone

Overview

Amendment summary

The Amendment	Warrnambool Planning Scheme Amendment C205warrwarr
Common name	Merri River and Russells Creek Catchments
Brief description	The Amendment proposes to implement the recommendations of the <i>Russells Creek Flood Mitigation As Constructed Flood Modelling, 2017</i> and <i>Design of North Warrnambool Floodplain Management Plan Implementation Works, 2010</i> by rezoning land from Urban Floodway Zone to General Residential Zone Schedule 1 or Public Park and Recreation Zone, applying the Floodway Overlay and Land Subject to Inundation Overlay and amending the Schedule to Clause 72.08.
Subject land	Land within the Merri River and Russells Creek catchments in North Warrnambool (Refer Figure 1)
The Proponent	Warrnambool City Council and Glenelg Hopkins Catchment Management Authority
Planning Authority	Warrnambool City Council
Authorisation	3 August 2021
Exhibition	23 September to 12 November 2021
Submissions	Number of Submissions: 21 Opposed or requested changes: 20 Refer Appendix A

Panel process

The Panel	Geoff Underwood, Chair and Alison McFarlane, Member
Directions Hearing	Video conference, 8 March 2022
Panel Hearing	Video conference, 26 April 2022
Site inspections	Unaccompanied, 4 April 2022 (Member McFarlane only)
Parties to the Hearing	Refer Appendix B
Citation	Warrnambool PSA C205warr [2022] PPV
Date of this report	7 July 2022

Executive summary

Warrnambool Planning Scheme Amendment C205warr (the Amendment) seeks to introduce and revise flooding controls within part of the Merri River and Russells Creek catchments in North Warrnambool.

This land has been identified by the Glenelg Hopkins Catchment Management Authority (GHCMA) and Warrnambool City Council (Council) as being liable to flooding from an open watercourse during a 1 in 100 year storm event, now called the 1 per cent Annual Exceedance Probability (AEP) flood event.

The Amendment proposes to:

- rezone land to Urban Floodway Zone or apply the Floodway Overlay to areas identified as high hazard flood risk
- apply the Land Subject to Inundation Overlay to areas identified as low hazard flood risk
- rezone land to Public Park and Recreation Zone or General Residential Zone Schedule 1, as appropriate in areas where the flood zone is reduced
- amend the Schedule to Clause 72.08 to include *Russell Creek Flood Mitigation – As Constructed Flood Modelling, 2017* and *Design of North Warrnambool Floodplain Management Plan Implementation Works, 2010* as Background Documents.

The Amendment represents a significant change to the flood controls that currently apply in North Warrnambool which are based on the *Warrnambool Land Liable to Flooding Report 1997*. Flood extents have reduced following the completion of flood mitigation projects along Russells Creek in the Mortlake Road/Garden Street precinct. Conversely, some areas are proposed to be covered by a flood control for the first time, including land north of Wangoom Road.

The common issues raised in the 21 submissions received on the Amendment were:

- Individual properties have not experienced flooding in the past and should not be subject to flood controls.
- The modelling is inaccurate is not responsive to the characteristics of the area, including existing topography.
- Mitigation works and improvements should be undertaken to mitigate overland flow and flooding.
- New development and increased density across North Warrnambool have increased the level of overland flow and flooding.

The Panel concludes that the Amendment is strategically justified and will implement the Planning Policy Framework and the Municipal Planning Strategy which both support the introduction of flood provisions to assist in the protection of life, property, community infrastructure and the environment from the hazards associated with floods. Progress of the Amendment should not be delayed based on future uncommitted opportunities to mitigate flood risk.

The Amendment is based on sound modelling of flood extents which have been appropriately translated into zones and overlays consistent with the relevant Ministerial Directions and Planning Practice Notes. Recent lived experiences of flooding are not comparable to the modelled 1 per cent AEP flood that has informed the Amendment, and do not justify changes to the Amendment. Minor site-specific mapping updates to the modelled flood extents are warranted where detailed survey data has been provided and verified by Council and GHCMA.

Recommendations

Based on the reasons set out in this Report, the Panel recommends that Warrnambool Planning Scheme Amendment C205warr be adopted as exhibited subject to the following:

1. Delete the Land Subject to Inundation Overlay from the 43 'minor incursion' sites listed in Appendix D of this Report.
2. Reduce the extent of land at 20 Botanic Road, Warrnambool included in the Land Subject to Inundation Overlay in accordance with 'updated mapping' shown in Figure 4 of this Report.
3. Rezone part of the land at 120 Bromfield Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 5 of this Report.
4. Rezone part of the land at 138 Bromfield Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 6 of this Report.
5. Rezone part of the land at 2-18 Daltons Road, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 7 of this Report.
6. Rezone part of the land at 32 Dooley Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 and apply the Floodway Overlay to land as shown on updated zone mapping and the updated overlay mapping in Figure 8 of this Report.
7. Amend the Schedule to Clause 74.02 (Further Strategic Work) to include the following:
 - a) Prepare Local Floodplain Development Plans to provide a performance-based approach for decision making that reflects local issues and best practice, including flood risk assessment, in floodplain management.
 - b) Prepare Schedules to the Floodway Overlay and Land Subject to Inundation Overlay to introduce exemptions for low risk buildings and works to minimise permit triggers based on the flood risk according to the projected flooding depth.

1 Introduction

1.1 The Amendment

(i) Amendment description

Warrnambool Planning Scheme Amendment C205warr (the Amendment) seeks to introduce and revise flooding controls within part of the Merri River and Russells Creek catchments in North Warrnambool. It proposes to implement the recommendations of the *Russells Creek Flood Mitigation As Constructed Flood Modelling, 2017* (As Constructed Modelling Report) and *Design of North Warrnambool Floodplain Management Plan Implementation Works, 2010* (North Warrnambool Flood Study). The controls are based on a 1 per cent Annual Exceedance Probability (AEP) flood event, sometimes referred to as the 1 in 100 year flood event.

Specifically, the Amendment proposes to make the following changes to the Warrnambool Planning Scheme (Planning Scheme):

- rezone land to the Urban Floodway Zone (UFZ) or apply the Floodway Overlay (FO) to areas identified as high hazard flood risk which have the greatest risk and frequency of being flooded
- apply the Land Subject to Inundation Overlay (LSIO) to areas identified as low hazard flood risk rezone land to Public Park and Recreation Zone (PPRZ) or General Residential Zone (GRZ), in areas where the UFZ is reduced
- amend the Schedule to Clause 72.08 to include *Russell Creek Flood Mitigation – As Constructed Flood Modelling, 2017* and *Design of North Warrnambool Floodplain Management Plan Implementation Works, 2010* as Background Documents.

(ii) The subject land

The Amendment applies to land shown in Figure 1.

Figure 1: Proposed rezoning and overlays



Source: Warrnambool City Council

1.2 Background

The background to the Amendment was outlined in Council's submission and evidence presented on behalf of Council by Tim Morrison of Catchment Simulation Solutions Pty Ltd as follows¹:

- Flood modelling was originally undertaken for the Russells Creek catchment as part of the North Warrnambool Flood Study.
- The models were then used to assess a range of potential flood mitigation options, and recommendations were made on which options to construct and those that were not feasible as described in *Design of North Warrnambool Flood Management Plan Phase 2: Mitigation Options, 2012*.
- In July 2014, Council exhibited Warrnambool Planning Scheme Amendment C78 (Amendment C78) to implement revised flood controls within the Merri River and Russells Creek floodplains. Amendment C78 also included areas affected by the South Warrnambool Merri River floodplain.
- In May 2015, following exhibition and receipt of submissions, Council resolved to split Amendment C78 into two parts. Part 1 related to land that did not attract submissions or where submissions were resolved. The Amendment was adopted by Council, approved by the Minister for Planning and gazetted in January 2016.
- Amendment C78 Part 2 included land within the Russells Creek floodplain (downstream of Bromfield Street) and select areas in the Merri River floodplain including Membroy Way, Queens Road and Daltons Road.
- Council further investigated mitigation options for Russells Creek through a study undertaken by consultants Water Technology Pty Ltd in 2015. Recommended flood mitigation works were constructed in 2016. This included a series of floodwalls along Russells Creek and culvert upgrades at Mortlake Road.
- Council deferred further consideration of Amendment C78 Part 2 until the flood mitigation works had been completed.
- Following construction of the mitigation works, further modelling was undertaken in 2017 by Water Technology Pty Ltd resulting in the As Constructed Modelling Report.
- The As Constructed Modelling Report used the most up to date procedures for estimating the 1 per cent AEP event conditions. A comparison between the North Warrnambool Flood Study and the as Constructed Modelling Report shows a significant decrease in flood extents (refer Figure 2).
- Council took the updated flood information from the As Constructed Modelling Report and converted it into a range of flood development controls which are the subject of the current Amendment. The Amendment also includes unresolved flood provisions that were included in Amendment C78 Part 2.²
- Implementation of flood controls in South Warrnambool Merri River floodplain, which was to be based on the *South Warrnambool Flood Study, 2007* is no longer supported by the Glenelg Hopkins Catchment Management Authority (GHCMA) as the study does not adequately address climate change impacts, which are expected to increase the severity and frequency of flood events. Council anticipates that a new flood investigation for the South Warrnambool Merri River floodplain will commence later in 2022.

¹ Documents 5 and 6

² Amendment C78 Part 2 lapsed.

Figure 2 Comparison of flood extents before and after flood mitigation works



Source: Warrnambool City Council

1.3 Authorisation

Authorisation to prepare the Amendment was provided by the Minister for Planning on 3 August 2021 subject to conditions. Council submitted that it complied with all conditions prior to exhibition of the Amendment.

1.4 Procedural issues

(i) Correction of maps

Council advised that approximately two weeks following the commencement of the exhibition of the Amendment, it was brought to its attention that incorrect maps had been exhibited. The incorrect maps showed the zoning of land on the west side of Bromfield Street in as GRZ Schedule 1 (GRZ1), whereas the correct zoning was UFZ. This land was not part of the study area for the Amendment and landowners were not notified of the Amendment.

Following consultation with the Department of Environment, Land, Water and Planning (DELWP), Council took the following steps to address the error:

- amended the maps to reflect the correct mapping data, and published the amended maps on the 'Browse Amendments' website administered by DELWP
- published a notice in the Warrnambool Standard advising that due to incorrect mapping, the exhibition period had been extended by two weeks
- wrote to affected landowners to inform them of the error and providing them with a copy of corrected maps.

Council submitted it had received no enquiries or submissions in relation to the mapping error.

(ii) Post exhibition changes

In response to submissions and further work Council proposed post exhibition changes to the Amendment mapping. Changes proposed were all reductions in the extend of flooding controls, including changes to 43 properties where application of controls were termed as ‘minor incursions’, as well as removal of controls from 120 Bromfield Street, Warrnambool.

These changes are discussed in Chapters 3.4 and 4.2 of this Report.

(iii) Mediation

Concerns about the accuracy of the modelling was a common theme in submissions. The Panel directed that prior to the commencement of the Hearing, Council with the assistance of the GHCMA, was to convene discussions with the Parties to explain the background to the Amendment, the methodology of the technical studies and to discuss matters in dispute.

These discussions resolved issues in dispute with Submitters 3 (138 Bromfield Street), 12 (2-18 Daltons Road) and 14 (32 Dooley Street). This is further discussed in Chapter 4 of this Report.

(iv) Hearing adjournment

At the conclusion of the first day of the Hearing, the Panel adjourned proceedings. This was to allow time for exchange of addition information between Council and the parties relating to the preparation and circulation of maps to give effect to the Council’s proposed changes.³ Following circulation of this material and receipt of additional submissions from the parties, the Panel advised that it had decided that reconvening the Hearing was unnecessary.⁴

1.5 Summary of issues raised in submissions and the Panel’s approach

The Panel considered all written submissions made in response to the exhibition of the Amendment, observations from the unaccompanied site visit, further submissions, evidence and other material presented to it during the Hearing.

The Council summarised the common issues raised in the submissions as follows:

- Individual properties have not experienced flooding the in the past and should not be subject to flood controls.
- The modelling is inaccurate and does not reflect real life flood events and/or existing sites/areas characteristics such as existing topography.
- Council and GHCMA should review and introduce mitigation works/improvements to cope with overland flow and flooding.
- New development and increased density across North Warrnambool have increased the level of overland flow and flooding.
- Property values and property resale will be impacted, and compensation should be payable.
- Insurance costs/premiums will be impacted.

³ Document 13

⁴ Document 25

In addition, a number of submitters raised site specific issues about the effect of the Amendment on particular properties.

The Panel has assessed the Amendment against the principles of net community benefit and sustainable development, as set out in Clause 71.02-3 (Integrated decision making) of the Planning Scheme.

The Panel has had to be selective in referring to the more relevant or determinative material in the Report. All submissions and materials have been considered by the Panel in reaching its conclusions, regardless of whether they are specifically mentioned in the Report.

This Report deals with the issues under the following headings:

- Planning context
- Technical basis and mapping
- Site specific issues.

1.6 Limitations

The Panel has not considered matters that are outside of the scope of the Amendment including compliance with existing planning permit conditions or the completion of works under permits.

Changes to property values and rating resulting from the application of planning controls to land is not a relevant planning matter considered by the Panel.

2 Planning context

2.1 Planning policy framework

Council submitted that the Amendment is supported by various clauses in the Planning Policy Framework, which the Panel has summarised below.

2.1.1 Victorian planning objectives

The Amendment assists in implementing the following policy objectives for planning in Victoria as set out in section 4 of the *Planning and Environment Act 1987* (PE Act):

- 4(1)(a) to provide for the fair, orderly, economic and sustainable use, and development of land
- 4(1)(b) to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity
- 4(1)(c) to secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria
- ...
- 4(1)(f) to facilitate development in accordance with the objectives set out in paragraphs (a), (b) (c) ...
- 4(1)(g) to balance the present and future interests of all Victorians.

The Amendment implements these objectives by identifying land affected by flooding and applying appropriate planning controls to that land in order to:

- provide for the orderly and sustainable development of land affected by flooding
- protect natural and man-made resources from flooding
- secure a pleasant, efficient and safe working, living and recreational environment in flood affected areas
- facilitate development that is in accordance with the above objectives by triggering a planning permit requirement for subdivision and buildings and works (subject to exemptions) in flood affected areas
- require that development proposals have regard to flood risk in order to balance the present and future interests of all Victorians.

2.1.2 Warrnambool Planning Scheme

(i) Municipal Planning Strategy

The Amendment implements the following Clauses in the Municipal Planning Strategy:

- Clause 02.03-1 (Environmental and landscape values) which recognises that the Merri River, Hopkins River and associated wetlands and floodplains form a highly significant coastal wetland system that provides important habitat for listed species of flora and fauna.
- Clause 02.03-3 (Environmental risks and amenity) which sets out the following strategic directions for floodplain management:
 - protect floodplains from development that would detrimentally impact their function; and
 - protect life, property and community infrastructure from flood events.
- Clause 02.03-4 (Catchment planning), which sets out the following strategic directions for catchment planning:

- retain the Hopkins and Merri River environs as natural drainage corridors with vegetated buffer areas
- facilitate enhancement of the riparian vegetation, in-stream rehabilitation and improvements in the quality of stormwater entering Russells Creek
- minimise the impact of use and development on water resources and waterways.

Council submitted that the Amendment supports and implements the Municipal Planning Strategy by implementing flood controls based on current and updated flood modelling.

(ii) Planning Policy Framework

Council submitted that the Amendment gives effect to the Planning Policy Framework, as summarised by the Panel below.⁵

Clause 11 (Settlement)

The Amendment supports Clause 11 by ensuring planning for settlement in Warrnambool as a major regional city, has regard to health, wellbeing and safety and is responsive to climate change. This is achieved by applying controls to land at risk at flooding, to ensure development occurs in appropriate locations.

Clause 13 (Environmental risks and amenity)

The Amendment supports Clause 13 by recognising areas subject to flooding and ensuring development is responsive to flood risk, including by ensuring development is carried out in ways that minimises its vulnerability to the threat of flood, consistent with Clause 13.01-1S (Natural hazards and climate change), Clause 13.03-1S (Floodplain management) and Clause 13.03-1L (Merri River and Russells Creek floodplains).

Clause 14 (Natural resource management)

The Amendment supports Clause 14 by identifying and protecting floodplains from inappropriate development and reducing negative impacts on catchments and water quality, consistent with Clause 14.02-1S (Catchment planning and management) and Clause 14.02-2S (Water quality).

2.2 Other relevant planning strategies and policies

(i) Great South Coast Regional Growth Plan

The *Great South Coast Regional Growth Plan, 2014* (RGP) is a policy document listed at Clause 11.01-1S (Settlement) of the Planning Scheme.

The RGP outlines opportunities to encourage and accommodate growth and manage change over the next 30 years by, amongst other things, *“outlining the potential impacts of climate change and exposure to natural hazards (especially bushfire and flood) that may impact growth”*.

In relation to floods, the RGP states:

The risks presented to land use from flood hazards must be considered in strategic and localised planning decisions. Land use planning decisions should be based on the best quality information on flood hazards to minimise risk to life, property, community infrastructure and environmental assets. Accurate flood mapping is critical in this regard.

⁵ Document 6

Flood provisions in planning schemes should be used consistently across the region to avoid inappropriate development (or redevelopment) or require appropriate development responses, as well as to apply design responses through the building code.

The Future Regional Settlement Framework Plan (Figure 3) in the RGP was informed by existing flood studies that considered risk to growth on a regional level, particularly in relation to settlement growth. Urban flood considerations are relevant to Warrnambool.

Figure 3 Great South Coast Future Regional Settlement Framework Plan



Source: Great South Coast Regional Growth Plan

(ii) Victorian Floodplain Management Strategy

The *Victorian Floodplain Management Strategy, 2016* (Floodplain Strategy) is listed as a policy guideline under Clause 13.02-1 of the Planning Scheme. It provides Statewide policy direction for managing floodplains and minimising flood risks in cities, towns, regional areas and rural communities, including guidance on riverine flooding, flash flooding and coastal flooding.

The Floodplain Strategy notes:

Because it is possible to predict which land is likely to be flooded, it is prudent to regulate development and building in those areas to ensure any impacts are known and managed. In so doing, the aim is to avoid or minimise the increase in future flood risks.

In order to identify the areas that need to be subject to planning and building controls, it is necessary to decide an appropriate threshold frequency of flooding. This frequency is known as the 'design flood event' (DFE).

The Victorian Floods Review questioned if the 1% AEP flood should still be used as the DFE in Victoria. The Victorian Government has determined that the 1% AEP flood is the appropriate standard to regulate and protect most forms of development through the planning and building systems.

Council submitted that the objectives of the Amendment are consistent with the Floodplain Strategy.

(iii) Warrnambool Floodplain Management Plan

The *Warrnambool Floodplain Management Plan 2018-2023* was developed in the context of the Floodplain Strategy and *Glenelg Hopkins Regional Flood Management Strategy, 2017* as well as a range of other strategic and technical documents. It recognises the long history of flooding from rivers, stormwater systems and storm tides across the Warrnambool region. The vision of the plan is for Warrnambool to be “a flood resilient city community”.

Council submitted:

The plan notes that the UFZ is applied extensively within Warrnambool City, extending along urban areas adjoining Merri Russell Creek.

As an alternative, the plan identifies that a flood overlay can be used in conjunction with an appropriate zone (such as FO and the PPRZ) to enable the primary use of the land to be recognised at the same time acknowledging its flooding characteristics.

The plan notes that this approach may be suited to Council, as it aligns with Council's aspirations that all floodplain locations form part of open space networks as directed by strategies with the Planning Scheme.⁶

Council was of the view that the objectives of the Amendment are consistent with the Warrnambool Floodplain Plan.

2.3 Planning Scheme provisions

A common zone and overlay purpose is to implement the Municipal Planning Strategy and the Planning Policy Framework.

(i) Zones

The purposes of the Zone are:

To identify waterways, major floodpaths, drainage depressions and high hazard areas within urban areas which have the greatest risk and frequency of being affected by flooding.

To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.

To reflect any declarations under Division 4 of Part 10 of the Water Act, 1989.

To protect water quality and waterways as natural resources by managing urban stormwater, protecting water supply catchment areas and managing saline discharges to minimise the risks to the environmental quality of water and groundwater.

(ii) Overlays

The purposes of the FO are:

To identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.

To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.

To reflect any declarations under *Division 4 of Part 10 of the Water Act, 1989* if a declaration has been made.

To protect water quality and waterways as natural resources by managing urban stormwater, protecting water supply catchment areas, and managing saline discharges to minimise the risks to the environmental quality of water and groundwater.

⁶ Document 6

To ensure that development maintains or improves river and wetland health, waterway protection and flood plain health.

The purposes of the LSIO are:

To identify flood prone land in a riverine or coastal area affected by the 1 in 100 (1 per cent Annual Exceedance Probability) year flood or any other area determined by the floodplain management authority.

To ensure that development maintains the free passage and temporary storage of floodwaters, minimises flood damage, responds to the flood hazard and local drainage conditions and will not cause any significant rise in flood level or flow velocity.

To minimise the potential flood risk to life, health and safety associated with development. To reflect a declaration under Division 4 of Part 10 of the Water Act, 1989.

To protect water quality and waterways as natural resources by managing urban stormwater, protecting water supply catchment areas, and managing saline discharges to minimise the risks to the environmental quality of water and groundwater.

To ensure that development maintains or improves river, marine, coastal and wetland health, waterway protection and floodplain health.

2.4 Ministerial Directions and Planning Practice Notes

Ministerial Directions

The Explanatory Report discusses how the Amendment meets the relevant requirements of Ministerial Direction 11 Strategic Assessment of Amendments and the *Ministerial Direction on the Form and Content of Planning Schemes* under Section 7(5) of the Act. That discussion is not repeated here.

Planning Practice Notes

Mr Morrison observed that while *Planning Practice Note 11 Applying for a planning permit under the flood provisions, August 2015* is mostly related to planning permit requirements after a flood control has been applied, it is still relevant as it contains insight into what is required for each overlay and zone.

Mr Morrison stated that *Planning Practice Note 12 Applying the Flood Provisions in Planning Schemes June 2015* (PPN12) is directly relevant to the Amendment as it provides guidance about which overlay and zone should be applied in various circumstances. He concluded that the proposed planning scheme amendment changes are in line with the guidance of both Planning Practice Note 11 and PPN12.⁷

Council submitted that that the Amendment has properly applied PPN12 for the following reasons:

- The methodology used to prepare the flood modelling and translate that modelling into the appropriate flood controls is robust and accurate, and based on the extent of flooding that would result from a 1 in 100 year flood event.
- While it was the preference of the GHMA for Council to schedule permit exemptions under the FO and LSIO over and above those provided within the parent planning provisions, Council has not proposed to do so at this time as the Amendment is essentially a reset of existing controls in North Warrnambool. Council has, however, agreed to modify Clause 72.04 of the Planning Scheme to include a further strategic work item relating to preparation of FO and LSIO schedules.

⁷ Document 5

- A Local Floodplain Development Plan is not required for the Amendment given the nature, type and intensity of development anticipated in the affected areas as well as the flooding characteristics of the region does not trigger the need for these guidelines.⁸

2.5 Discussion and conclusion

There is consistent and cascading policy support for flood management across State, regional and local strategies and in the Planning Scheme, particularly at Clause 13.03-15. The Amendment is responsive to this policy content and has been prepared in accordance with relevant Ministerial Directions and Practice Notes. The Panel is satisfied that the Amendment should proceed subject to addressing the more specific issues raised in submissions as discussed in the following chapters.

The Panel concludes:

- Flooding controls are required to assist in the protection of life, property, community infrastructure and the environment from the hazards associated with floods.
- The Amendment implements the Planning Policy Framework and Municipal Planning Strategy and is consistent with the relevant Ministerial Directions and Planning Practice Notes.
- The Amendment is well founded and strategically justified.

⁸ Document 6

3 Technical basis and mapping

3.1 Technical basis of the flood studies

(i) The issue

The issue is whether the flood studies have been carried out appropriately and properly inform the flooding controls.

(ii) Evidence and submissions

Mr Morrison's evidence outlined the modelling approach that underpins the As Constructed Modelling Report for Russells Creek, stating:

- The models were developed using industry standard software packages.
- Detailed peer review of the models and approaches was undertaken by the DELWP anonymous review panel at several stages of development.
- Ideally a flood model is calibrated to recent historic floods and design flows are based on gauged data with a suitable period of record. This did not occur due to the lack of both historical flood data and gauging data within the catchment. An alternative qualitative assessment approach confirmed both models matched well.
- While the lack of calibration data is a limitation in the study, it is not uncommon in small urban catchments like Russells Creek with a lack of gauge data.
- The calculations undertaken for rainfalls and rainfall loss conditions are appropriate and standard practice for flood modelling.
- The peak design flows are 17 per cent less than those derived from the North Warrnambool Flood Study, however are based on an additional 30 years of historic rainfall and flood information, as well as more modern approaches for defining flood behaviours, so are considered more robust.
- A review of the model generated with the TUFLOW software⁹ revealed various potential issues with the model inputs that might impact on the extent of planning overlays. Sensitivity testing was undertaken to determine the impacts of these issues on flood extents, albeit using a model with incomplete terrain and mitigation data. The sensitivity testing showed relatively minor changes in flood extents, largely within undeveloped areas and in road corridors, but no significant change around residential blocks.
- Given the outcomes of the sensitivity analysis, and the fact the other issues raised are likely to have an insignificant impact on the results, the Russell Creek model results are fit for use in developing flood planning controls, including flood overlays.

Mr Morrison's evidence further summarised the approach for modelling flood estimates in the Merri River catchment as follows:

- The North Warrnambool Flood Study was informed by flood frequency analysis from 1966-2008 to determine peak flows for the 1 per cent AEP and other design events in the Merri River catchment.

⁹ TUFLOW is a hydraulic and hydrodynamic modelling software suite.

- The modelled flood estimates could change if flood frequency inputs were updated with post 2008 data, although it is difficult to say with certainty whether this update would increase or decrease the design flood estimates.
- The calibration of the hydraulic model appears to be very good. Comparisons of the model with other models developed for private developments with up to date modelling software packages have largely match.
- Overall, the data from the North Warrnambool Flood Study is fit for purpose for developing flood planning controls, including overlays. However, it could benefit in the future to update the model to reflect a modern software package. A review of the design flows based on the latest gauge data would also be of benefit at this time.

Mr Morrison set out the standard approach for derivation of FOs and LSIOs with reference to the *Flood delineation for planning scheme maps standard approach, 2013* issued by the GHCMA. He noted:

- Both overlays are based on modelled outputs for the 1 per cent AEP flood.
- Areas within the 1 per cent AEP extent are defined as floodways if the peak depth exceeds 0.5 metres and the peak velocity by depth exceeds 0.4 square metres per second. The remaining area (that is areas located outside of the floodway but within the 1 per cent AEP flood extent) is defined as LSIO.
- The GHCMA approach combines floodway and flood storage into the FO and this is achieved by using the peak depth filter to capture areas that are deep but slow moving. This conforms with the DELWP definition of floodways, which includes areas of temporary storage of floodwaters.

Finally, Mr Morrison noted that the standard mapping approach also outlines a number of processing steps that may be completed to determine the overlays, including:

- smoothing gridded results to provide a more realistic representation of flood extents
- removal of disconnected 'puddles'
- 'filling' of low hazard areas surrounded by high hazard areas
- 'filling' of flood islands that may not have direct flood risk, but are not appropriate for development due to evacuation difficulties.

Mr Morrison concluded:

Our review of the proposed overlays suggest that these processes have been completed accurately and appropriately. In some areas the smoothing will locally increase or decrease the flood extent compared to the raw model results, however these are generally small and will unlikely change development outcomes. In summary, the 1% AEP flood outputs from the flood modelling completed for Russells Creek and the Merri River have been appropriately translated to create the flood overlay layers.¹⁰

GHCMA submitted:

Amendment C205warr seeks to introduce the flood controls in North Warrnambool to align with the [As Constructed Modelling Report] modelled extents. This is supported by the GHCMA as it is based on the best available information and has aligned with recent flood events.

Ms Cooper (Submission 6) questioned whether the Amendment should progress in the absence of calibration of the models against historic floods events and gauge data.

¹⁰ Document 5

(iii) Discussion

The Panel has given significant weight to the evidence of Mr Morrison that the modelling has been undertaken accurately and that outputs have been appropriately translated into flood controls. Where limitations of the modelling have been identified by Mr Morrison, the Panel notes that alternative calibration methods have been applied to provide confidence that the modelling is sufficiently accurate to inform the planning controls proposed.

(iv) Conclusions

The Panel concludes:

- The Amendment is based on sound modelling of flood extents.
- Flood extents have been appropriately translated into zones and overlays, subject to the site specific changes discussed elsewhere in this Report.

3.2 Lived experience**(i) The issues**

The issues are whether:

- the flood extent reflects real life flood events
- properties that have not experienced flooding in the past should be subject to flood controls.

(ii) Evidence and submissions

Several submitters cited lived experience as their evidence that the flood model over-estimates extents.

Council submitted that the lived experiences outlined in submissions only includes smaller floods that are not comparable to the modelling 1 per cent AEP. Mr Morrison agreed, noting the 1 per cent AEP was unlikely to have been experienced by the local community within the Merri River or Russells Creek catchment.

The GHCMA explained:

Several submissions raised that the modelling is inaccurate based on recent flood events that have occurred within Warrnambool. The October 2020 and January 2021 flood events were referenced. These events were significantly lower than the 1% AEP flood event for the Russell's Creek catchment.

...

The behaviour of flooding on the Merri River catchment and Russells Creek catchment are vastly different. The Merri River catchment is larger than Russells Creek with many tributaries upstream contributing flow. Russell's Creek is an ephemeral waterway that is a flash flood catchment, meaning that flooding will typically occur within six hours of rainfall. A flood event within one catchment does not translate to a flood event in the other.

The CMA has high confidence that the October 2020 event was approximately a 20% AEP event in the Russells Creek catchment and approximately a 2% AEP event in the Merri River catchment. This event was less than the design flood event of 1% AEP in each catchment and is only relevant if locations that were not identified as flood prone were flooded. This is not the case with any of the submissions received.

...

This [January 2021] event was not an event of significance in either the Merri River or Russell's Creek system and therefore not relevant to the Amendment.¹¹

(iii) Discussion

The Panel accepts that advice of the GHCMA that flood events in the Merri River and Russells Creek catchments in 2020 and 2021 are not comparable to the scale of event (1 per cent AEP) the Amendment is planning for. The Panel agrees with Mr Morrison's evidence that flood controls should not be based on the observations and experience of residents, notwithstanding they can be valuable inputs into the modelling.

(iv) Conclusion

The Panel concludes:

- Recent lived experiences of flooding are not comparable to the modelled 1 per cent AEP flood that has informed the Amendment.

3.3 Timing of Amendment

(i) The issues

The issues are whether:

- the Amendment should be placed on hold until mitigation works are implemented
- introduction of overlays between Wares Road and Aberline Road should be considered as part of the East Aberline Structure Plan process.

(ii) Evidence and submissions

Investigation of flood mitigation options was a common theme in many submissions.

Council submitted that the most practical and economic solutions to manage flood prone land in North Warrnambool are siting and designing buildings to reduce the impact of possible flooding (for example, by raising the floor levels of new buildings) and investing in capital works. Council advised that it works collaboratively with the GHCMA on opportunities to reduce the impact on flooding throughout the municipality, with the highest priority given to areas that pose high risk to public safety.

Council acknowledged that if, and when, future on-ground structural flood mitigation works are completed, the planning scheme should be amended to update the application of the flood provisions at that time.

Mr Morrison's evidence was:

Note that stalling the implementation of flood controls until some future development and mitigation structure is constructed would be against the principles of floodplain management to protect life and property. This is highlighted in the Floodplain Strategy which states "*Flood overlays need to be introduced or updated as soon as possible after new flood maps are produced to maximise the returns on investment in flood information and help manage risk*".¹²

¹¹ Document 12

¹² Document 5

The GHCMA submitted:

Mitigation options for upstream of Wangoom Road have previously been investigated but have been found to be cost prohibitive or would likely result in flooding of downstream properties. This would not be supported by the GHCMA. Mitigation options must serve a greater community benefit and not result in an increased flood risk to other properties.

It has been suggested that flood mitigation could be investigated for properties upstream of Wares Road as it is currently vacant farmland. This may be an option to be investigated in the future, however the planning scheme should represent the existing flood risk until it can be demonstrated that mitigation works would be effective and have been committed to being, or have been, constructed.¹³

Ms Cooper submitted that the overlays between Wares Road and Aberline Road should not be introduced by the Amendment and that flood controls for the area should be considered as part of a future amendment for the East Aberline residential development. Council disagreed with Ms Cooper's approach.

In response to the Panel's questions, Council confirmed that the Victorian Planning Authority was leading preparation of the East of Aberline Precinct Structure Plan. Planning is in early stages with no timeframe set for finalisation of the plan. The baseline design standard for new development is to manage water to pre-development flows and levels.

(iii) Discussion

The Panel notes Council's commitment to prepare a precinct plan for the area east of Aberline Road which is reflected in the Planning Scheme in the Schedule to Clause 74.02 (Further Strategic Work). However, while the preparation of a precinct structure plan has been agreed, the work is uncommitted. With an uncertain timeframe ahead and no expectation that drainage for East Aberline development would be managed beyond pre-development flows or offer downstream benefits, this opportunity to mitigate flood risk should not be missed.

The Panel agrees with Council and the GHCMA that the Amendment should progress based on the available flood modelling. If further strategic work or on-ground mitigations are carried out in the future, the approved flood provisions can be reviewed and revised as necessary.

(iv) Conclusion

The Panel concludes:

- Progress of the Amendment should not be delayed based on uncommitted opportunities to mitigate flood risk.

3.4 Minor incursions

(i) The issue

The issue whether minor incursions should be excluded from flood zones and overlays.

(ii) Evidence and submissions

GHCMA identified properties in the exhibited mapping where select properties on the flood fringe would have less than 30 square metres or 6 per cent of the site area included in the LSIO, which it

¹³ Document 12

termed as ‘minor incursions’. GHCMA considered the overlay would generate unnecessary planning permit requirements on these properties.

Mr Morrison’s evidence was:

The GHCMA has identified 47 properties where flooding only causes a “Minor Incursion” ... We have reviewed the 47 properties and agree with the recommendation to remove the LSIO from 43 of the 47 properties, leaving 4 properties where we recommend that the LSIO is retained.

In all four of the lots where we recommend the LSIO to remain, the raw flooding extent shows greater inundation than the smoothed LSIO polygon and the raw extents suggest there may be impacts on the existing dwelling and therefore any likely future building footprint.

Appendix D lists the 43 minor incursion sites where removal of the LSIO is supported by Mr Morrison. GHCMA submitted it supports Mr Morrison’s recommendation.¹⁴

In response to the Panel’s questions, Council advised that owners and occupiers of the 43 ‘minor incursion lots’ were not directly notified of Council’s resolved position to seek a recommendation from the Panel to remove the lots from the LSIO.

(iii) Discussion

The Panel accepts the evidence of Mr Morrison that it is appropriate for the 43 minor incursion sites located on the flood fringe to be excluded from the LSIO mapping. The Panel is surprised that Council did not inform property owners of its resolved position to change the Amendment to exclude the minor incursion site as a matter of courtesy, albeit that those owners would likely consider the change to be of benefit.

(iv) Conclusion and Recommendation

The Panel concludes it is appropriate to exclude the minor incursions from flood zones and overlays.

The Panel recommends:

- 1. Delete the Land Subject to Inundation Overlay from the 43 ‘minor incursion’ sites listed in Appendix D of this Report.**

¹⁴ Document 12

4 Site specific issues

4.1 20 Botanic Road, Warrnambool

(i) The issue

The issue is whether the boundary of the UFZ and LSIO should be amended at 20 Botanic Road, Warrnambool.

This property is currently zoned part UFZ and GRZ1 and included in the LSIO. The Amendment proposes to decrease the extent of property in UFZ and increase the LSIO.

(ii) Evidence and submissions

Mr Timms (Submitter 20) submitted that the LSIO should only apply to land lower than 7.0 metres Australian Height Datum (AHD).

Council submitted that a further technical review identified that 1 per cent AEP flood levels range from 7.60m AHD on the upstream boundary (east) of the site to 7.23m AHD on the downstream boundary (west) of the site. On this basis, no change to the Amendment was supported.¹⁵

The evidence of Mr Morrison noted that that Mr Timms' submission is based on the lived experience of the January 2021 event which had a smaller extent than a 1 per cent AEP.

Mr Morrison further commented:

The submission does discuss various topographic survey that has been undertaken. While there does not appear to be any discrepancies between what is reported in the submission and the LiDAR¹⁶ dataset upon which the modelling is based, if this is an issue for the submitter then perhaps their survey could be obtained by Council and the CMA and compared to the LiDAR and if there are significant variations, the LSIO could be revised. Although this may yield a larger LSIO if the LiDAR does indeed sit lower than the ground survey.¹⁷

During the period that the Hearing was adjourned, Mr Timms provided Council and GHCMa with survey data, prompting a reconsideration of the relevant flood contour for the site. Council subsequently prepared updated mapping showing a further reduction in the extent of the property included in the LSIO (

¹⁵ Document 6

¹⁶ Light Detection and Ranging is a remote sensing method used to generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.

¹⁷ Document 5

Figure 4).¹⁸

In further submissions Mr Timms requested additional changes to the mapping of the LSIO.¹⁹ Mr Timms relied on surveyed levels to support his request for further change to the LSIO but did not present additional evidence in support of the further reduction.

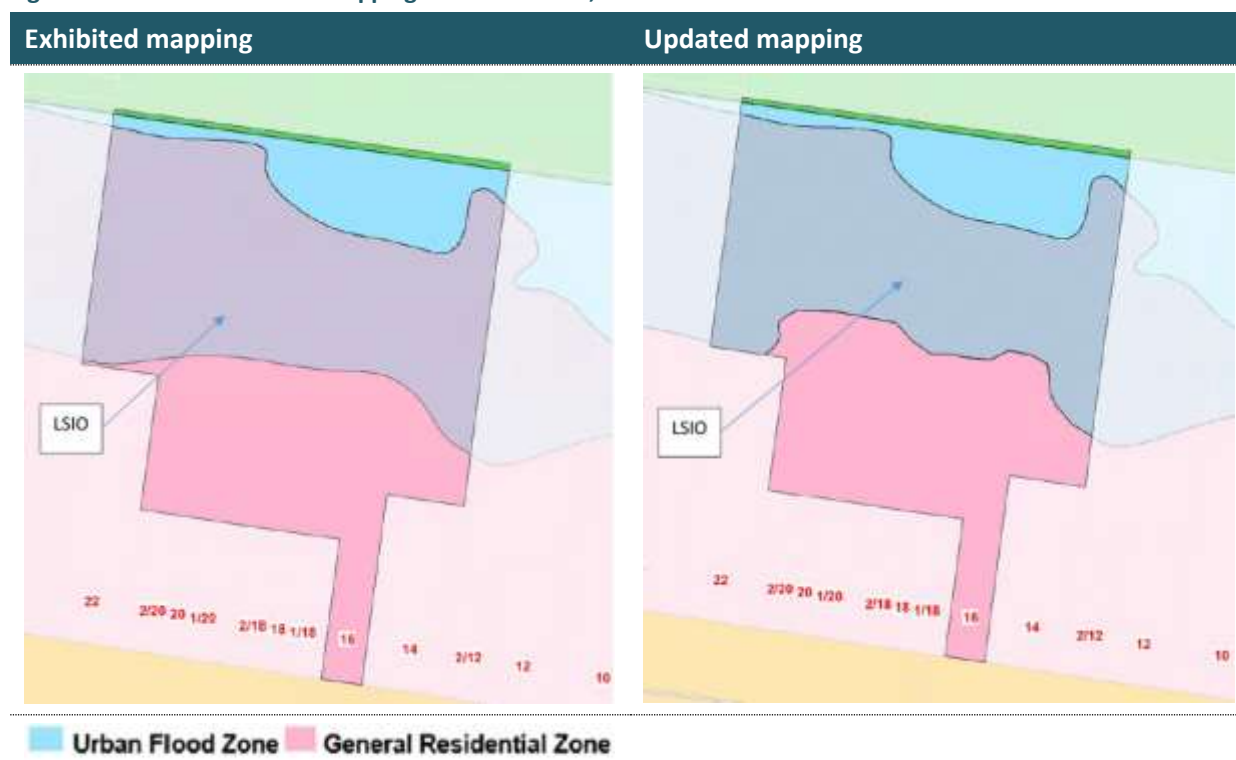
Council and GHCMA did not support the additional change requested by Mr Timms on the basis that it would be 0.2 metres below the modelled 1 per cent AEP flood level.²⁰

¹⁸ Document 14

¹⁹ Document 22

²⁰ Document 24

Figure 4 Recommended mapping 20 Botanic Road, Warrnambool



Source: PPV adapted from Document 14

(iii) Discussion

The Panel accepts that revision of the flood extents for 20 Botanic Road has been informed by survey data and is appropriate. The Panel does not support additional changes to the flood extents requested by Mr Timms as no further evidence has been provided to substantiate such a change.

(iv) Conclusion and recommendation

The Panel concludes:

- The 1 per cent AEP levels should be applied as the boundary of the overlay on the land at 20 Botanic Road, Warrnambool.

The Panel recommends:

Reduce the extent of land at 20 Botanic Road, Warrnambool included in the Land Subject to Inundation Overlay in accordance with 'updated mapping' shown in

2. Figure 4 of this Report.

4.2 106 Bromfield Street, Warrnambool

(i) The issue

The issue is whether the boundary of the UFZ should be amended at 106 Bromfield Street, Warrnambool.

The majority of this property is currently zoned UFZ, with a smaller area zoned GRZ1. The LSIO applied to that part of the land in the GRZ1. The Amendment proposes to rezone part of the land from UFZ to GRZ1 with consequential revision of the LSIO.

(ii) Evidence and submissions

Mr Lafferty (Submitter 19) submitted that the area rezoned to GRZ1 be increased because he had not previously observed this land to be affected by flood events.

Council's response and Mr Morrison's evidence on whether the lived experience of residents should inform mapping of the flood extent is summarised at Chapter 3.1. No other evidence was presented to the Panel to substantiate that zones and overlays proposed for 106 Bromfield Street, Warrnambool should be revised.

(iii) Discussion

As discussed in Chapter 3, the Panel is satisfied that the Amendment is based on sound modelling of flood extents. The Panel has not been presented with any evidence that the modelling for land at 106 Bromfield Street is flawed, or that has been incorrectly translated into zones and overlays.

(iv) Conclusion

The Panel concludes:

- The UFZ is appropriate as it applies to land at 106 Bromfield Street, Warrnambool.

4.3 120 Bromfield Street, Warrnambool

(i) The issue

The issue is whether the boundary of the UFZ should be amended at 120 Bromfield Street, Warrnambool.

Land at 120 Bromfield Street, Warrnambool is currently zoned part UFZ and part GRZ1. No overlays apply to the land. The exhibited Amendment did not propose any change to the current provisions.

(ii) Evidence and submissions

Mr Bail (Submitter 16) requested that flood extents be reviewed in light of supplied survey data.

Council submitted:

The Panel will observe a recommendation by officers to Council in the report of 7 February 2022, for an additional change to partially repeal the UFZ from a property at 120 Bromfield

Street (submission 16). The GHCMA supports the change in UFZ to align with on ground survey information provided by the submitter, and Council endorses this change.²¹

Mr Morrison's evidence was:

A review of the UFZ against model results suggests the alignment is correct.

...

If the values from ground survey alter significantly from the Digital Elevation Model it is suggested these may be used instead to shape the UFZ.²²

Council prepared plans to compare the exhibited flood mapping with revised mapping requested to be supported by the Panel (Figure 5).²³ No further submissions were received following circulation of the updated mapping.

Figure 5 Recommended mapping 120 Bromfield Street, Warrnambool



Source: PPV adapted from Document 15

(iii) Discussion

The Panel accepts that revision of the flood extents for 120 Bromfield Street has been informed by further survey data, consistent with the expert evidence of Mr Morrison.

(iv) Conclusion and recommendation

The Panel concludes:

- The extent of land in the UFZ should be reduced at 120 Bloomfield Street, Warrnambool.

The Panel recommends:

- 3. Rezone part of the land at 120 Bromfield Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 5 of this Report.**

²¹ Documents 6 and 9

²² Document 5

²³ Document 15

4.4 138 Bromfield Street, Warrnambool

(i) The issue

The issue is whether the boundary of the UFZ should be amended based on the approved earthworks at 138 Bromfield Street, Warrnambool.

This property is currently zoned part UFZ and part GRZ1. No overlays apply to the land. No change to the existing zone configuration was proposed by the Amendment.

(ii) Evidence and submissions

Glen and Maryanne Owen (Submitter 3) submitted that part of the land should be rezoned from UFZ to GRZ1 based on earthworks that were lawfully carried out under Planning Permit PP2020-0101.

Council submitted:

The submitter has notified Council that the earthworks have been completed in accordance with the planning permit, including the provision of a feature survey for assessment. The GHCMA has undertaken a site inspection and assessed the feature survey and advised Council that the earthworks have been completed to the required standard. The GHCMA can support the repeal of the UFZ in this location and in accordance with the earthworks undertaken.²⁴

No evidence was provided by Mr Morrison.

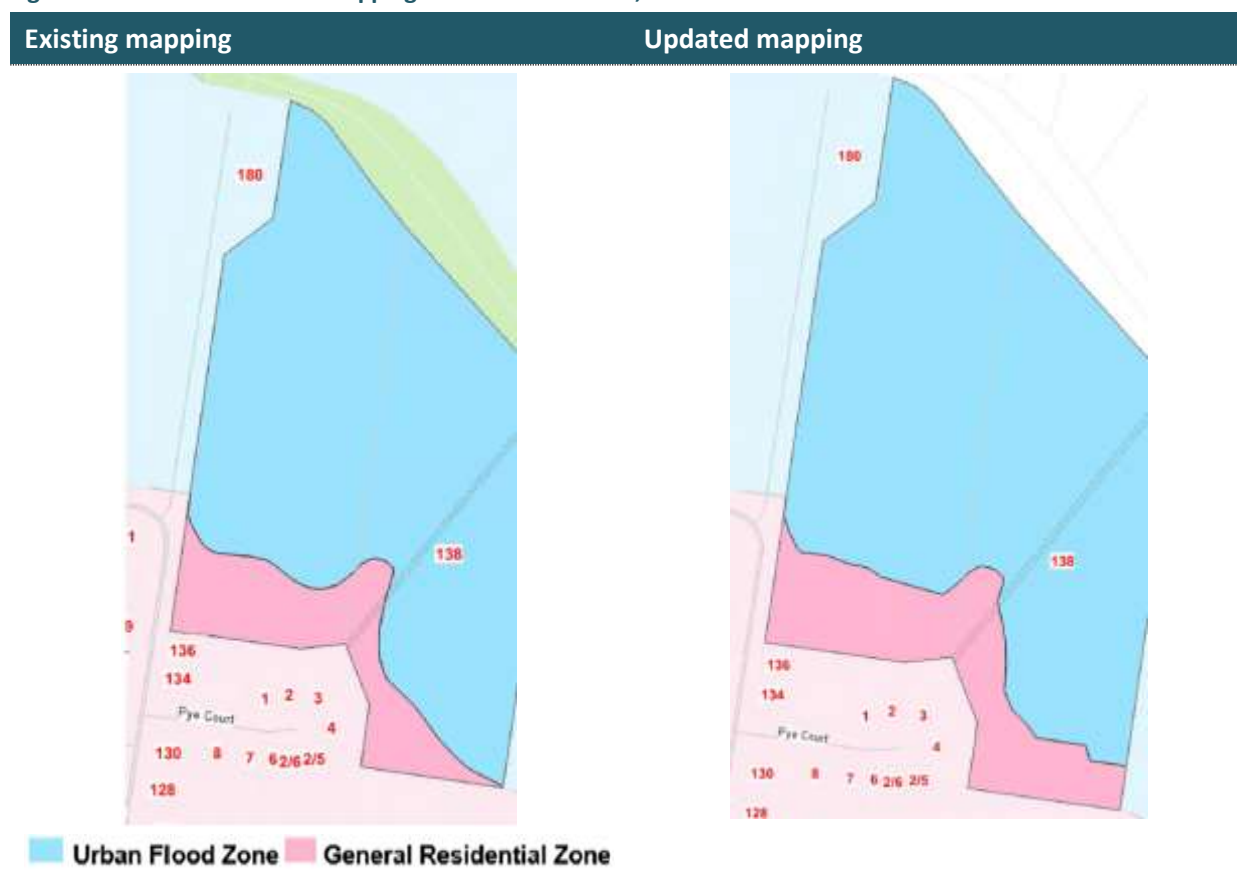
Council prepared plans to compare the existing flood mapping with revised mapping requested in response to the submission (Figure 6).²⁵ Mr Davies on behalf of Glen and Maryanne Owen confirmed the amended mapping was agreed.²⁶

²⁴ Document 6

²⁵ Document 16

²⁶ Document 20

Figure 6 Recommended mapping 138 Bromfield Street, Warrnambool



Source: PPV adapted from Document 16

(iii) Discussion

The Panel accepts that earthwork at 138 Bloomfield Street, Warrnambool has reduced the modelled 1 per cent flood extent below the threshold for inclusion in the UFZ. The Panel agrees with the Council, GHCMa and the submitter that it is appropriate to reduce the extent of land in the UFZ where the flood risk no longer exists.

(iv) Conclusion and recommendation

The Panel concludes:

- The extent of land in the UFZ should be reduced for land at 138 Bloomfield Street, Warrnambool.

The Panel recommends:

- 4. Rezone part of the land at 138 Bromfield Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 6 of this Report.**

4.5 2-18 Daltons Road, Warrnambool

(i) The issue

The issue is whether the boundary of the UFZ should be amended based on the approved earthworks at 2-18 Daltons Road, Warrnambool.

This property is currently zoned UFZ. No overlays apply to the land. The Amendment proposes to rezone part of the land from UFZ to GRZ1.

(ii) Evidence and submissions

Mr Howard for G Mollenuxy (Submitter 12) submitted that additional land should be rezoned to GRZ1 in recognition of earthwork carried out in accordance with Planning Permit PP2017-0127.

Council submitted:

The submitter has notified Council that the earthworks have been completed in accordance with the planning permit, including the provision of a feature survey for assessment.

The GHCMA has undertaken a site inspection and assessed the feature survey. The GHCMA has advised Council that it is satisfied that the earthworks have been completed as close as practicable to the planning permit. While the finished works do not quite match the modelling, given the size, shape and nature of the 1% AEP floodplain in this location the GHCMA has confirmed the works have been completed to a satisfactory standard and can support the partial repeal of the UFZ on this land.

Council prepared plans comparing the exhibited flood mapping with revised mapping in response to the submission (Figure 7).²⁷

Figure 7 Recommended mapping 2-18 Daltons Road, Warrnambool



Source: PPV adapted from Document 17

²⁷ Document 17

(iii) Discussion

The Panel accepts that earthwork at 2-18 Daltons Road, Warrnambool has reduced the modelled 1 per cent flood extent below the threshold for inclusion in the UFZ. The Panel agrees with the Council, GHCMA and the submitter that it is appropriate to reduce the extent of land in the UFZ where the flood risk no longer exists.

(iv) Conclusion and recommendation

The Panel concludes:

- The extent of land in the UFZ should be reduced for land at 2-18 Daltons Road, Warrnambool.

The Panel recommends:

- 5. Rezone part of the land at 2-18 Daltons Road, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 in accordance with 'updated mapping' shown in Figure 7 of this Report.**

4.6 32 Dooley Street, Warrnambool**(i) The issue**

The issue is whether the boundary of the UFZ should be amended at 32 Dooley Street, Warrnambool.

This property is currently zoned part GRZ1 and part UFZ. No overlays apply to the land. No change to the existing zone configuration was proposed by the Amendment.

(ii) Evidence and submissions

Mr Gardner (Submitter 14) proposed that part of the land at 32 Dooley Street, Warrnambool be rezoned from UFZ to GRZ1 in recognition of recent earthworks.

Council submitted:

The GHCMA conducted a site inspection and provided technical advice to enable the submitter to rectify the land to enable the repeal of the UFZ.

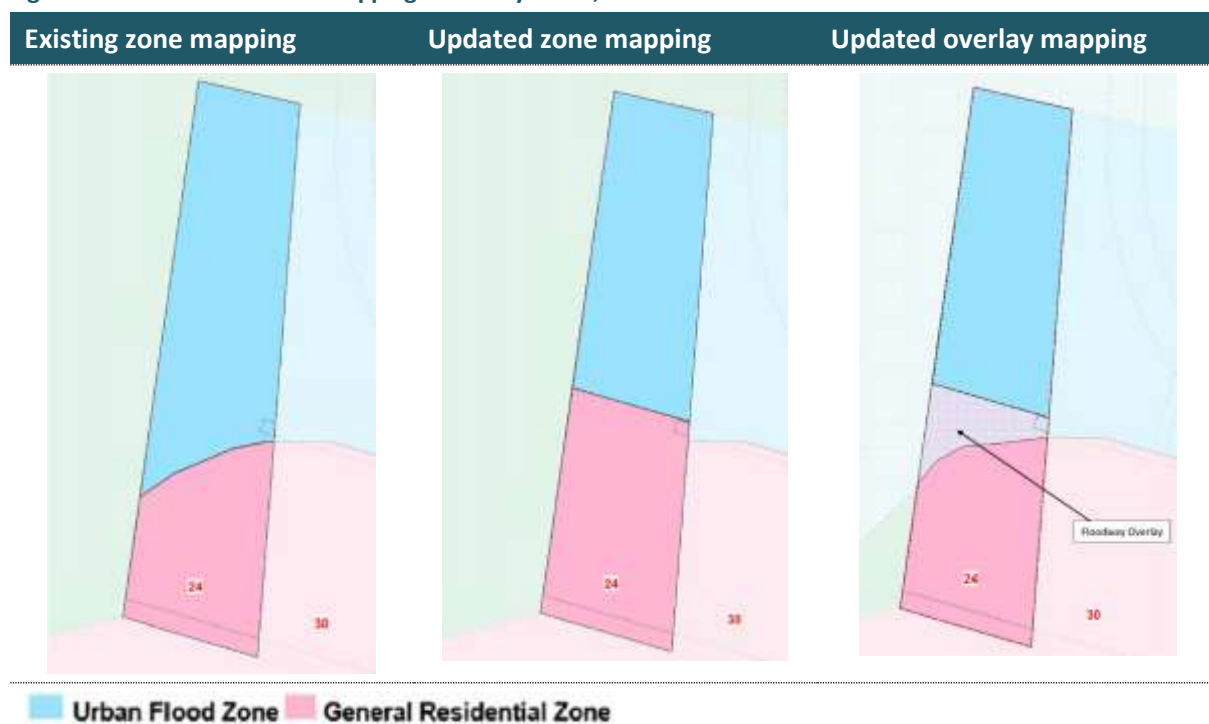
The submitter has notified Council that the earthworks have been completed, including the provision of a feature survey for assessment.

The GHCMA has assessed the feature survey and advised Council that the earthworks have been completed to the required standard. The GHCMA can support the partial repeal of the UFZ in line with the boundary of the adjacent row of properties (26-30 Dooley Street), subject to the introduction of the FO in its place. The UFZ is to be retained on the northern portion of the land.

Council prepared plans comparing the exhibited flood mapping with revised mapping requested to be supported by the Panel (Figure 8). No further submissions were received following circulation of the revised plans.²⁸

²⁸ Document 18

Figure 8 Recommended mapping 32 Dooley Street, Warrnambool



Source: PPV adapted from Document 18

(iii) Discussion

That Panel agrees with Council and the GHCMA that flood mapping for 32 Dooley Street can be revised based on the updated assessment of flood risk.

(iv) Conclusion and recommendation

The Panel concludes:

- The extent of land in the UFZ should be reduced and land in the FO increased for land at 32 Dooley Street, Warrnambool.

The Panel recommends:

6. **Rezone part of the land at 32 Dooley Street, Warrnambool from Urban Floodway Zone to General Residential Zone Schedule 1 and apply the Floodway Overlay to land as shown on updated zone mapping and the updated overlay mapping in Figure 8 of this Report.**

4.7 Membro Way, Warrnambool

(i) The issues

The issues are whether:

- flood risk makes further development along the Merri River corridor unsustainable
- mapping of the flood extent is accurate.

(ii) Evidence and submissions

Mrs and Mr Sullivan (Submission 1) submitted that further development is not sustainable along the Merri River given recent occurrences of flooding. Mr Cannon (Submission 7) questioned the accuracy of modelling and suggested that the area to be rezoned from UFZ to GRZ1 is broader than it should be, as the floodplain should match the rise in site topography.

Council noted that while the natural topography of the area is shaped as a floodplain, the design flood magnitude for planning purposes is the 1 per cent AEP which is based on historical flood and gauge records on the Merri River. Council submitted that no change to mapping of the GRZ1 was warranted.²⁹

(iii) Discussion

As discussed in Chapter 3, the Panel is satisfied that the Amendment is based on sound modelling of flood extents. The Panel has not been presented with any evidence that the modelling for land in Membroy Way is flawed, or that has been incorrectly translated into zones and overlays.

(iv) Conclusion

The Panel concludes:

- The Amendment is appropriate as it applies to land in Membroy Way.

²⁹ Document 5

4.8 Wangoom Road, Ian Road and Wiggs Lane, Warrnambool

(i) The issues

The issues are whether:

- undersized culverts under Wangoom Road are exacerbating flooding issues in North Warrnambool
- modelling has accounted for the main drainage through the area
- an intentional blockage of the Russells Creek tributary is exacerbating flows north of Wangoom Road.
- the creek near Wiggs Lane should be included in the flood extent.

(ii) Evidence and submissions

Several submissions focussed on the Wangoom Road, Wiggs Lane and Ian Road area. A significant issue for these submitters was the size of Wangoom Road culverts. Submissions included photographs of locations along the waterway where flood flows have been blocked and water has banked back to cause damage to land and buildings. Many considered investment in improved infrastructure would mitigate, or at least lessen, the flood risk. Submissions also raised the accuracy of flood modelling in this area, because it appeared to have not picked up on local features of established drainage systems.

Mr Morrison's evidence was:

- The area to the north of Wangoom Road essentially forms a large informal flood detention basin that is constrained by the Wangoom Road embankment, with the existing culverts being largely inadequate to convey the upstream flow, while anecdotally flooding is exacerbated with the culverts being blocked at times. This then leads to surcharging of the creek and flooding of a number of residential properties.
- The area would likely naturally be subject to flooding to some extent given that it is fairly flat and un-channelised.
- Culvert upgrades have been explored by Council previously. Even with larger culverts, the LSIO would still be required, and downstream impacts may offset any benefit gained.
- An option of diverting water west was examined in the *Wangoom Road Growth Area Flood Assessment, 2016* and was found to reduce the risk of flood to existing residents within this area.
- A further study in 2016 (*North of Wangoom Road Development Area: Stormwater and Flooding Opportunities and Constraints, 2016*) recommended that flooding in the area would be best mitigated by either a large retarding basin or a high flow diversion channel (preferred), however noted that both options are expensive and will require significant land acquisition.
- There are only six properties with above floor flooding that would benefit from either of these high cost solutions (estimated at \$4.5 million in 2016).
- Flood mitigation works may occur via a large scale development of residential or farming areas north of Wangoom Road in the future, but stalling the implementation of flood controls now would be against the principles of floodplain management to protect life and property.

- In relation to the use of FO under the GHCMA guidelines, areas of peak depth greater than 0.5 metres in the 1 per cent AEP are included in the FO.³⁰

Mr Morrison's evidence also confirmed that the wetland topography may be exacerbating local flooding along the north side of Wangoom Road, however the primary flood mechanism appears to be flood water backing up against the Wangoom Road embankment. Mr Morrison concluded "*removal of the wetland would likely have little impact to the FO/LSIO extent*".³¹

Finally, Mr Morrison's evidence noted that the LSIO extends roughly to the crossing at Wiggs Lane and that while a FO could be included at this location, it was likely removed as it was discontinuous (with adjoining land in the Moyne Shire).³²

(iii) Discussion

Submissions present an accurate picture of flooding that occurs from time to time in this area. While the Panel understands the anxiety of submitters, it accepts that a decision about works is one for Council. The Panel also notes Mr Morrison's evidence that improving the flow of water in one location may transfer a problem downstream to another location.

The measure for this Amendment is whether the modelling accurately identifies the extent of affected land within the 1% AEP, such that the controls are effective in protecting life, land and property. The Panel is satisfied that is the case.

(iv) Conclusion

The Panel concludes:

- The Amendment is appropriate as it applies to land in Wangoom Road, Wiggs Lane and Ian Road area.

4.9 133-135 Whites Road, Warrnambool

(i) The issue

The issue is whether the modelling is accurate for the Whites Road area and at the Wares Road bridge.

(ii) Evidence and submissions

Submitter 6 questioned the accuracy of the flood extent and sought exclusion of land in Whites Road from the controls pending further review of the model.

Council submitted the introduction of the controls is based on current risk shown though information from modelling not previously available, and, as with previous submissions, advised that the introduction of future, currently unplanned and un-investigated flood mitigation/improvements is not sufficient reason to delay the introduction of flood controls.

The GHCMA supported Council.

The submission was referred to Mr Morrison for assessment. He advised:

³⁰ Document 5

³¹ Document 5

³² Document 5

- Stalling the implementation of flood controls until possible future mitigation works, that have not been adequately investigated, are constructed would be against the principles of floodplain management to protect life and property.
- As with the Wangoom Road properties, it is difficult to determine, however a large scale flood detention basin upstream of Whites Road would be very unlikely to provide enough flood benefit to justify the cost, given that only 8 houses will likely benefit from such a structure.
- The flood risk to the existing dwelling is relatively low, the GHCMA's analysis suggests that the dwelling would not be inundated by the 1% AEP.
- The flood controls proposed on the submitter's property are not onerous (primarily LSIO) is readily developable in the future by the current or future owners.

Mr Morrison also examined past flooding at the Wares Road bridge and the impact on the submitter's property. Using data from the model and from a local gauge, Mr Morrison reported the bridge was not inundated in the 2020 flood event and that the subject land was outside the influence of circumstances at the Wares Road bridge.³³

(iii) Discussion

The measure for this Amendment is whether the modelling accurately identifies the extent of affected land within the 1 per cent AEP, such that the controls are effective in protecting life, land and property. The Panel is satisfied that is the case.

(iv) Conclusion

The Panel concludes:

- The Amendment is appropriate as it applies to land on Whites Road.

³³ Document 5 and Plate 2

5 Form and content of the Amendment

5.1 General drafting issues

The Ministerial Direction on the Form and Content of Planning Schemes, issued under section 7(5) of the PE Act, requires that a planning scheme or planning scheme amendments must be prepared and presented in accordance with the style guide set out in Annexure 1 of the Ministerial Direction. Rules for writing a planning scheme provision are provided in A Practitioner’s Guide to Victoria’s Planning Schemes.

5.2 Submissions

Council submitted:

... the Panel will observe a recommendation by officers to Council to modify Clause 72.04 of the Planning Scheme to undertake further strategic work to support schedules to the LSIO and FO to reduce the burden of planning permits for inconsequential flood risk.

Council seeks a direction from the Panel that these changes be included as part of the Amendment.³⁴

The GHCMA submitted:

Previously the CMA had identified that there were no Schedules exhibited as part of this Amendment and that we strongly urge adoption of schedules to the LSIO and FO. While this still remains the opinion of the GHCMA, we are satisfied that they have not been included as part of this Amendment as introducing schedules has a municipality wide impact, and this Amendment only impacts North Warrnambool. The GHCMA is satisfied that discussions with Council around Schedules to the flood controls will take place during the next municipality wide Amendment.

The CMA strongly supports the adoption of Local Floodplain Development Plans (LFDP) in Planning Scheme Amendments which incorporate the FO. While the CMA would like to see the adoption of a LFDP for the Warrnambool Local Government Authority, we are satisfied that this is more appropriately introduced during a municipality wide Amendment and look forward to discussing this option with Council in the future.

In response to further direction issued by the Panel, Council prepared a draft schedule to Clause 72.04 to detail the further work actions discussed and agreed with the GHCMA.³⁵

5.3 Discussion and conclusion

The Panel agrees with the GHCMA that the Amendment would have benefited from inclusion of schedules to the LSIO and FO. This approach is consistent with PPN12 which notes that effective use of schedules should reduce the number of planning permit applications the Council and the floodplain management authority need to process.

Similarly, the Panel agrees with the GHCMA that preparation of a Local Floodplain Development Plan would have been of benefit through streamlining the consideration of future planning permit applications.

The Panel supports the proposed addition of further strategic work items in the Schedule to Clause 74.02 to prompt future action on this matter. The Panel notes that contrary to the submission of

³⁴ Document 5

³⁵ Documents 13 and 19

the GHCMA, LSIO and FO schedules are not required to be prepared for a whole municipality at once, but can be prepared and introduced for select areas. This might be a more practical implementation approach for Council.

The Panel concludes:

- Preparation of schedules to the LSIO and FO and a Local Floodplain Development plan would complement the Amendment and reduce the number of planning permit applications generated by the new flood provisions.

5.4 Recommendation

The Panel recommends:

- 7. Amend the Schedule to Clause 74.02 (Further Strategic Work) to include the following:**
 - a) Prepare Local Floodplain Development Plans to provide a performance-based approach for decision making that reflects local issues and best practice, including flood risk assessment, in floodplain management.**
 - b) Prepare Schedules to the Floodway Overlay and Land Subject to Inundation Overlay to introduce exemptions for low risk buildings and works to minimise permit triggers based on the flood risk according to the projected flooding depth.**

Appendix A Submitters to the Amendment

No.	Submitter
1	Barry and Eileen Sullivan
2	Owen and Agnes Maslen
3	Glen and Maryanne Owen
4	Chae Douglas
5	Dean and Ellen Fleming
6	Pauline Cooper
7	Rob Cannon
8	Bradley Bull and Nikkyta Arundell
9	Neil Smith
10	T Cleverley and S Atherton
11	John Welch
12	G Mollenuxy
13	Drumoak Pty Ltd
14	Paul Gardner
15	Harold and Kathleen Giblin
16	Ian Bail
17	James and Maureen Barrant
18	Trevor Martin, Phillip Butler and Peter Bishop
19	Peter Lafferty
20	Stephen Timms
21	Glenelg Hopkins Catchment Management Authority

Appendix B Parties to the Panel Hearing

Submitter	Represented by
Warrnambool City Council	Julie McLean, Coordinator City Strategy, who called expert evidence on: - Flood modelling from Tim Morrison of Catchment Simulation Solutions Pty Ltd.
Glenelg Hopkins Catchment Management Authority	Sheree Kearns, Senior Environmental Engineer
Glen and Maryanne Owen	Alastair Davies of Davies Simpson
Paul Gardner	Alastair Davies of Davies Simpson
Pauline Cooper	
G Mollenuxy	Brendan Howard of Urbanomics Town Planning
Peter Bishop, Phillip Butler, Trevor Martin	
John Welch	
Drumoak Pty Ltd	Brian Hancock
Stephen Timms	

Appendix C Document list

No.	Date	Description	Provided by
1	undated	Warrnambool C205warr Map Book	Warrnambool City Council (Council)
2	23/3/22	Warrnambool C205warr Panel Directions and Timetable Version 1	Planning Panels Victoria (PPV)
3	24/4/22	Drone footage	Drumoak Pty Ltd
4	11/4/22	Warrnambool C205warr Timetable Version 2	PPV
5	14/4/22	Warrnambool C205warr Flood Modelling Peer Review Expert Opinion Report April 2022	Council
6	19/4/22	Council submission, with Attachments (Documents 7-9)	“
7	“	Attachment A: Chronology of Events	“
8	“	Attachment B: Fact Sheet	“
9	“	Attachment C: Council Report 7 February 2022	“
10	20/4/22	Warrnambool C205warr Distribution List update (Version 2)	PPV
11	“	Pauline Cooper submission	P Cooper
12	22/4/22	Glenelg Hopkins Catchment Management Authority submission (Submitter 21)	GHCMA
13	29/4/22	Further Panel Directions	PPV
14	18/5/2022	Revised mapping 20 Botanic Road, Warrnambool	Council
15	“	Revised mapping 120 Bromfield Street, Warrnambool	“
16	“	Revised mapping 138 Bromfield Street, Warrnambool	“
17	“	Revised mapping 2-18 Daltons Road, Warrnambool	“
18	“	Revised mapping 32 Dooley Street, Warrnambool	“
19	“	Amended schedule to Clause 74	“
20	1/6/2022	Further submission 32 Dooley Street, Warrnambool	A Davies
21	“	Further submission 138 Bromfield Street, Warrnambool	“
22	“	Further submission 20 Botanic Road, Warrnambool	S Timms
23	6/6/2022	Further Panel Directions	PPV
24	7/6/2022	Response to further Directions	Council and GHCMA
25	8/6/2022	Panel correspondence re close of Hearing	PPV

Appendix D Minor incursion sites for removal from LSIO

Address	
1 Adam Court, Warrnambool	31 Evelyn Crescent, Warrnambool
4 Breton Street, Warrnambool	18 Garden Street, Warrnambool
1/9 Breton Street, Warrnambool	14 Garden Street, Warrnambool
2/9 Breton Street, Warrnambool	31 Garden Street, Warrnambool
11 Breton Street, Warrnambool	4-9 La Bella Court, Warrnambool
2/15 Breton Street, Warrnambool	9 La Bella Court, Warrnambool
15 Breton Street, Warrnambool	11 Medinah Close, Warrnambool
16 Breton Street, Warrnambool	43 Moonah Street, Warrnambool
26 Breton Street, Warrnambool	45 Moonah Street, Warrnambool
44 Breton Street, Warrnambool	142 Moore Street, Warrnambool
46 Breton Street, Warrnambool	154 Moore Street, Warrnambool
47 Breton Street, Warrnambool	1/17 Mortlake Road, Warrnambool
54 Breton Street, Warrnambool	1 Newry Court, Warrnambool
59 Breton Street, Warrnambool	28 Queens Road, Warrnambool
61 Breton Street, Warrnambool	52 Queens Road, Warrnambool
2 Brolga Street, Warrnambool	10 Rogers Avenue, Warrnambool
15 Brolga Street, Warrnambool	9 Roslyn Close, Warrnambool
48 Cherlin Road, Warrnambool	1 Sapphire Court, Warrnambool
6 Dunlea Court Warrnambool	2 Truro Court, Warrnambool
1/4 Evelyn Crescent, Warrnambool	15 Tulsa Close, Warrnambool
5 Evelyn Crescent, Warrnambool	88 Wangoom Road, Warrnambool
29 Evelyn Crescent, Warrnambool	