

Planning Panels Victoria

Ballarat Planning Scheme Amendment C217ball Ballarat 11 Waterways Flood Study

Panel Report

Planning and Environment Act 1987

5 October 2026

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 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 Panels Victoria acknowledges the Wurundjeri Woi Wurrung People as the traditional custodians of the land on which our office is located. We pay our respects to their Elders past and present.

Planning and Environment Act 1987

Panel Report pursuant to section 25 of the PE Act

Ballarat Planning Scheme Amendment C217ball

Ballarat 11 Waterways Flood Study

5 October 2026



Gabby McMillan, Chair



Simonne Eldridge, Member

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Glossary and abbreviations

AEP	Annual Exceedance Probability
Alfred Square	Alfred Square Pty Ltd
Alfred Square land	1 and 1A Curtis Street, Shop 1/1 to 3/1 Curtis Street and 61 Curtis Street, Ballarat
Amendment	Ballarat Planning Scheme Amendment C217ball
ARR 2019 Version 4.1	Australian Rainfall and Runoff 2019 Version 4.1
ARR 2019 Version 4.2	Australian Rainfall and Runoff 2019 Version 4.2
Ballarat CBD	Ballarat Central Business District area as described by the drainage experts and includes land generally bounded by Mair Street and Eastwood Street (as shown in Figure 14)
BMO	Bushfire Management Overlay
CCMA	Corangamite Catchment Management Authority
Council	Ballarat City Council
DEECA	Department of Energy, Environment and Climate Action
Development Guidelines	Guidelines for Development in Flood-Affected Areas, 2016
DNRE Advisory Note	Advisory Notes for Delineating Floodways, DNRE, 1998
DTP	Department of Transport and Planning
EAO	Environmental Audit Overlay
Flood Study	Ballarat 11 Waterways Flood Study, Water Technology Pty Ltd, July 2025
Floodplain Strategy	Victorian Floodplain Management Strategy, 2016
Floodway Overlay	Floodway Overlay Schedule 2
Housing Strategy	Ballarat Housing Strategy 2041
Integra	Integra Pty Ltd
Integra land	Lot 2 Ballarat-Carngham Road, Alfredton, 271 and 301 Ballarat-Carngham, Bunkers Hill and Lot 2 Ross Street, Bonshaw
LSIO	Land Subject to Inundation Overlay Schedule 2
MPS	Municipal Planning Strategy
PE Act	<i>Planning and Environment Act 1987</i>
Planning Scheme	Ballarat Planning Scheme
PPF	Planning Policy Framework

PPN12	Planning Practice Note 12: Applying the Flood Provisions in Planning Schemes
Practitioner's Guide	A Practitioner's Guide to Victorian Planning Schemes Version 7, June 2024
RCP	Representative Concentration Pathway
RCZ	Rural Conservation Zone
Rodney Ventures	Rodney Ventures Pty Ltd
Rodney Ventures Land	211-213 Elsworth Street, Canadian
RORB	Run Off Routing on Burroughs
SBO	Special Building Overlay Schedule 1
Summary Report	Ballarat 11 Waterways Flood Study - Summary Report, Water Technology, July 2025
TUFLOW	Two-Dimensional Unsteady Flow
UDIA	Urban Development Institute of Australia, Victoria
VCAT	Victorian Civil and Administrative Tribunal
VPO	Vegetation Protection Overlay
VPP	Victoria Planning Provisions
Water Technology	Water Technology Pty Ltd

Overview

Amendment summary

The Amendment	Ballarat Planning Scheme Amendment C217ball
Common name	Ballarat 11 Waterways Flood Study
Brief description	Implementation of the Ballarat 11 Waterways Flood Study 2025 through the application of the Floodway Overlay, Land Subject to Inundation Overlay and Special Building Overlay
Subject land	Refer Figure 1 and Appendix A
The Proponent	Ballarat City Council
Authorisation	26 February 2026 with 7 conditions
Exhibition	29 April to 29 May 2026
Submissions	Number of Submissions: 66 Opposed: 63

Panel process

The Panel	Gabby McMillan (Chair), Simonne Eldridge
Directions Hearing	By video, 3 August 2026
Panel Hearing	In person and by video at Ballarat Town Hall on 31 August, 1, 2 and 4 September and Planning Panels Victoria on 7 and 8 September 2026
Site inspections	Unaccompanied, 3 September 2026
Parties to the Hearing	Ballarat City Council represented by Greg Tobin and Aaron Shrimpton of Harwood Andrews, who called expert evidence on: - Flooding and hydrology from Ben Hughes of Water Technology - Flooding and hydrology from Christine Lauchlan Arrowsmith of Streamology Corangamite Catchment management Authority represented by Dr Geoff Taylor Urban Development Institute of Australia, Victoria represented by Eliza Minney, Jackson Zaal and Kerry Wilkinson Rodney Ventures Pty Ltd represented by Stephanie Mann of Counsel instructed by Andrea Towson of Gadens, who called expert evidence on: - Drainage and hydrology from Rob Swan of HARC - Economics from Rhys Quick of Urbis Alfred Square Pty Ltd represented by John Cicero of Best Hooper who called expert evidence on: - Drainage and hydrology from Nina Barich of Incitus Pty Ltd Integra represented by John Cicero of Best Hooper Lewis Family Trust (Submitter 7) Submitter 6 Submitter 10

Panel process

Submitter 14
Submitter 18
Submitter 34
Submitter 37
Submitter 65
Submitter 66

Citation	Ballarat PSA C217ball [2026] PPV
Date of this report	5 October 2026

Executive summary

Ballarat Planning Scheme Amendment C217ball (the Amendment) seeks to implement the *Ballarat 11 Waterways Flood Study, Water Technology Pty Ltd, July 2025* (Flood Study) through the application of flood controls including the:

- Floodway Overlay and Land Subject to Inundation Overlay (LSIO) to areas identified at risk of riverine flooding
- Special Building Overlay to manage urban areas identified at risk of stormwater flooding.

The Amendment assessed 11 waterways within the City of Ballarat and affects 4,260 properties located in the Yarrowee River Catchment. This area is a major sub catchment within the upper Barwon River system and drains a significant portion of the Ballarat urban area.

The Amendment has been prepared by the Ballarat City Council (Council) in partnership with the Corangamite Catchment Management Authority (CCMA).

Following exhibition of the Amendment 67 submissions were received, most of these opposing the Amendment. The key issues raised in submissions included:

- Flood Study methodology and accuracy
- overlay mapping accuracy and extent
- property impacts including on future use and development, property values and insurance premiums.

Strategic basis for the Amendment

There is strong legislative and policy support for the Amendment. This is particularly the case with the recent strengthening of climate considerations in the *Planning and Environment Act 1987* and Ministerial Direction 22 (Climate change considerations).

Clause 13.03-1S (Floodplain management) of the Ballarat Planning Scheme directs planning authorities and floodplain managers to identify the flood hazard, using the best available information. The Panel is satisfied that the Amendment is based on the best available flood information and this information should be reflected in the Planning Scheme.

It is important to include a permit trigger where the flood hazard exists. It would not be good planning to defer the Amendment for 'better' information, as the Flood Study is sufficiently robust to inform the Amendment.

Flood modelling and accuracy

The methodology, inputs and assumptions used in the Flood Study are appropriate for its municipal-scale purpose. All four drainage experts agreed that the Flood Study provides an appropriate basis for the Amendment and does not need to be updated.

Specifically, the Panel supports the use of:

- ARR 2019 Version 4.1 and 2100 RCP8.5 climate change scenario as the relevant guidance documents at the time the Flood Study was prepared
- terrain data and model resolution

- representing the hydraulic influence of buildings and other urban features through land-use-based roughness values.

The Panel accepts that the hazard criteria input (including flood depth, velocity and depth multiplied by velocity) provide an objective and consistent basis to identify flood hazard across the Flood Study area.

The Panel accepts that some refinement was necessary to convert the grid-based model outputs into boundaries suitable for inclusion in the Ballarat Planning Scheme (Planning Scheme). The smoothing and clipping process undertaken is appropriate for preparing municipality-wide mapping.

Principles for translating modelling into the overlays

As matter of principle the appropriate flood control for any land should be driven by the hazard, source and function of the flood (hazard-based approach). This is the most objective and consistent measure of the flood extent and behaviour to inform the overlay mapping at the strategic planning stage. To adopt a more subjective (policy-based approach) at a municipal or catchment scale would not be appropriate, nor would it be consistent with State planning policy or Planning Practice Note 12 (Applying the Flood Provisions in Planning Schemes).

However, the hazard-based approach can be quite blunt in some circumstances and could lead to outcomes which are inconsistent with the planning policy framework. For this reason, the Panel accepts that in limited circumstances refinement of the hazard-based mapping (and selection of the most appropriate flood control) through a 'policy-based' lens may be required to avoid perverse outcomes.

Any re-assessment of the hazard-based mapping should only be triggered in circumstances where:

- The overlays that result from the hazard-based approach will clearly restrict use and/or development in a manner that is inconsistent with the purpose of the underlying zoning and policy direction for the site.
- Where the vulnerability of the future community, buildings and infrastructure is known, with a high degree of certainty at the time the flood controls are proposed to be introduced (that is, at the strategic planning stage).
- There are sufficient residual planning controls in place to mitigate the flood hazard at the permit application stage (having regard to the information known about the built form conditions, infrastructure and community).

Common issues

Impact on insurance, property values and development opportunities

The Council and the CCMA have a responsibility of ensuring the Planning Scheme identifies flood hazard. The statutory agencies have applied an objective hazard-based criteria derived from outputs of the Flood Study (which has been supported by all drainage experts). The mapping reflects existing conditions and recognises probability of land being inundated in certain rainfall and storm events. In preparing this Amendment, Council and the CCMA are meeting their responsibilities. The proposed flood controls are a proportional regulatory response to the flood hazard that already

exists. The Floodway Overlays will not unreasonably impact insurance, property values and development opportunities.

Infrastructure improvements as a flood mitigation measure

The Panel acknowledges the concerns of submitters in relation to the capacity of drainage infrastructure, particularly in locations such as Whitefield Street where there is currently no constructed road, kerb or channel. However, the flood controls need to be based on the hazard that exists today and any infrastructure that influences riverine flows. This Amendment does not replace the role of Council in infrastructure provision, maintenance or upgrade – this will continue to be addressed through separate capital works and asset management processes.

Site specific issues

The Panel has applied the translation principles (discussed in Chapter 4.1 of this report) to specific sites and reached the following conclusions:

Alfred Square land

- The Floodway Overlay should be removed from the land at 1 and 1A Curtis Street, Shop 1/1 to 3/1 Curtis Street and 61 Curtis Street, Ballarat and replaced with the LSIO.

Rodney Ventures land

- The Floodway Overlay mapping at 211-213 Elsworth Street, Canadian is appropriate.

Integra land

- The Floodway Overlay should be replaced with the LSIO on Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A)
- Further work is required before the Floodway Overlay can be removed from the land at 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C). Specifically, the Council should:
 - should review flood control mapping against the planning principles identified at Chapter 4.1 of the report, particularly in relation to the certainty of future land use and development
 - compare or distinguish the approach on these sites to other sites in rural settings, where the Floodway Overlay has not been revisited or removed
- No change is required to the flood control mapping at Lot 1 PS928934 Ross Creek Road, Bonshaw (Bonshaw Site).

Individual sites

- The flood control mapping is appropriate at:
 - 402-404 Main Road, Golden Point
 - 107 Hickman Street, Ballarat
 - 1 Boyd Court, Canadian
 - 18 Canadian Springs Drive, Canadian (based on the information available at this time)
 - 13 Whitefield Street, Blackhill
 - 21 Mimosa Avenue, Alfredton

- The flood control mapping is not appropriate at 425 Richards Street, Canadian. The LSIO should be removed from that land.

Other issues

Most of the drafting and mapping changes shown in the Version 1 and Version 2 Amendment documents are appropriate. The only change not supported by the Panel (as outlined above) is the deletion of the Floodway Overlay from 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C).

It may be appropriate for Council to conduct a policy-based review of the Floodway Overlay mapping of the land zoned Commercial 1 Zone in the Ballarat CBD based on the principles outlined in Chapter 4.1.

Recommendations

Based on the reasons set out in this report, the Panel recommends that Council:

- 1. Adopt Ballarat Planning Scheme Amendment C217ball as exhibited with the changes recommended in this report.**

Floodway Overlay

- 2. Amend the Floodway Overlay Schedule 2 mapping to remove its application from the land at:**
 - **1, 1A, Shop 1/1, Shop 2/1m Shop 3/1 and 61 Curtis Street, Ballarat (Alfred Square land).**
 - **Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A) (as shown in the Version 1 Amendment documents – Document 49).**

Land Subject to Inundation Overlay

- 3. Amend the Land Subject to Inundation Overlay Schedule 2 mapping so:**
 - **it applies to the part of the land at 1, 1A, Shop 1/1, Shop 2/1m Shop 3/1 and 61 Curtis Street, Ballarat (Alfred Square land) that will be removed from the Floodway Overlay Schedule 2.**
 - **it applies to the land Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A) that will be removed from the Floodway Overlay Schedule 2**
 - **it does not apply to land at 425 Richards Street, Canadian**
 - **it does not apply to the 140 properties shown in the Version 1 Amendment documents (resulting from the updated clipping process)**
 - **it is reduced and realigned at 36 Ross Creek Road, Bonshaw (as shown in the Version 1 Amendment documents)**
- 4. Amend the Land Subject to Inundation Overlay Schedule 2 to include the following decision guideline:**

The following decision guidelines apply to an application for a permit under Clause 44.04, in addition to those specified in Clause 44.04 and elsewhere in the scheme which must be considered, as appropriate, by the responsible authority:

- ***The flood risk report.***

Further work

The Panel recommends that Ballarat City Council undertake further work to determine if the Floodway Overlay can be removed from the land at 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C). That work should include:

- **a review of the flood controls against the principles identified at Chapter 4.1 of this report that outline circumstances when the hazard-based mapping approach could be revisited**
- **a comparison of the approach on this land against other sites affected by this Amendment in rural settings, where the Floodway Overlay has not been revisited or removed.**

1 Introduction

1.1 The Amendment

(i) Amendment description

The purpose of the Amendment is to implement the findings of the Ballarat 11 Waterways Flood Study, Water Technology Pty Ltd, July 2025 (Flood Study) which comprises:

- Summary Report.
- 8 Flood mapping project hydrology and hydraulics reports applying to the 11 waterways:
 - Little Bendigo Creek & Hit or Miss Gully
 - Kensington Creek
 - Redan Creek
 - Bonshaw Creek
 - Canadian Creek and Tributaries
 - Yarrowee River and Gnarr Creek
 - Warrenheip Creek and Ryans Drain
 - The Chase Waterway.

Specifically, the Amendment proposes to:

- apply the Floodway Overlay Schedule 2 (Floodway Overlay), the Land Subject to Inundation Overlay Schedule 2 (LSIO) to land identified at risk of riverine flooding
- apply the Special Building Overlay Schedule 1 (SBO) to urban areas identified at risk of stormwater flooding
- add the Ballarat 11 Waterways Flood Study - Summary Report, Water Technology, July 2025 (Summary Report) as a background document in Clause 72.08.

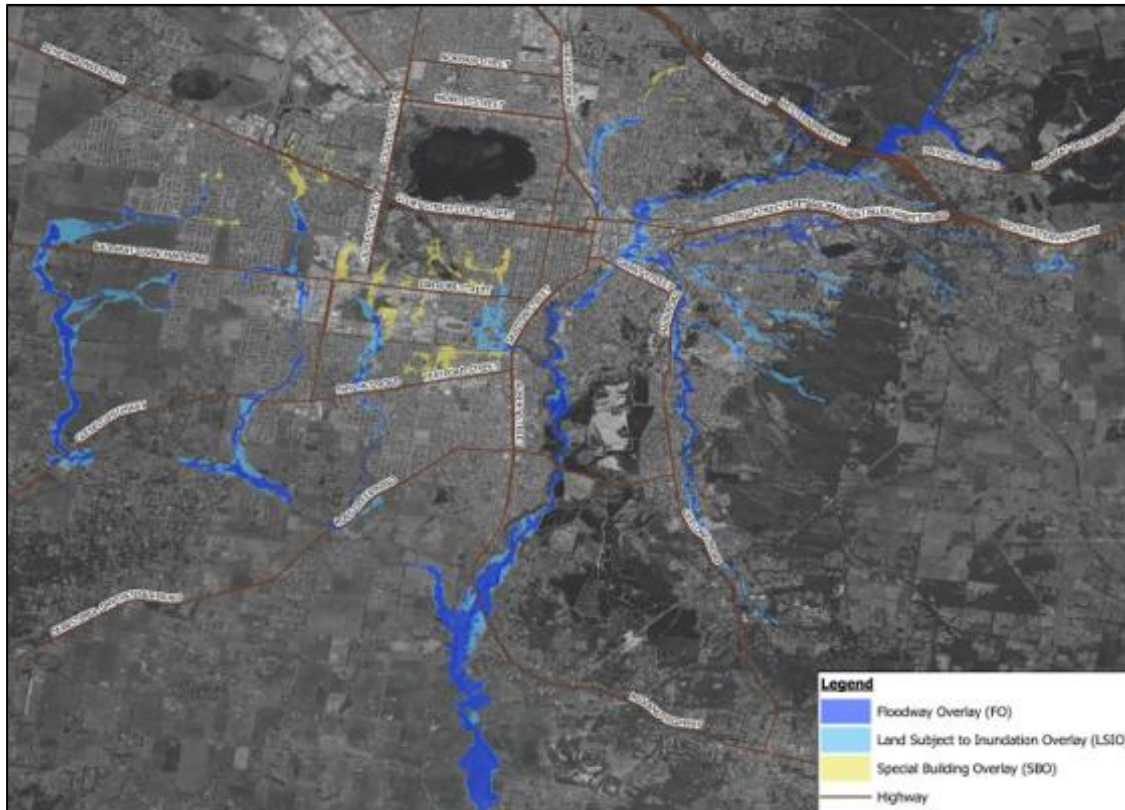
Ballarat City Council (Council) prepared the Amendment and is the planning authority.

(ii) The subject land

The Amendment applies to land in the Yarrowee River Catchment identified in the Flood Study as being at risk of riverine or urban stormwater flooding (Figure 1 and Appendix A).

The Yarrowee River Catchment is a major sub catchment within the upper Barwon River system and drains a significant portion of the Ballarat urban area. The Yarrowee River flows south through Ballarat Central, Sebastopol and Delacombe before joining the Leigh River.

The Floodway Overlay, LSIO and SBO are based on a design flood event that has a 1 per cent chance of occurring in any given year, known as the 1 per cent Annual Exceedance Probability (AEP). They have been based on climate change projections to 2100 under a Representative Concentration Pathway (RCP) 8.5 (high emissions) climate change scenario.

Figure 1 Subject land

Source: Explanatory Report

The Amendment impacts 4,260 properties across the 11 waterway catchments. The catchments are shown in more detail in Appendix A of this report.

Of the affected properties:

- 1,747 are within the Floodway Overlay
- 2,676 within the LSIO
- 1,078 within the SBO

(noting that some properties may be affected by more than one Overlay).

The Ballarat suburbs impacted by the Floodway Overlay and LSIO include a mix of residential, commercial, industrial, and rural land uses.

The Explanatory Report identifies:

Ballarat Central, Bakery Hill and Soldiers Hill are characterised by residential, commercial and heritage precincts, while suburbs such as Alfredton, Lucas and Winter Valley are undergoing significant residential growth.

Sebastopol, Delacombe and Warrenheip include industrial and commercial zones supporting business activity in addition to residential areas. Outer suburbs including Napoleons, Ross Creek and Durham Lead support rural and agricultural uses with some rural residential developments.

Historical areas such as Eureka and Golden Point reflect a meeting point between Ballarat's gold rush heritage and residential areas. Canadian, Black Hill and Mount Clear include residential areas with large areas of natural, open space.

Growth areas, particularly in Ballarat's west are seeing increasing urban expansion, particularly towards Smythes Creek, Bonshaw and Cambrian Hill.

The Explanatory Report identifies that the SBO is to be applied:

... generally within residential areas in the upper reaches of the Bonshaw, Gnarr, Kensington and Redan Creeks and The Chase Waterway, except for the industrial and mixed-use areas in Delacombe and Alfredton affected by overland flows in the upper reaches of the Redan and Bonshaw Creeks.

1.2 Background

The Amendment was prepared in consultation with the CCMA which is the relevant floodplain management authority.

Council provided a chronology of events which is summarised in Table 1.

Table 1 Chronology of events

Date	Event
April 2017	Council resolved to initiate the Ballarat 11 Waterways Project
2017	Technical Review by DEECA (formerly DELWP) Panel (2017) Kensington Creek Methodology
2017 - 2019	Initial flood modelling
2018	Review of report outputs by Mr Neil Craigie
2019	Yarrowee River Hydrological Calibration and Losses Review by Mr Tony Ladson
2022	Identified the initial flood mapping required updates due to changes in flood estimation guidelines ARR2019 and updated terrain data and ongoing development in the catchment.
2023	CCMA determines 1% AEP 2100 RCP8.5 planning event to underpin overlays. Update to the flood modelling initiated. Hydrologic model inputs finalised in August 2023
June – July 2024	Community engagement on updated modelling
July 2025	Flood Model data inputs for Redan and Canadian Creek and Tributaries updated due to substantial missing drainage data raised during consultation and models were re-run.
29 July 2025	Final Flood Study completed
Oct – Nov 2025	All draft planning scheme documents and flood model data made available to the community prior to Planning Delegated Committee meeting
3 Dec 2025	Council adopts Flood Study
26 Feb 2026	Amendment authorised for preparation with 7 conditions relating to: - updates to the Floodway Overlay schedules - confirmation of CCMA support for the updated flooding schedules - minor updates to Clauses 72.03 and 72.08 schedules - minor updates to the Explanatory Report and Instruction Sheet. Council advised these conditions were satisfied in the exhibited documents.
29 April - 29 May 2026	Amendment exhibited

1.3 Procedural issues

(i) Flood modelling data

Before the Directions Hearing Rodney Ventures Pty Ltd (Rodney Ventures) requested flood modelling data and information that informed the Flood Study be provided to its drainage expert. Council agreed to the request and provided the modelling data to the drainage experts.

(ii) Late requests to be heard

Alfred Square Pty Ltd (Alfred Square) and Submitter 65 both lodged late requests to be heard at the Hearing. The Panel agreed to both requests.

1.4 The Panel's approach

A total of 67 submissions (including late submissions) were received to the exhibited Amendment. Most submissions opposed the Amendment, however the CCMA supported the Amendment.

The key issues raised in the opposing submissions were:

- Flood Study modelling methodology and accuracy
- translation of the modelling into the overlay controls, including:
 - the application overlays to shallow or low-level inundation areas
 - overlay mapping accuracy and extent
- property impacts including on future use and development, property values and insurance premiums
- implications of existing drainage infrastructure and maintenance.

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 considered all written submissions made in response to the exhibited Amendment, observations from site visits, and submissions, evidence and other material presented to it during the Hearing. 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:

- Strategic issues
- Technical issues:
 - Flood Study methodology
 - Delineating flood extent and hazard
- Applying the flood controls:
 - Translation principles
 - Common issues
 - Site specific issues
 - Other issues

1.5 Experts

Several parties called experts on flooding and hydrology in addition to economic evidence (refer Table 2).

A meeting of flooding, hydrology and drainage experts was conducted at the direction of the Panel. Their joint expert statement was provided to parties before the commencement of the Hearing (Document 48).

Table 2 Experts

Expert	Party calling expert	Document Number
Flooding, hydrology and drainage experts		
Ben Hughes of Water Technology	Council	Doc 33
Christine Lauchlan Arrowsmith of Streamology	Council	Doc 34
Nina Barich of Incitus Pty Ltd	Alfred Square	Doc 42
Rob Swan of HARC	Rodney Ventures	Doc 35
Economic expert		
Rhys Quick of Urbis	Rodney Ventures	Doc 36

1.6 Versions of the Amendment

The Panel directed Council to circulate a Version 1 of the Amendment documentation before the commencement of the Hearing, and a final version with its closing submissions. Council circulated:

- Version 1 Amendment documents (with mapping changes) (Document 49)
- Version 2 Amendment documents (with drafting changes) (Document 65).

The Version 1 Amendment documents incorporated changes identified by Council, the CCMA and Water Technology which refined the overlay maps through a 'clipping' process. Clipping occurs where there was a minor incursion of the LSIO on a property and this land is 'clipped' out of the control mapping. The incursion threshold was originally 5 square metres but was increased to 10 square metres after exhibition. The clipping process is discussed in more detail in Chapter 4.2. The Version 1 Amendment documents show updated mapping in draft format, including:

- the removal of 140 properties from the proposed LSIO following the updated clipping process. Two of these properties were the subject of submissions; from submitter 12 and submitter 18.
- reduction in the extent of the LSIO in response to updated technical information about infrastructure at 36 Ross Creek Road, Bonshaw (submitter 48)
- replacement of the Floodway Overlay with the LSIO on two properties controlled by Integra (discussed in Chapter 4.3.4).

The Version 2 Amendment documents were presented by Council on the last day of the Hearing, incorporating decision guidelines into the LSIO in response to submissions and evidence.

Parties were given the opportunity to provide written comments on the Version 2 Amendment documents following the close of the Hearing. No parties elected to provide comments.

The Panel discusses the changes proposed in the Version 1 and Version 2 Amendment documents in Chapter 4.4.

The Panel's recommendations use Council's Exhibited Amendment documents as the starting point.

2 Strategic issues

2.1 Planning context

This chapter identifies planning context relevant to the Amendment. Appendix C highlights key imperatives of relevant provisions and policies not identified in this chapter including details of the Floodway Overlay, LSIO and SBO purpose and application provisions.

Table 3 Planning context

	Relevant references
Victorian planning objectives	- section 4 of the PE Act
Municipal Planning Strategy	- Clause 02.03-3 (Environmental Strategy)
Planning Policy Framework	- Clauses 11.01-1S (Settlement), 11.01-1S (Settlement – Regional Victoria), 11.02-1S (Development capacity), 11.03-1L-1 (Ballarat CBD) - Clause 12.03-1S (River and riparian corridors, waterways, lakes, wetlands and billabongs) - Clauses 13.01-1S (Natural hazards and climate change), 13.03-1S (Floodplain Management) - Clause 19.03-3S (Integrated water management)
Other planning strategies and policies	- Plan for Victoria - Victorian Floodplain Management Strategy (Department of Environment, Land, Water and Planning, 2016) - Ballarat Housing Strategy 2041 (Housing Strategy)
Planning scheme provisions	- Floodway Overlay - Land Subject to Inundation Overlay - Special Building Overlay
Ministerial directions	- Ministerial Direction 11 (Strategic Assessment of Amendments) - Ministerial Direction 22 (Climate change considerations)
Planning practice notes and guidance	- Planning Practice Note 12: Applying the Flood Provisions in Planning Schemes (PPN12) - Planning Practice Note 46: Strategic Assessment Guidelines, September 2022 - Guidelines for Development in Flood-Affected Areas, DELWP, 2019 - A Practitioner's Guide to Victorian Planning Schemes Version 7, June 2024 (Practitioner's Guide) - Victorian Floodplain Management Strategy, 2016 (Floodplain Strategy)

2.2 Strategic justification

(i) Relevant Policy and guidance

Clause 13.03-1S (Floodplain management) sets out the objective:

To assist the protection of:

- Life, property and community infrastructure from flood hazard, including coastal inundation, riverine and overland flows.
- The natural flood carrying capacity of rivers, streams and floodways.
- The flood storage function of floodplains and waterways.
- Floodplain areas of environmental significance or of importance to river, wetland or coastal health.

It includes the strategies:

Identify land affected by flooding, including land inundated by the 1 in 100 year flood event (1 per cent Annual Exceedance Probability) or as determined by the floodplain management authority in planning schemes.

Avoid intensifying the impact of flooding through inappropriately located use and development.

The relevant policy document is the *Victorian Floodplain Management Strategy* (Floodplain Strategy). The Floodplain Strategy is a State Government strategy that clarifies the roles and responsibilities of government agencies and authorities involved in flood management. In relation to planning, the strategy explains:

Enhanced effort in municipal planning, supported by increased knowledge of flood hazards, will go a long way towards securing resilience to floods. 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.

PPN12 provides practical advice and guidance for local councils, planners, and other stakeholders on how to apply flood related provisions within local planning schemes effectively.

PPN12 requires the flood controls to:

- be based on best available data
- be proportionate to the level of risk
- implemented with appropriate engagement with affected stakeholders
- be evidence-based and context specific.

The *Guidelines for Development in Flood-Affected Areas* (Development Guidelines) provide a comprehensive framework for assessing and managing development proposals in flood prone regions of Victoria. These guidelines aim to ensure that development is compatible with flood risks, thereby protecting human life, property, and the environment.

(ii) The issue

The issue is whether the Amendment is strategically justified.

(iii) Submissions

Council submitted that there is significant legislative and policy support for the Amendment and identified the following:

- section 6(2)(e) provides that a planning scheme may:
...regulate or prohibit any use or development in hazardous areas or in areas which are likely to become hazardous.
- Ministerial Direction 22¹ (Climate change considerations) states that a planning authority must have regard to 'the potential coastal, flood and bushfire risks arising from climate change'
- the Floodplain Strategy strongly supports the use of planning controls to manage flood risk and identifies that existing flood risk must be addressed through planning controls
- Action 19 in Plan for Victoria provides that government needs to 'Better communicate and manage flood, bushfire and climate hazards risks'
- PPN12 provides detailed guidance on the application of the flooding provisions and states that flooding is a natural hazard that is to a great degree predictable in terms of location, depth and extent.

Council submitted:

- it was important to introduce controls promptly given the recent Victorian Civil and Administrative Tribunal (VCAT) more recent narrow interpretation of flood risk considerations where there is no flood control in place.
- unless there is an existing flood control, flooding will be an irrelevant matter whatever the Flood Study states about a site or the desirability of considering flood related issues.
- in support of these submissions, Council referenced *Kiyagan v Baw Baw SC* [2025] VCAT 206 (12 March 2025) where the Tribunal refused to join the CCMA (who sought to be joined to argue a range of flooding grounds on the basis of State planning policy). In that decision the Tribunal said:

While the notion that these matters 'ought' to be considered may be attractive, the Council has not identified a basis in the planning scheme to support a conclusion the provisions of the Scheme engage a discretion to be exercised in relation to flooding

The CCMA submitted:

- the Amendment is strategically justified and reflects the best available flood information
- Ballarat has been identified as a priority flood risk area in the Corangamite Regional Floodplain Management Strategy and is subject to both riverine flooding and overland flow/stormwater flooding
- it is important that planning controls reflect current flood information and understanding of flood behaviour so that land use and development decisions appropriately consider flood risk.

Generally, submitters did not contest the strategic justification for the Amendment. Most submitters accepted that flood hazard should be identified. Some submitters, including Rodney Ventures, submitted that the application of the Floodway Overlay was not proportionate to the flood risk (given its restrictive nature) and therefore could compromise other strategy policy objectives (such as the delivery of housing).

¹ Council's main submission referenced Ministerial Direction 19 – this appears to be a typographical error.

(iv) Discussion

There is strong legislative and policy support for the Amendment. This is particularly the case with the recent strengthening of climate considerations in the PE Act and Ministerial Direction 22.

Clause 13.03-1S (Floodplain management) directs planning authorities and floodplain managers to identify the flood hazard, using the best available information. The Panel is satisfied that the Amendment is based on the best available flood information and this information should be reflected in the Planning Scheme.

While the hazard criteria underpinning the flood modelling evolves (discussed in Chapter 4.1), the Panel accepts that authorities need to 'draw a line in the sand' in terms of settling the Flood Study. It is not practical to update the flood modelling on a constant basis as criteria and expectations evolve. There has been sufficient rigour, peer review processes and support from all the drainage experts to conclude the Flood Study has sufficient currency.

It is important to include a permit trigger where the flood hazard exists. It would not be good planning to defer the Amendment for 'better' information, as the Flood Study is sufficiently robust to inform the Amendment.

While the Amendment may have consequence on other policy consideration (including economic implications) the Panel is satisfied the Amendment is a proportionate response to policy. As discussed in Chapter 4.1 as a matter of principle, an objective hazard-based approach to the overlays should be adopted – however if there is an exceptional circumstance a 'policy-based' review may be adopted to ensure the overlay mapping does not result in a perverse planning outcome.

Overall, the Panel is satisfied that, subject to its recommendations, the Amendment will deliver a net community benefit and sustainable development as required by Clause 71.02-3.

(v) Conclusions and recommendation

For the reasons set out in this report, the Panel concludes that the Amendment:

- is supported by, and implements, the relevant sections of the Planning Policy Framework
- is consistent with the relevant Ministerial Directions and Practice Notes
- is well founded and strategically justified
- should proceed subject to addressing the more specific issues raised in submissions as discussed in the following chapters.

The Panel recommends Council:

Adopt Ballarat Planning Scheme Amendment C217ball as exhibited with the changes recommended in this report.

3 Technical issues

3.1 Flood Study methodology

(i) The issue

The issue is whether the methodology used in the Flood Study is appropriate and provides a reliable basis for the Amendment.

(ii) Background

Scope of the Flood Study

The Flood Study was prepared by Water Technology Pty Ltd (Water Technology) on behalf of Council, in partnership with the CCMA. It comprises flood mapping and hazard information for 11 waterways across the municipality and was used to prepare the proposed flood controls.

The Flood Study updated hydrologic and hydraulic models originally developed between 2017 and 2019. The updates responded to development and changes in catchment conditions since the earlier modelling, the availability of updated terrain and drainage information, and updates to the latest Two-Dimensional Unsteady Flow (TUFLOW) software release.

The study assessed a range of flood events and climate change scenarios. It focused on flooding along the 11 waterways and urban areas along main flow paths within each catchment.

Modelling methodology

The Flood Study used Run Off Routing on Burroughs (RORB) hydrologic models to estimate runoff and streamflows generated by rainfall across each catchment. The resulting flows were then applied to TUFLOW hydraulic models to simulate the movement of floodwaters through waterways and surrounding land, including the resulting flood levels, depths, velocities and extents.

The modelling retained the hydrological methodology used for the earlier 2017 to 2019 studies and incorporated relevant updates from *Australian Rainfall and Runoff 2019 Version 4.1* (ARR 4.1). The RORB and TUFLOW models were updated to reflect changes since the earlier studies.

The study modelled the 20, 10, 5, 2, 1 and 0.5 per cent Annual Exceedance Probability (AEP) events. Climate change scenarios were also modelled for the 1 per cent AEP event. Intensity-frequency-duration rainfall depths were obtained from the Bureau of Meteorology, while areal reduction factors and temporal patterns were sourced from the ARR Data Hub.

Inputs and assumptions

The RORB models represented catchment and sub-catchment boundaries, drainage reaches, land use, impervious surfaces, rainfall depths and patterns, rainfall losses and catchment routing characteristics. The models were reviewed and updated to reflect

development since the earlier studies, including changes to impervious areas and drainage reaches.

The TUFLOW models were largely based on Light Detection and Ranging terrain data captured in October 2019, supplemented where available by more recent digital elevation models representing completed works. The hydraulic models used grid cell sizes of two or three metres, depending on the scale of each model and the characteristics of its flow paths. Constructed channels were represented using sub-grid sampling or one-dimensional network features where these provided a more suitable representation than the general two-dimensional model grid.

The models included relevant drainage infrastructure, including culverts, pipes and pits. Council's drainage asset information was reviewed and combined into pipe and pit datasets. Where information was incomplete, missing dimensions or levels were inferred from site observations, topographic information or engineering judgement. Pipes smaller than 300 millimetres in diameter were generally excluded, as they do not typically form part of the major drainage network.

The models sought to represent infrastructure and development in place by mid-2023, with model updates generally limited to works completed or scheduled for completion by late 2023.

Calibration and verification

The Yarrowee River and Gnarr Creek RORB model was calibrated using streamflow information from the Leigh River at Mount Mercer gauge, the only available flow record within the catchment. Because the gauge was downstream of the flood mapping area, the RORB model was extended to the gauge for calibration.

Three historical events, in August 2010, January 2011 and September 2016, were used for calibration. These events were selected because they represented different flood magnitudes and were sufficiently recent to limit the effect of changes in the catchment. Modelled hydrographs were compared with the recorded hydrographs at Mount Mercer, including their shape, peak and timing.

A flood frequency analysis of the annual peak-flow record at Mount Mercer was also used to verify the adopted design parameters. The design flows produced by the RORB model closely aligned with those derived from the flood frequency analysis.

The calibrated parameters informed the design modelling for the Yarrowee River and Gnarr Creek. In the absence of equivalent streamflow information for the other catchments, the calibrated rainfall-loss parameters also informed the modelling of the ungauged catchments.

Climate Change Allowance

The Flood Study assessed the effects of increased rainfall intensity associated with climate change on the 1 per cent AEP event. It modelled projected conditions to 2100 under RCP4.5, RCP6 and RCP8.5.

The climate change projections available from the ARR Data Hub extended to 2090. The rainfall intensity factors for 2100 were therefore derived by linear extrapolation.

The flood mapping used to prepare the proposed overlays was based on the 1 per cent AEP event under the RCP8.5 scenario for 2100. RCP8.5 was the highest of the three scenarios modelled and is one of the climate futures considered in ARR 2019 Version 4.1.

Review of the Flood Study

The modelling and reporting were subject to Water Technology's internal review process and several external reviews.

In 2017, a technical panel managed by the Department of Environment, Land, Water and Planning (DELWP) reviewed the methodology applied to the Kensington Creek study and found it technically sound. No specific changes arising from that review are identified.

In 2018, Neil M Craigie Pty Ltd reviewed the study reports and the status of recently constructed or partly constructed stormwater infrastructure. Decisions about whether to include identified infrastructure was deferred until after community consultation.

In 2019, Tony Ladson reviewed the calibration and rainfall losses used for the Yarrowee River and Gnarr Creek model. The review found that locally calibrated parameters were more appropriate than the regional loss values. The modelling of the ungauged catchments subsequently drew on those locally calibrated parameters.

Stantec subsequently reviewed the hydrologic and hydraulic models. Sensitivity testing of an alternative runoff approach for Bonshaw Creek identified only a marginal difference in the number of inundated properties, and the adopted methodology was retained. Stantec's recommended hydraulic-model improvements were incorporated into the final models.

(iii) Evidence and submissions

Several submitters had concerns about whether the Flood Study provided a sufficiently reliable basis for the Amendment:

- Rodney Ventures had concerns with aspects of the terrain data, model resolution and hydraulic assumptions. However, in its closing submissions, Rodney Ventures accepted that Water Technology had accurately modelled the flood conditions and translated the results into the proposed overlays using the selected criteria.
- Alfred Square considered that the modelling did not adequately reflect the physical context and flood mechanism affecting its land, including the Yarrowee River being contained in a culvert beneath the site.
- Integra considered that existing and planned drainage infrastructure had not been adequately represented and that the climate change assumptions overstated the flood extent.
- UDIA had concerns with the currency and completeness of the information underpinning the Flood Study. It submitted that development since the modelling commenced had altered impervious areas, drainage patterns and terrain across several catchments. It also considered that omitting or incorrectly representing piped drainage infrastructure could overstate surface flooding. UDIA separately raised concerns with the climate change assumptions and the use of AAR 2019 Version 4.1 rather than Version 4.2.

- Submitters 7, 37, 39 and 65 considered that the mapped hazard did not reflect observed flooding and local drainage conditions. They referred to flood history, the operation of local drainage infrastructure and whether the mapped flooding resulted from drainage deficiencies rather than riverine flood behaviour.
- Submitters 39 and 65 also had concerns with the assumptions made where drainage information was incomplete and with the effect of the climate change allowance.
- Submitters 37 and 66 considered that local drainage infrastructure, flood mitigation works and development-related drainage changes had not been adequately represented.
- Submitter 34 considered that the terrain model did not accurately represent the levels and physical features of the property.

In the joint expert statement, Mr Hughes, Dr Lauchlan Arrowsmith, Ms Barich and Mr Swan all agreed:

- the Flood Study used standard industry methods and software and was an appropriate basis for the Amendment
- ARR 2019 Version 4.1 was appropriate when the modelling was undertaken
- the climate change allowance was appropriate
- the terrain data and model resolution were suitable for a study of this scale
- the drainage infrastructure included in the modelling was appropriate and typical of similar studies
- the Flood Study did not need to be updated.

The CCMA supported the Flood Study methodology, submitting that the study:

- used contemporary modelling methods, incorporated historical flood information and community input, and had been independently reviewed
- represented the best available flood information for Ballarat and provided a sound technical basis for the Amendment
- the adoption of the 2100 RCP8.5 scenario was consistent with the climate change guidance in ARR 2019 Version 4.1, which applied when the hydrologic modelling was undertaken; these assumptions remained appropriate for long-term planning and flood risk management.

Council submitted:

- the updates to ARR 2019 (from Version 4.1 to Version 4.2) did not justify updating the Flood Study
- it relied on the expert evidence that applying ARR 2019 Version 4.2 would have varying effects across the 11 catchments. If the updated version was used:
 - the modelled flood extents may increase in some locations and decrease in others but were likely to increase overall
 - any updated modelling may therefore identify a greater flood extent than the exhibited mapping.

In response to submissions that the Flood Study did not adequately represent local drainage infrastructure, including road drainage, Council submitted:

- The assumptions adopted in the Flood Study were appropriate. It distinguished between infrastructure relevant to modelling flood behaviour during the one per

cent AEP event and local drainage infrastructure designed to manage more frequent rainfall events.

- The Flood Study was intended to represent existing conditions and future drainage or capital works should not be included until completed. If those works subsequently altered flood behaviour, the flood mapping could be reviewed.
- It was appropriate, given the scale of the Flood Study, to represent the hydraulic influence of buildings and other urban features through the roughness values assigned to different land uses, rather than by modelling each building individually.

(iv) Discussion

The Panel accepts the experts' evidence that the Flood Study was prepared using accepted industry methods and software; the study provides a sound technical basis for the Amendment.

ARR 2019 Version 4.1 was the applicable when the modelling was undertaken. The subsequent release of Version 4.2 does not, of itself, justify revisiting the Flood Study. All four drainage experts agreed that an update was not required.

Applying Version 4.2 could have varying effects across the 11 catchments, including the potential to increase the overall modelled flood extent. Updating the Flood Study is therefore unlikely to address submitters' concerns about the extent of the proposed overlays. There is no justification for delaying the Amendment for further modelling.

The adopted climate change scenario is suitable for a municipal-scale flood study. It was consistent with the guidance applying when the modelling was undertaken and was supported by all four drainage experts. The concerns raised in submissions do not establish that use of the 2100 RCP8.5 scenario makes the Flood Study unreliable.

The terrain data and model resolution are also suitable for the scale and purpose of the Flood Study. Higher-resolution or site-specific modelling may provide additional detail in some locations, but the experts agreed that it was unlikely to materially change the proposed overlays. Property-specific concerns about terrain levels and local physical features are considered in Chapter 4.

Submitters' concerns about the representation of local and road drainage infrastructure are acknowledged. However, the experts agreed that the drainage infrastructure included in the modelling was appropriate and typical of similar studies. It was not necessary to include every local drainage asset to provide a reliable representation of flood behaviour during the 1 per cent AEP event.

Representing the hydraulic influence of buildings and other urban features through land-use-based roughness values was proportionate to the municipal-scale and strategic purpose of the Flood Study. Modelling every building individually was not necessary to establish an appropriate catchment-wide basis for the Amendment.

The exclusion of future drainage and capital works does not undermine the reliability of the Flood Study. Those works should be reflected in the modelling only once completed and their effects on flood behaviour are known. The modelling and overlay mapping can then be reviewed if necessary.

Overall, the concerns raised in submissions do not demonstrate that the methodology, inputs or assumptions used in the Flood Study are inappropriate for its municipal-scale purpose. This conclusion is supported by the agreement of all four drainage experts that the Flood Study provides an appropriate basis for the Amendment and does not need to be updated.

(v) Conclusion

The Panel concludes that the modelling approach is appropriate and adequately represents flood behaviour at the scale required for the Amendment.

3.2 Delineating flood extent and hazard

(i) The issues

The issues are whether:

- the hazard criteria used to delineate the boundary between the Floodway Overlay and LSIO are appropriate
- the smoothing and clipping processes used to refine the mapping are appropriate.

(ii) Background

The Flood Study produced flood depth, velocity and hazard information from hydrologic and hydraulic modelling of the study catchments. The proposed flood control mapping was generated from the one per cent AEP flood event under the 2100 RCP8.5 climate change scenario. The hydraulic models used grid cell sizes of between two and three metres, depending on the scale and characteristics of each catchment. These outputs formed the basis for preparation of the flood controls, including delineation of the Floodway Overlay, LSIO and SBO.

The CCMA recommended, and Council adopted, the following criteria to delineate the boundary between the Floodway Overlay and LSIO:

- flood depth of 0.3 metres
- velocity of 2.0 metres per second
- depth multiplied by velocity of 0.3 square metres per second.

Land meeting any one of these criteria was included within the Floodway Overlay. The remaining modelled flood extent was generally included within the LSIO. An SBO was recommended in selected urban areas where stormwater infrastructure was a significant control on flood behaviour.

The draft overlays were developed in consultation with the Council and the CCMA. In generating the overlays, raw model outputs were smoothed and refined to create plausible floodway and flood fringe boundaries. This included smoothing irregular boundaries, removing protrusions and slivers, addressing isolated patches and marooned islands, and clipping trivial extents to avoid unnecessary permit triggers. The study notes that clipping was undertaken where extents of no more than 5 square metres encroached on land.

(iii) Evidence and submissions

Hazard criteria

The drainage experts agreed that the proposed overlays were generally delineated using modelled flood depth, velocity and depth multiplied by velocity. They also agreed that minor changes were made for practical purposes, and that flood duration, timing and socio-economic factors were not considered when preparing the overlays.

The experts agreed that flood hazard was the primary technical basis for delineating the Floodway Overlay. However, they did not agree on the extent to which broader considerations, some of which extend beyond purely hydraulic assessment, should also influence overlay selection. Noting that these broader considerations primarily sat outside their area of expertise.

Mr Swan's evidence was that the former Department of Natural Resources and Environment's *Advisory Notes for Delineating Floodways* (DNRE Advisory Note), together with PPN12 and ARR 2019, supported consideration of matters beyond depth, velocity and depth multiplied by velocity. These included flood frequency and duration, access and isolation, flood behaviour and the function of the affected land.

Mr Swan and Ms Barich considered that the proposed Floodway Overlay may be more extensive than necessary because the hazard criteria had not been followed by a broader assessment of flood risk. They also considered that using a depth of 0.3 metres to identify high flood hazard was not consistent with industry guidance.

Dr Lauchlan Arrowsmith considered that factors other than flood hazard were not required to delineate the Floodway Overlay. Mr Hughes considered that hazard should provide the initial basis for delineation, with other matters considered at a site-specific level.

Rodney Ventures relied on Mr Swan's evidence and submitted that:

- the 0.3 metre depth criterion resulted in more land being included in the Floodway Overlay than was necessary
- the criteria were safety thresholds used for development assessment rather than criteria designed for strategic overlay mapping
- flood frequency and duration, access and isolation, flood behaviour and the function of the land should also inform delineation
- the LSIO would appropriately manage the flood risk affecting its land.

Rodney Ventures sought a further review of the hazard mapping before the Floodway Overlay and LSIO boundaries were finalised.

Alfred Square submitted that the flood mechanism and function of the affected land should also inform overlay selection. It said the Yarrowee River was contained in a culvert beneath its land, the land did not perform a riverine flood-conveyance function, and the mapped flooding arose from breakout flows and localised low points.

Integra sought greater use of the LSIO rather than the Floodway Overlay. It submitted that the inundation affecting its land could be managed through the LSIO and future stormwater management measures.

Council submitted that the adopted hazard criteria were consistent with established flood mapping practice in Victoria and provided an objective and consistent basis for distinguishing between the Floodway Overlay and LSIO. It relied on the evidence of Mr Hughes and Dr Lauchlan Arrowsmith and the support of the CCMA. All land proposed for inclusion in the Floodway Overlay met at least one of the adopted criteria.

Council submitted that limited weight should be given to Mr Swan's reliance on the DNRE Advisory Note. It noted that the advisory note dated from 1998 and that all the drainage experts had not used them in practice since about 2015. Council relied instead on PPN12, contemporary floodplain guidance and current practice in applying flood controls.

The CCMA supported the hazard-based approach and the criteria it had recommended. It submitted that hazard provided a consistent and objective basis for strategic overlay mapping.

The CCMA distinguished between hazard and risk. It submitted that risk depended on matters including the proposed development, land use, building design, occupancy and mitigation measures, which were more appropriately considered when a development proposal was assessed. It nevertheless considered that the source and function of flooding were relevant to overlay selection.

The CCMA submitted that replacing the Floodway Overlay with the LSIO could create a mismatch between the identified hazard and the planning control. It considered that the LSIO may not adequately recognise higher-hazard flood flows or land performing an important flood-conveyance function.

Refinement of the flood extent and hazard mapping

Submitters 6, 10, 14, 18 and 34 had concerns with the location of the mapped boundaries on their properties. They referred to low modelled flood depths, property levels and local topography and sought removal or property-scale refinement of the overlays. The application of the flood controls to these properties is considered in Chapter 4.

In response to questions raised during the Hearing, Mr Hughes provided a memorandum summarising the smoothing and clipping processes used to convert the Flood Study outputs into planning overlays.

The memorandum explained that Water Technology converted the raster model outputs into polygons using geographic information system software. The resulting boundaries were refined through successive iterations of smoothing to produce a more practical representation of the modelled flood extent. Although the software generated the outputs, professional judgement was applied in determining whether further smoothing was required.

The mapping was then reviewed by Water Technology's Project Manager and Project Director to confirm that the Floodway Overlay criteria had been correctly applied and that the smoothed LSIO reasonably reflected the modelled flood extent.

The memorandum also explained the clipping process. For the exhibited Amendment, Water Technology used VicMap parcel boundaries to divide the LSIO and remove LSIO extents smaller than 5 square metres. The threshold was selected in consultation with

Council and the CCMA to limit the number of properties affected by small areas of LSIO while still accurately reflecting the modelled flood extent.

The clipping process was largely automated, although some manual adjustment was undertaken to produce neater overlay boundaries. Removal or conversion of a small area of Floodway Overlay required separate manual review and adjustment of the adjoining LSIO boundary.

The drainage experts agreed that higher-resolution modelling could provide greater definition in some locations but was unlikely to materially change the overlays they examined.

Mr Hughes considered that the smoothing and clipping processes produced mapping that reasonably reflected the modelled flood extent. However, he was not involved in selecting the revised 10-square-metre clipping threshold and was not aware of a public policy supporting that threshold.

The CCMA submitted that replacing the Floodway Overlay with the LSIO on specific parcels of land could create a mismatch between the identified hazard and the planning control. It considered that the LSIO may not adequately recognise higher-hazard flood flows or land performing an important flood-conveyance function.

Council submitted that smoothing and clipping were appropriate practical measures for translating municipal-scale flood modelling into planning scheme mapping. Post exhibition, Council increased the clipping threshold to 10 square metres and prepared revised mapping (reflected in the Version 1 Amendment documents). It considered that the revised 10 square metre threshold removed minor LSIO encroachments from individual parcels without materially changing the mapped flood extent.

Council distinguished between clipping small areas of LSIO and changing the Floodway Overlay. It submitted that removing or converting an area of Floodway Overlay required separate technical review because of the need to consider the hazard criteria and any consequential adjustment to the adjoining LSIO boundary.

(iv) Discussion

Hazard criteria

The Panel accepts that flood depth, velocity and depth multiplied by velocity provide an objective and consistent basis for identifying flood hazard across a municipality.

Applying the same criteria across the study area avoids overlay boundaries being determined by subjective site-specific judgements at the strategic mapping stage.

The Panel accepts that the 0.3 metre depth criterion can result in land being included in the Floodway Overlay even where the velocity and depth-velocity criteria are not met. This is a consequence of the criteria operating independently and does not, of itself, demonstrate that the Floodway Overlay is inappropriate.

The DNRE Advisory Note identifies a broader range of matters that may be relevant to delineating a floodway, including flood frequency and duration, access, isolation and the function of the affected land. However, the Note predates contemporary flood modelling and are not determinative of how the Floodway Overlay should be delineated. PPN12

does not prescribe a particular numerical methodology or require every factor identified in the DNRE Advisory Note to be incorporated into strategic overlay mapping.

This does not mean that the broader factors identified by Mr Swan are irrelevant. They do not displace hazard as the starting point for strategic mapping.

The Panel accepts the distinction drawn by Council and the CCMA between hazard and risk. Hazard can be identified consistently through strategic flood modelling. Risk depends on additional matters, including land use, occupancy, development form and mitigation measures, which may vary between sites and proposals. Those matters are generally more appropriately considered through the permit process.

The adopted criteria provide an appropriate basis for distinguishing between the Floodway Overlay and LSIO at the strategic level. Whether their application results in the outcome on specific sites is considered in Chapter 4.

Refinement of the flood extent and hazard mapping

The Panel accepts that some refinement was necessary to convert the grid-based model outputs into boundaries suitable for inclusion in the Planning Scheme. Directly reproducing the model-cell boundaries would result in irregular mapping and minor incursions that may have little practical relationship to flood behaviour or the purpose of the controls.

The smoothing process included professional review and was not solely automated. There is no evidence that it materially displaced the modelled flood extent or systematically expanded or reduced the proposed overlays. The fact that higher-resolution modelling could provide greater definition in some locations does not mean the municipal-scale mapping is unreliable or unsuitable for strategic planning.

Likewise, clipping small areas of LSIO from individual parcels is a reasonable practical refinement. Applying an overlay to a very small part of a parcel may create a permit requirement without materially advancing the purpose of the control.

The exhibited 5 square metre threshold was selected by Water Technology in consultation with Council and the CCMA. Although Water Technology did not select the revised 10 square metres, the absence of a prescribed threshold does not make the revised approach inappropriate. The threshold is a practical mapping judgement, and the difference between 5 and 10 square metres is unlikely to materially alter the representation of the modelled flood extent. The Panel accepts that the 10 square metre threshold provides a reasonable means of removing minor LSIO incursions while retaining the integrity of the mapping.

Overall, the smoothing and clipping processes were appropriate for preparing municipality-wide mapping. Site-specific information may justify further refinement in individual cases, but it does not demonstrate a broader deficiency in the process. Those specific sites are considered in Chapter 4.

(v) Conclusions

The Panel concludes that:

- The adopted hazard criteria provide an appropriate catchment-wide basis for delineating between the Floodway Overlay and LSIO.
- The model outputs were appropriately converted, smoothed and reviewed through a clipping process.
- The revised 10 square metre clipping (reflected in the Version 1 Amendment documents) threshold is a reasonable and practical refinement for small areas of LSIO.

4 Applying the flood controls

4.1 Translation principles

(i) The issues

The issues are whether the flood control mapping should:

- reflect a direct translation of the flood modelling (hazard-based approach)
- be refined based on a consideration of broader considerations, such as site context or planning policy objectives (policy-based approach).

(ii) Evidence and submissions

The CCMA submitted:

- the appropriate flood control for any land should be driven by the hazard, source and function of the flood, rather than the degree of flexibility that a particular control may provide
- while modern floodplain management increasingly incorporates risk-based assessment, hazard remains the appropriate foundation for strategic planning
- a hazard-based approach provides a consistent and objective basis for identifying flood affected land
- risk assessment builds upon hazard information and is best applied to the assessment of specific development proposals, rather than as a substitute for strategic overlay delineation
- risk is often development specific and can vary depending on land use, building design, occupancy and mitigation measures
- it did not support the refinement or moderation of the Floodway Overlay in the Ballarat Central Business District (CBD) area (or anywhere else).

In relation to the relevant guidance and thresholds the CCMA submitted:

- It had not relied on a simple 0.5 metre depth threshold to delineate flood control mapping since 2012. It now favours more robust and physically identifiable hazard parameters that reflect flood behaviour (and associated risks to people, property and infrastructure).
- It does not rely on the DNRE Advisory Note to define hazard as this approach has been superseded by contemporary floodplain management guidance and advances in hydrological and hydraulic modelling that now underpins flood studies. The contemporary approach provides a more accurate representation of flood behaviour and the hazard.
- Reliance on the hazard to identify the flood control is consistent with PPN12, which recognises that risk mitigation measures do not replace the identification of the flood hazard when establishing strategic planning controls. The floodway as the 'high hazard' portion of the floodplain where most development is to be avoided.

The CCMA also explained that at the statutory planning stage, proposals are assessed using the hazard information in combination with an assessment of the vulnerability of

future occupants and the consequences of flooding (as set out in the Development Guidelines for Development). These considerations at the permit stage do not change the underlying flood hazard identified in the Flood Study.

Council submitted that while the Flood Study outputs provided a proper basis for the flood control mapping, it identified some areas where a departure from the strict hazard-based approach was warranted. For example, Council was willing to reconsider the Floodway Overlay:

- in parts of the Ballarat CBD Council was persuaded by the agreement of drainage experts that the substitution of the Floodway Overlay with the LSIO in the Ballarat CBD may be warranted.
- on parts of the Integra Land, the Council agreed that the Floodway Overlay could be substituted with the LSIO on the basis of the site context and conditions.

Council submitted that its approach was consistent with the Victorian Planning Provisions (VPP), stating that the Amendment applies the Floodway Overlay and LSIO based on objective hydraulic criteria derived from the flood modelling, consistent with the guidance in PPN12.

Alfred Square submitted that a strictly hazard-based approach is not appropriate, particularly for the Alfred Square Land where the land is zoned Commercial 1 Zone. It said that the PPN12 does not require a strict hazard-based approach to mapping of the overlays and risk is also a relevant consideration.

Rodney Ventures submitted:

- that socio-economic considerations needed to be taken into account when identifying land in the Floodway Overlay
- all sites needed to be reviewed through a 'planning lens' or 'second pass'
- the delineation between the Floodway Overlay and LSIO needed to be proportionate response to the risk
- it adopted the evidence of Mr Quick and Mr Swan who said that a broader range of considerations could be taken into account when applying the mapping.

Most submitters were concerned that the flood controls did not account for broader socio-economic or site-specific conditions.

(iii) Discussion

State policy provides strong support for the identification of the flood hazard (not the risk) at the strategic planning stage. State planning policy at Clause 13.03-1S includes the strategy:

Identify land affected by flooding, including land inundated by the 1 in 100 year flood event (1 per cent Annual Exceedance Probability) or as determined by the floodplain management authority in planning schemes.

This is clearly a reference to hazard, which needs to be determined with reference to State policy threshold of the 1 per cent AEP and on the advice of the floodplain manager. In this case the hazard has been determined on this basis (adopting the criteria recommended by the CCMA).

Likewise, when identifying land affected by flooding PPN12 states:

.. information on the type and extent of flooding is required to accurately map land affected by flooding and apply the most appropriate flood provision.

The Panel acknowledges that PPN12 does reference risk. For example, PPN12 states that when determining the correct flood controls:

The nature of the flood risk and the type of flood information available will determine how and to what extent the flood provisions are applied in the planning scheme.

The flood zone and overlay provisions ensure that the use and development of land subject to inundation is made compatible with the level of flood risk through the planning permit process.

The UFZ applies to urban areas where the potential flood risk is high and strict controls over land use are required. The three overlays (FO, LSIO and SBO) cover a range of situations in both urban and rural areas where the potential flood risk is less than in the UFZ, and where control over development (buildings, works and subdivision) and not land use, is sufficient.

One or more of these tools can be applied to cover a particular flooding situation. The ways the flood zone and overlays can be applied in a rural and urban context are shown in Table 1 and Figure 2.

However, the reference to risk seems to be in the context of the risk that might arise in different land use contexts (such as an urban or rural setting). For example, the flood hazard and consequential risk is likely to be different in an urban setting (where you may apply the Urban Floodway Zone) compared with a rural setting (where you may apply the Floodway Overlay). The Panel does not interpret the reference to risk in PPN12 as needing to complete a detailed site-based risk at the strategic planning stage; this would not be practical at a broad municipal or catchment-wide scale when the future form of use and development is unknown.

The Panel agrees with the CCMA that, as matter of principle the appropriate flood control for any land should be driven by the hazard, source and function of the flood (hazard-based approach). This is the most objective and consistent measure of the flood extent and behaviour to inform the overlay mapping at the strategic planning stage. To adopt a more subjective (policy-based approach) at a municipal or catchment scale would not be appropriate, nor would it be consistent with the VPPs or PPN12.

However, the hazard-based approach can be quite blunt in some circumstances and could lead to outcomes which are inconsistent with the planning policy framework. For this reason, the Panel accepts that in limited circumstances refinement of the hazard overlay mapping (and selection of the most appropriate overlay) through a 'policy-based' lens may be required to avoid perverse outcomes.

To be clear, the Panel does not support a technical risk-based assessment of sites as the driver of the hazard mapping review (i.e. it is not about the flood behaviour – this has already been determined by the Flood Study). Any re-assessment of the hazard-based overlay mapping should only be triggered based in circumstances where:

- the vulnerability of the future community, built form and infrastructure is known with a high degree of certainty at the time the flood control mapping is proposed
- the hazard-based overlay mapping has clear adverse policy implications
- there is appropriate alternative flood control in place to mitigate the risks.

Where there is a low degree of certainty about future conditions and the vulnerability of future occupants – any deviation from the hazard-based approach to flood mapping is unlikely to be warranted.

(iv) Conclusions

The Panel concludes:

- Most appropriate flood control for any land should be driven by the hazard, source and function of the flood (hazard-based approach).
- Any deviation from the hazard-based approach (alternate policy-based approach) should only occur in limited circumstances where:
 - The overlays that result from the hazard-based approach will clearly restrict use and/or development in a manner that is inconsistent with the purpose of the underlying zoning and policy direction for the site.
 - Where the vulnerability of the future community, buildings and infrastructure is known, with a high degree of certainty at the time the flood control mapping is proposed to be introduced (i.e. at the strategic planning stage).
 - There are sufficient residual planning controls in place to mitigate the flood hazard at the permit application stage (having regard to the information known about the built form conditions, infrastructure and community).

4.2 Common issues

4.2.1 Operation of flood controls

(i) The issue

The issue is whether there is a substantive difference between the operation of the Floodway Overlay and the LSIO.

(ii) Background

Floodway Overlay

The Explanatory Report identifies that the Floodway Overlay:

is applied to waterways, main flood paths, drainage depressions and high hazard areas, at high depths ≥ 0.3 m and velocities ≥ 2.0 m/s for which the impacts of flooding are moderate to high with a depth x velocity of ≥ 0.3 m²/s.

The identified statement of risk for FO2 is:

Floodway areas experience frequent inundation by fast flowing and, in some locations, deep floodwaters during flood events, presenting a high hazard to life, property and infrastructure.

Development or works within floodways can obstruct the passage of floodwaters, reduce flood conveyance and storage capacity, and increase flood depths and velocities both onsite and on adjacent land, resulting in increased flood risk, damage and safety hazards.

PPN12 identifies:

The FO applies to mainstream flooding in both rural and urban areas. These areas convey active flood flows or store floodwater in a similar way to the UFZ [Urban Floodway Zone], but with a lesser flood risk. The FO is suitable for areas where there is less need for control over land use, and the focus is more on control of development.

Land Subject to Inundation Overlay

The Explanatory Report identifies that:

The LSIO is applied to land liable to inundation by overland flow, in flood storage or in flood fringe areas from flooding in both rural and urban areas. These areas are of lesser depth and velocity than the FO being less than 0.3 m in depth and less than 0.2 m/s in velocity.

The identified LSIO2 statement of risk identifies:

Floodway areas experience frequent inundation by fast flowing and, in some locations, deep floodwaters during flood events, presenting a high hazard to life, property and infrastructure. Development or works within floodways can obstruct the passage of floodwaters, reduce flood conveyance and storage capacity, and increase flood depths and velocities both onsite and on adjacent land, resulting in increased flood risk, damage and safety hazards.

PPN12 identifies:

The LSIO applies to mainstream flooding in both rural and urban areas. In general, areas covered by the LSIO have a lower flood risk than UFZ or FO areas.

Comparison of permit requirements and considerations

A planning permit is required in the Floodway Overlay, LSIO and SBO for all subdivision and a range of buildings and works. These are summarised in Appendix C (Table 4) including the permit exemptions identified in the Floodway Overlay, LSIO and SBO.

The Floodway Overlay, LSIO and SBO schedules contain additional application requirements and/or decision guidelines than identified in the relevant header provisions.

All applications in the Floodway Overlay, LSIO and SBO are required to be referred to the floodplain management authority (CCMA in this instance).

There is a more limited capacity to create additional lots in the Floodway Overlay.

Clause 44.03-3 (Floodway Overlay) states:

A permit is required to subdivide land. A permit may only be granted to subdivide land if the following apply:

- The subdivision does not create any new lots, which are entirely within this overlay. This does not apply if the subdivision creates a lot, which by agreement between the owner and the relevant floodplain management authority, is to be transferred to an authority for a public purpose.
- The subdivision is the resubdivision of existing lots and the number of lots is not increased, unless a local floodplain development plan incorporated into this scheme specifically provides otherwise.

(iii) Evidence and submissions

Several submitters raised concerns about the restrictive nature of the Floodway Overlay on several sites and submitted it could be replaced with the LSIO on the basis that:

- the subdivision requirements under the Floodway Overlay were overly restrictive and disproportionate to the flood risk trying to be managed
- the LSIO is sufficient to manage flood risks, particularly given the 'statement of risk' and application requirements under the LSIO are equivalent to the Floodway Overlay.

Council provided an overview of the different flood controls and how they operate, with a focus on the differences between the Floodway Overlay and the LSIO. Council submitted:

- the overlays regulate development form rather than use

- the Floodway Overlay, LSIO and SBO all require a permit for buildings and works and subdivision
- the Floodway Overlay is more restrictive than the LSIO in terms of subdivision, but noted:
 - subdivision is generally restricted to the re-subdivision of existing lots
 - the number of lots cannot be increased on parts of land that are mapped within the Floodway Overlay
 - new lots may not be created entirely within the mapped extent of the overlay.

Rodney Ventures submitted the differences between the Floodway Overlay and the LSIO is limited, with the key differences being:

- The LSIO decision guidelines are more extensive than the Floodway Overlay, but are also more permissive provided that the flood risk is appropriately managed.
- The Floodway Overlay takes a stricter approach to subdivision of land. The level of restriction is open to interpretation – based on the Tribunal’s commentary in *Greater Shepparton CC v Goulburn Broken Catchment Management Authority* [2016] VCAT 2181 (*Greater Shepparton*).
- The subdivision requirements at Clause 44.03-3 (Floodway Overlay) could be read as cumulative requirements – which would mean that there is a prohibition on subdivision unless both conditions are met. The implication of this could be:

Using the RV [Rodney Ventures] Land as an example, it is plainly an existing lot. If there were proposed to be more lots within the part of the RV Land affected by the FO – to function as rear yards attached to land outside of the FO2, to use Council’s example – that would be a resubdivision of an existing lot, which results in more lots than what currently exists. On the express terms of the FO head clause, that proposal could not get a permit for subdivision.

There is no local floodplain development plan that would specifically provide for that to occur...

...

Council’s interpretation does not give the reference to ‘the number of lots is not increased’ any work to do. It would also press against what RV understands to be the policy behind the FO as the most stringent flood overlay control, which is to avoid increased density of population in areas affected by flooding.

Alfred Square submitted that the consequences of retaining the Floodway Overlay on land is real, particularly in relation to subdivision. Its submissions aligned with the submissions of Rodney Ventures. It stated:

The uncertainty created by the language of the subdivision provision highlights the submission being made by Alfred Square that unless there are compelling circumstances that would require the imposition of an FO over its land the less restrictive provisions, at least in terms of statutory planning controls, should be applied. That is not to say that the LSIO is less restrictive when it comes to the assessment of the impact of flooding affecting the land sought to be subdivided.

In response to concerns raised by Rodney Ventures and Alfred Square regarding the interpretation of the subdivision provisions at Clause 44.03-3 (Floodway Overlay), Council submitted:

- In *Greater Shepparton* VCAT considered the operation of clause 44.03-3 to clarify the correct interpretation of the subdivision controls (that is if the two limbs operate disjunctively or conjunctively). The Tribunal:
 - Stated that the practical effect of the first limb is:

Therefore, if it was proposed to subdivide land under clause 44.03-2 and if any lot was to be created that was entirely within the Floodway Overlay, then the only subdivision that could be permitted would be a resubdivision of existing lots and no additional lots could be created. In other words, if the first dot point cannot be complied with, then a subdivision under the second dot point is the only option.

- Found that:

Subdivision, which creates new additional lots, may be permitted provided no lot is entirely within the Floodway Overlay, although a lot may be partly within the Floodway Overlay and partly outside the overlay. There is an exception for a subdivision that creates a lot that is to be transferred to an authority for a public purpose.

- The effect of *Greater Shepparton* is that subdivision within the Flood Overlay is not prohibited where it creates additional lots, provided that no lot created is entirely within the overlay. The first limb operates as a permissive control for land that straddles the overlay boundary. Where land is wholly within the Flood Overlay, the creation of additional lots is prohibited and only re-subdivision of existing lots without increasing the number of lots may be permitted under the second limb.
- The *Greater Shepparton* decision has not been subject to judicial review. The decision has not been contradicted in VCAT and is supported by a plain reading of the provisions.

(iv) Discussion

The key issue in dispute was the distinction between the Floodway Overlay and the LSIO. While many aspects of the Floodway Overlay and the LSIO are similar, the Floodway Overlay is designed to be more restrictive – given it is intended to apply to mainstream flooding (including the conveyance of active flood flows or storage of floodwater). In contrast the LSIO is designed to identify the broader extent of flooding and applies to lower hazard areas.

It is therefore expected and appropriate that the purpose, decision guidelines and subdivisions requirements in the Floodway Overlay will operate in a more restrictive manner.

In relation to subdivision, it is clear the intention of the Floodway Overlay is to prohibit the creation of new lots in the mapped extent of the overlay. However, on larger lots partially affected by the Floodway Overlay (like Rodney Ventures land, Alfred Square land and the Integra land) the Panel agrees with Council that a plain reading of Clause 44.03-3 allows for new lots to be created outside of the mapped extent of the Floodway Overlay.

(v) Conclusions

The Panel concludes:

- There is a substantive difference between the operation of the Floodway Overlay and the LSIO.
- The Floodway Overlay operates in a more restrictive manner, particularly in relation to subdivision of land within the overlay.

4.2.2 Impacts on insurance, property values and development

(i) The issue

The issue is whether the flood controls unreasonably impact insurance, property values and development opportunities.

(ii) Evidence and submissions

Many submitters expressed concern regarding the implications of the flood controls on property values, insurance costs and future use and development opportunities. Concerns were also raised regarding the perceived impact of the overlays on market perception and investment certainty.

Mr Quick gave evidence that the economic impacts of the flood controls (in terms of redevelopment and market incentives) could be detrimental if the overlays were not proportionate to the flood risk.

Council submitted:

- the designation of an area as flood prone does not cause or change the likelihood of flooding, rather it recognises an existing condition of the potential to be inundated in certain rainfall and storm events
- Council and the CCMA have a statutory responsibility to identify the flood risk
- insurance companies have individual processes to determine the flood risk and calculate premiums
- inaccuracies in flooding information will mean that insurers are unable to properly assess the likelihood of impacts
- implementing flood controls based on the most accurate and relevant flood data is a statutory responsibility to minimise the potential flood risk to life, health and safety associated with development
- the purpose of the flood controls are to manage flood risk for life, property and development and to ensure that future use and development appropriately respond to identified flood hazard
- matters relating to property valuation, insurance outcomes and development opportunities do not of themselves negate the application of flood planning controls based on a proper model.

The CCMA submitted:

- it is responsible for floodplain management across the region, including providing flood advice, assessing development in flood prone areas, and supporting appropriate land use planning
- the incorporation of accurate flood mapping into planning schemes is a key tool for reducing future flood risk and improving community resilience.

(iii) Discussion

The Council and the CCMA have a responsibility of ensuring the Planning Scheme identifies flood hazard. The statutory agencies have applied an objective hazard-based criteria to inform the flood controls. The flood controls are primarily derived from outputs of the Flood Study (which has been supported by all drainage experts). The mapping

reflects existing conditions and recognises probability of land being inundated in certain rainfall and storm events. In preparing this Amendment, Council and the CCMA are meeting their responsibilities.

The Amendment will introduce new permit triggers and application requirements for some projects. The Panel agrees that if the flood controls were not proportionate to the risk, as suggested by Mr Quick it could have an adverse economic impact. However, subject to the Panel's recommendations the flood controls are a proportional regulatory response to the flood hazard that already exists.

It is not clear whether this Amendment will affect insurance premiums, or whether the insurance companies already have their own flood information which is already used to calculate premiums. It is possible that with the introduction of flood controls and integration of flood mitigation measures that insurance costs could decrease – however it is difficult to speculate.

(iv) Conclusion

The Panel concludes the flood controls will not unreasonably impact insurance, property values and development opportunities.

4.2.3 Insufficient infrastructure

(i) The issue

The issue is whether Council should prioritise the upgrade of drainage infrastructure to mitigate the flood risk, rather than imposing flood controls.

(ii) Submissions

Many submitters raised concerns about the role of inadequate drainage infrastructure in contributing to flood risk. Submitters 39 and 65 were particularly concerned that the lack of drainage infrastructure was contributing to the flood hazard, including unconstructed roads with no kerb and channel. They submitted:

- Council should redirect its efforts to improving the capacity of infrastructure, so that the flood extent was not overstated
- it was not appropriate to shift the burden arising from a lack of drainage infrastructure on the public land onto private landowners
- the drainage infrastructure capacity and upgrades should be prioritised over the Amendment.

Council submitted:

- planning overlays are applied to manage identified flood risk through land use and development controls and do not replace the role of infrastructure provision, maintenance or upgrade, which is addressed through separate capital works and asset management processes
- flood modelling for planning purposes considers combined flood and overland flow behaviour under defined events and does not distinguish flood risk solely on the basis of infrastructure performance or maintenance at a particular point in time

- even if local drainage infrastructure was upgrade, it is typically designed for a more frequent and smaller event, such as the 10 per cent AEP, rather than and 1 per cent 100 AEP and would not alter the flood extent or behaviour. However, if any upgrades where of significant capacity to change the flood hazard, this could be reviewed in the future through a separate planning scheme amendment process.

Mr Hughes gave evidence:

- infrastructure was assessed if it affected riverine flows
- road drainage infrastructure is designed to deal with localised run off, rather than riverine flows
- including it in the model would not affect the results.

(iii) Discussion

The Panel acknowledges the concerns of submitters in relation to the capacity of drainage infrastructure, particularly in locations such as Whitefield Street where there is currently no constructed road or kerb and channel. However, the Floodway Overlays need to be based on the hazard that exists today and any structures that currently influence riverine flows. This Amendment does not replace the role of Council in infrastructure provision, maintenance or upgrade – this will continue to be addressed through separate capital works and asset management processes.

While future drainage infrastructure upgrades may change the flood hazard, the Panel accepts the evidence of Mr Hughes that any effect is likely to be marginal given the design event for drainage infrastructure, compared with the 1 per cent AEP used for strategic planning.

(iv) Conclusions

The Panel concludes:

- The upgrade of drainage infrastructure is assessed and upgraded through a separate capital works process.
- The introduction of Floodway Overlays should not be deferred on the basis of future capital works.

4.3 Site specific issues

4.3.1 Introduction and issues

The Panel has concluded:

- the Flood Study underpinning the Amendment is technically suitable for identifying the flood hazard (Chapter 4)
- the flood control mapping (and delineation between the Floodway Overlay and the LSIO) should be determined based on an objective hazard-based approach (Chapter 4.1)
- any deviation from the hazard-based approach should only occur in limited circumstances where there is a clear planning policy reason (policy-based approach) (Chapter 4.1).

In this Chapter the Panel has considered whether there are any planning policy reasons to refine or alter the flood controls on the following sites:

- Alfred Square land
- Rodney Ventures land
- Integra land
- 402-402 Main Road, Golden Point
- 107 Hickman Street, Ballarat
- 5 Deep Lead Close, Canadian
- 1 Boyd Court, Canadian
- 425 Richards Street, Canadian
- 18 Canadian Springs Drive, Canadian
- 13 Whitefield Street, Black Hill
- 21 Mimosa Avenue, Alfredton

4.3.2 Alfred Square land (Curtis Street, Ballarat)

(i) Background

It is proposed to apply the LSIO to the majority of the land at 1, 1A, Shop 1/1, Shop 2/1m Shop 3/1 and 61 Curtis Street, Ballarat (Alfred Square land) and the Floodway Overlay to part of the land.

The Alfred Square land is in the CBD and is zoned Commercial 1 Zone. The land is developed with an existing shopping centre comprising Big W and Dan Murphy's as anchor stores. The diverted Yarrowee River runs under the western part of the land, within the Yarrowee Creek Culvert.

Figure 2 Proposed flood control mapping on the Alfred Square land, Ballarat



Source: Site visit maps produced by Council

(ii) Submissions and evidence

Alfred Square submitted:

- the Floodway Overlay should not be applied to the land
- the LSIO should be applied to the land and could be relied upon to appropriately mitigate the impacts of flooding
- the site context is relevant in considering which flood controls should be applied:
 - the site is in the core of the Ballarat CBD and is an area where the Planning Scheme encourages intensive development of the site, particularly called up through the purpose of the underlying Commercial 1 Zone
 - the flood hazard in this location is different, in that the Yarrowee River has been placed underground, replacing what would have once been an open waterway.
- PPN12 is relevant guidance and states:
 - that the type of a flood control (e.g. LSIO, Floodway Overlay) should be commensurate with the flood risk, not flood hazard.
 - Floodways are usually aligned with natural defined channels and depressions that often carry relatively deep and high velocity flows
- The Yarrowee River is a constructed waterway at the site, and while it performs a water conveyance function through the Alfred Square land it does not perform a flood conveyance function.

In relation to the operation and consequences of the overlays, Alfred Square submitted:

- The Floodway Overlay is more restrictive than the LSIO and it would be incongruous to apply the most restrictive flood control to a site with isolated flooding issues, in the middle of the Ballarat CBD where intensive development is anticipated and encouraged.
- The LSIO still provides the ability to consider flooding, through the requirement for a Flood Risk Report and referral to the CCMA at the permit application stage.
- The Floodway Overlay would impose a real restriction on future redevelopment of the site, particularly in relation to the subdivision. For example, if land in a multi-level building within the Floodway Overlay could not be subdivided to create new commercial lots.
- There is uncertainty about how the subdivision provisions in the Floodway Overlay operate. While Council submitted that it would only restrict the creation of a new lot within the mapped extent of the Floodway Overlay, it is possible that a more restrictive interpretation of the Floodway Overlay could potentially limit any subdivision of the site.
- There is overwhelming evidence and submissions to support the removal of the Floodway Overlay from the Alfred Square land and replace it with the LSIO.

Ms Barich gave evidence:

- the Floodway Overlay should not be applied to the Alfred Square land
- the flood hazard on the site (and within the Ballarat CBD) is not representative of a riverine or flood flows and would not meet the criteria for the Floodway Overlay under PPN12
- the flood hazard on the site arises from breakout flooding and ponding in a low point of the site, it is not active flow or high flow; it is not equivalent to the flood

hazard you would expect from a river as it is not major flows coming from the core of the Yarrowee River

- it is appropriate to delineate the flood controls on the basis of a risk assessment (not just a pure hazard-based assessment).

Council submitted:

- the Alfred Square land should be subject to an LSIO, and that the Floodway Overlay should be removed from the land
- drainage controls on the site are important and this is illustrated by the existing section 173 agreement that requires the owner of the land to allow Council to access the drainage assets (including the removal of any buildings) and to indemnify the Council against any damage arising from leaking, flooding, bursting or breaking of pipes within the drainage asset
- both the Floodway Overlay and LSIO require the submission of Flood Risk Report and in the context of this land (an established site within the CBD), would enable flood risk to be suitably considered and mitigated at the permit application stage.

The drainage experts agreed (point 10) in the conclave statement that:

The FO in the CBD areas should be reconsidered to be a LSIO only and remove the FO. Urban centres, such as the Ballarat CBD, represent a specific scenario where greater flexibility for future development to enable flood mitigation is potentially better enabled through the LSIO schedule alone (as opposed to the FO).

Mr Hughes and Ms Lauchlan Arrowsmith gave evidence:

- From a technical perspective flood hazard alone should form the basis of the flood control mapping
- Elements other than flood hazard can be used for determining the area of a Floodway Overlay on a site-specific level. With flood hazard forming the initial basis of the overlay.
- The Floodway Overlay could be removed from the Alfred Square land; with the LSIO applying to the land – but this would need to be considered by planners.

The CCMA submitted:

- It does not support the removal of the Floodway Overlay from the Alfred Square Land (or more broadly from land within the Ballarat CBD).
- The flood control mapping should be applied consistently on the basis of the hazard, not broader socio-economic or planning considerations.
- Any delineation between the Floodway Overlay and the LSIO should be identified on the basis of hazard-based criteria. This approach has been applied in 12 planning scheme amendments across the Corangamite region and the CCMA has not historically relied on a 0.5 metre depth threshold to delineate the Floodway Overlay.
- The independent experts engaged by the submitters ultimately supported the technical validity of the flood modelling.
- Any site-specific refinement to the flood control mapping is a matter of planning judgement, rather than a departure from the technical framework underpinning the Amendment.

(iii) Discussion

Council agreed that the Floodway Overlay can be removed from the Alfred Square land, largely on the basis of the known risk and broader planning policy considerations.

In Chapter 4.1 the Panel has identified the limited circumstances where there may be a deviation from the strict hazard-based approach overlay mapping. This site is one of those circumstances where a policy-based approach is warranted for the following reasons:

- The Alfred Square land is located within the CBD and is already developed. This context is relevant, as it provides a high degree of certainty about the future use and development of the site and in turn the vulnerability of future occupants.
- There is also strong policy support to redevelop the site for commercial purposes, including a likely multi-level development (where there will likely be a need to subdivide land in the future). The Floodway Overlay will impose a disproportionate restriction on the creation of a new lot in the core of the Ballarat CBD (within a multi-level building and/or carpark).
- The LSIO will offer an equivalent level of flood mitigation to the Floodway Overlay in this context, including:
 - the same statement of risk
 - sufficient certainty about the future form of use and development to be able to consider risk at this stage in the process (as distinct from other sites where the future form of development is uncertain)
 - the same application requirement for a Flood Risk Report at the permit application stage.

The Panel is satisfied that a deviation from the hazard-based approach is warranted on the Alfred Square land and that the LSIO will appropriately identify and in turn mitigate the impacts of flooding at the Alfred Square land.

(iv) Conclusions and recommendations

The Panel concludes:

- The Floodway Overlay should be removed from the Alfred Square land.
- The LSIO should be applied to the whole of the Alfred Square land.

The Panel recommends:

Amend the Floodway Overlay Schedule 2 mapping to remove its application from the land at 1, 1A, Shop 1/1, Shop 2/1m Shop 3/1 and 61 Curtis Street, Ballarat (Alfred Square land).

Amend the Land Subject to Inundation Overlay Schedule 2 mapping so that it applies to the part of the land at 1, 1A, Shop 1/1, Shop 2/1m Shop 3/1 and 61 Curtis Street, Ballarat (Alfred Square land) that will be removed from the Floodway Overlay Schedule 2.

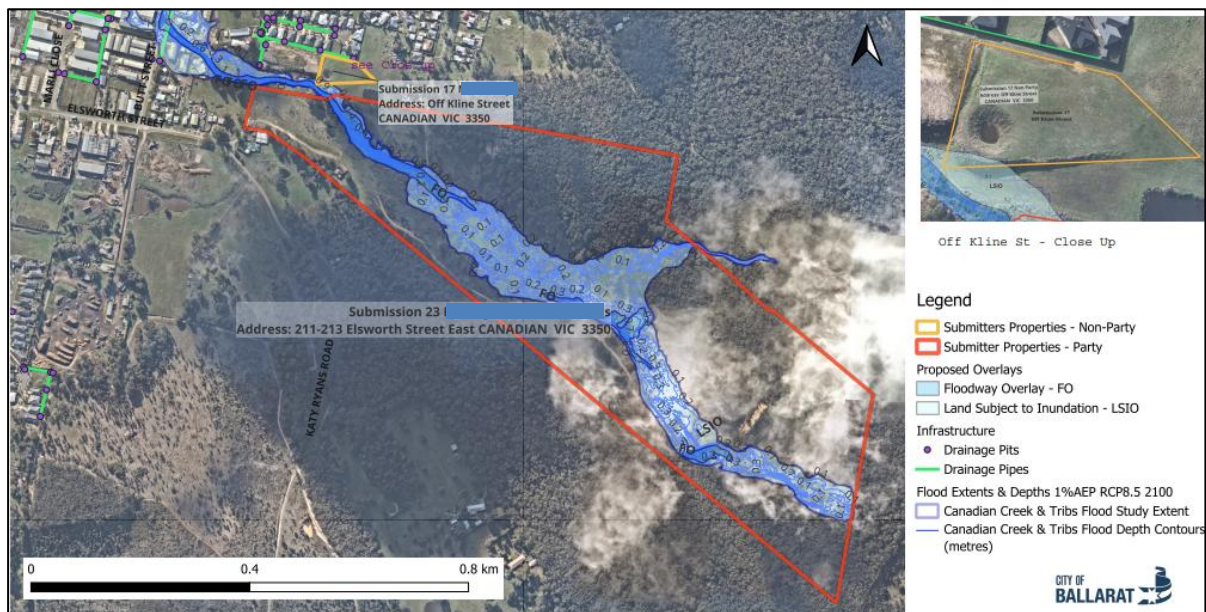
4.3.3 Rodney Ventures land (211-213 Elsworth Street, Canadian)

(i) Background

It is proposed to apply the Floodway Overlay and LSIO to part of the land at 211-213 Elsworth Street, Canadian (Rodney Ventures land).

The Rodney Ventures land was previously used as a rifle range and comprises vegetation, access tracks and a disused building. The Canadian Creek is a designated waterway and runs through the site. The land is zoned Rural Conservation Zone (RCZ) and is affected by the Environmental Audit Overlay (EAO), Vegetation Protection Overlay (VPO) and Bushfire Management Overlay (BMO).

Figure 3 Proposed flood control mapping at Rodney Ventures land, Canadian



Source: Site visit maps produced by Council

(ii) Submissions

Rodney Ventures submitted that the Floodway Overlay should be removed from the Rodney Ventures land and replaced with the LSIO. It submitted:

- it was necessary to take account of the socio-economic effects of the Amendment
- the application of the Floodway Overlay was unnecessary and not a proportionate response to the level of flood risk
- the adopted of the hazard criteria are conservative and inconsistent with the thresholds adopted for the Floodway Overlay in other parts of the municipality (such as the Burrumbeet Creek)
- there has been no planning assessment of the consequences of applying the Floodway Overlay on the land, particularly in relation to housing delivery
- the broader consequences of the identified site-specific development feasibility constraints, as identified by Mr Quick need to be considered
- the Practitioner's Guide establishes six principles for drafting planning controls, including consistency and proportionality; the Amendment is neither

proportional, nor consistent with the hazard criteria as applied in other parts of the municipality.

In relation to development feasibility, Rodney Ventures submitted:

- Mesh Planning prepared a desktop planning assessment, which showed that the site had a net developable area of 32,140 square metres (without the Floodway Overlay) and a reduced developable area of 26,572 (with the Floodway Overlay).
- The Floodway Overlay would have a detrimental impact on the development capacity and feasibility of the future development of the site. This would have economic and broader policy implications, including in relation to the delivery of housing.
- The subdivision provisions in the Floodway Overlay could be interpreted in a restrictive manner (as discussed in Chapter 4.2.1) and could stymie any subdivision of land within the total land holding and not just the mapped extent of the Floodway Overlay.

Council did not support any changes to the Floodway Overlay at the Rodney Ventures land submitting:

- The context of the site does not warrant a reconsideration of the Floodway Overlay, including the following:
 - the land is zoned RCZ which does not allow the type of residential development assumed in Mesh Planning's yield analysis
 - the land is subject to an EAO, VPO and BMO which would present additional constraints on future development
 - the designated waterway (Canadian Creek) runs through the site and it is appropriate to apply the Floodway Overlay to the waterway.
 - there is no rezoning proposal or development feasibility assessment for the site. The theoretical yield analysis is a desktop planning assessment, not a development yield assessment.
- Socio-economic factors do not support a review of the flood controls; especially where the factors are contingent on a theoretical development scenario that relies on the rezoning of land. The site is in a different class to sites that are currently zoned and identified for development.
- It acknowledged that the Floodway Overlay is a more restrictive control than the LSIO. However:
 - the prevailing controls on the site do not permit the type of intensive residential development contemplated by the theoretical yield analysis
 - the suggestion that the flood controls will render development unviable is only hypothetical. The subdivision controls in the Floodway Overlay would enable a new lot to be created, which comprises all the land in the Floodway Overlay (e.g. to create a reserve that could be handed to a public land manager), with the balance of land being able to be subdivided.
 - to the extent there is a flooding concern, this would be considered at the time a rezoning proposal came forward.
- It is not appropriate to conduct a site-by-site risk analysis for a flooding Amendment of this scale, instead Council relies on the guidance in the Victorian

Floodplain Management Strategy, PPN12 and the relevant VPPs in applying the flood controls.

- While the Floodway Overlay is focussed on high hazard areas, the purpose of the overlay also encapsulates other features such as drainage depressions:

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

In relation to the broader economic impact of the Amendment (with response to housing capacity), Council submitted:

- there is no proposal to rezone the land, change residential density controls or alter the settlement boundaries
- the Amendment does not reduce the supply of land for housing or compromise Council's ability to meet housing targets. The Ballarat Housing Capacity Assessment Program has reviewed capacity and shows that Council is well placed to meet present housing targets.

In relation to the apparent inconsistency with the Burrumbeet catchment and this Amendment, Council submitted:

- the hazard criteria are dependent on location and the relevant Catchment Management Authority (CMA)
- Burrumbeet catchment (under the controls of a different CMA) has a significantly different regime imposed through a Local Floodplain Development Plan
- the flood overlays should be consistent with the approach adopted by the relevant CMA, not arbitrarily set to ensure purported consistency.

In response to expert evidence (and submissions) of Rodney Ventures, Council submitted:

- Mr Swan had not undertaken alternative modelling and his reliance on the 1998 DNRE Advisory Note from 1998 was not appropriate as it was not a contemporary approach nor a document he had used since around 2015
- the Mesh Planning analysis was not a development feasibility of yield analysis
- Mr Quick's evidence was based on principles and of a general nature.

(iii) Discussion

In Chapter 4.1 the Panel has identified the limited circumstances where there may be a deviation from the strict hazard-based approach overlay mapping. The Rodney Ventures land is not a site where a policy-based review is warranted.

Planning policy considerations

The Rodney Ventures land is currently zoned for rural conservation purposes and has several overlay controls relating to vegetation protection, bushfire hazard and land contamination. There is no current planning policy that suggests the site is a priority area for redevelopment or more intense land use.

The Panel accepts that the proposed flood controls, particularly the Floodway Overlay will impose further constraints on the site, however the relative practical impact of additional overlays (when compared with the current controls) is low or minor.

Furthermore, it is not feasible to undertake a site-specific risk assessment at this stage (because it is not possible to assess the vulnerability of future occupants based on the information currently before the Panel).

The desktop planning assessment prepared by Mesh shows that the Floodway Overlay will not affect the theoretically developable area on the site. As such, this does not provide any basis to extrapolate municipal wide impacts on housing targets or broader economic implications.

As there is strong policy support for the identification of hazard early in the planning process to inform any future development proposal, there is no reason to vary from the hazard-based approach at this site.

Consequences of the Floodway Overlay

While the LSIO and Floodway Overlay have similar application requirements, the subdivision provisions in the Floodway Overlay are more restrictive (as discussed in Chapter 3.1). However, the possible restriction on subdivision (and consequences on the Rodney Ventures land) have been overstated by Rodney Ventures.

The Panel has concluded that the plain interpretation of the subdivision provisions in the Floodway Overlay is that you cannot create a new lot on any land mapped entirely in the Floodway Overlay, but the balance of any lot (not mapped in the Floodway Overlay) is not subject to the same restriction and could potentially be subdivided subject to a permit application consideration. This allows land within the Floodway Overlay to be 'hived off' if necessary, without affecting the ability to consider a subdivision proposal for the balance of the land. This would enable land in the high hazard area (for example along Canadian Creek) to be subdivided and transferred to a public land manager.

Consistency

The Panel understands the concerns regarding a more consistent approach to the hazard criteria across the municipality. As discussed in Chapter 3.1 the hazard criteria adopted for the Flood Study is acceptable. To require a consistent approach to the hazard criteria would require a change in State planning policy, as currently Clause 13.03-1S (Floodplain management) allows for discretion by the floodplain management authority:

Identify land affected by flooding, including land inundated by the 1 in 100 year flood event (1 per cent Annual Exceedance Probability) or as determined by the floodplain management authority in planning schemes.

Under current State policy, there is no requirement for the adoption of the same hazard criteria across a municipality (or the State) – the criteria can vary on the basis of the risk acceptance of the relevant floodplain manager for a particular catchment.

(iv) Conclusion

The Panel concludes the flood control mapping at 211-213 Elsworth Street, Canadian (Rodney Ventures land) is appropriate.

4.3.4 Integra land

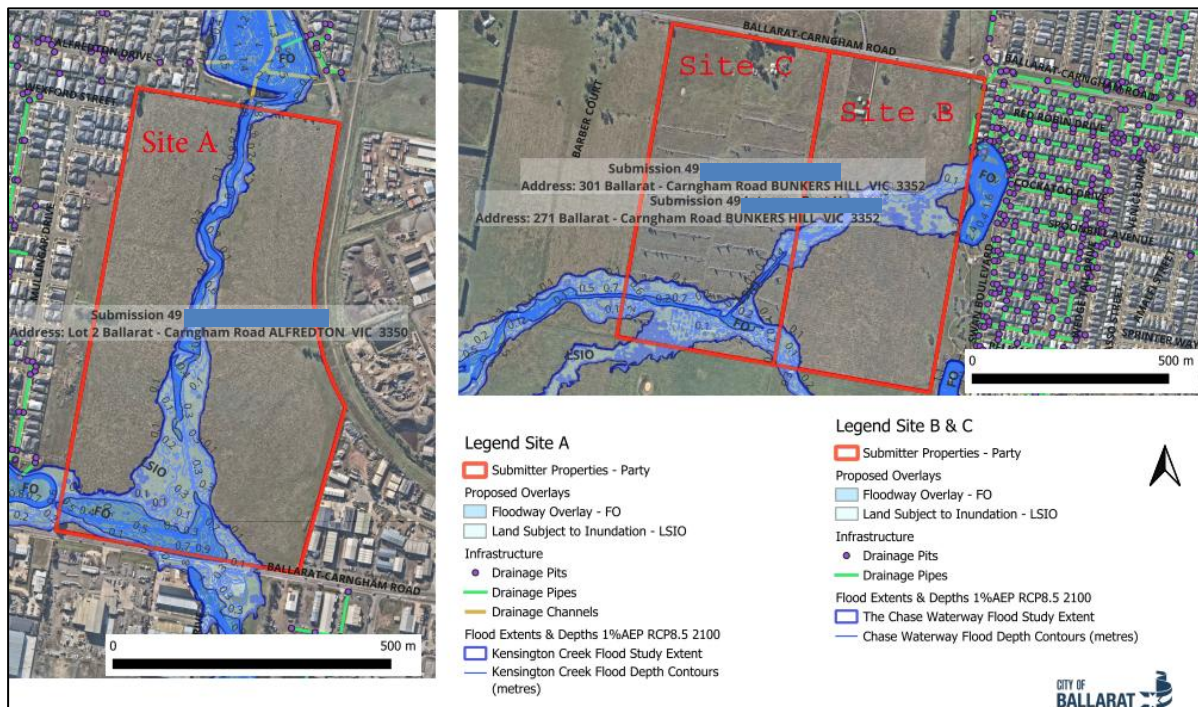
(i) Background

Integra made submissions in relation to three parcels of land, referred to as:

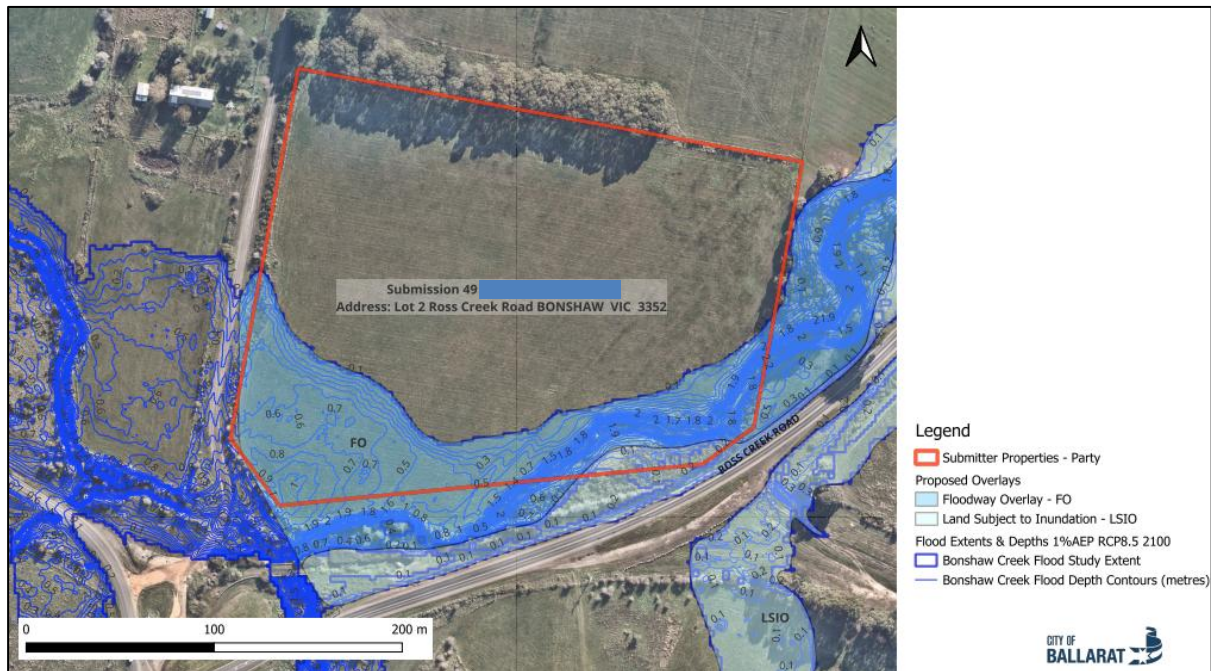
- Site A – Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A)
- Site B and C – 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C)
- Lot 1 PS928934 Ross Creek Road, Bonshaw (Bonshaw Site) (collectively Integra land).

Council's Version 1 Amendment documents proposed to delete the Floodway Overlay from Integra Sites A, B and C.

Figure 4 Proposed flood control mapping at Integra Sites A, B and C, Alfredton



Source: Site visit maps produced by Council

Figure 5 Proposed flood control mapping at Bonshaw

Source: Site visit maps produced by Council

(ii) Submissions

Integra Site A

Submitter 6 opposed the introduction of the Floodway Overlay on the land and submitted:

- the mapping does not reflect the topography or title boundaries of the land
- site levels should be checked more carefully before the overlay is applied, particularly the part of the land proposed to be included in the Floodway Overlay
- the condition of the creek (including the build-up of tree roots and rubbish) is contributing to water flows and flood risk)
- there has been no history of flooding on the land.

In relation to Site A, Council submitted:

- Site A:
 - Is located immediately to the east of the Ballarat West Precinct Structure Plan boundary and is zoned Industrial 3 Zone
 - is traversed by the Kensington Creek and there is a retarding basin wetland to the south-west which been delivered by Integra (as part of the Ballymanus estate and in the Development Contribution Plan (DCP) area)
 - Ballarat-Carngham Road, Alfredton is located on the southern boundary and is proposed to be widened
- It intends to work with Integra regarding its future development of Site A, noting its current Industrial 3 Zone to facilitate appropriate development and drainage outcomes for the property that finalise the delivery of the DCP and drainage of the land.
- The Floodway Overlay should be removed from Site A.

- Applying the LSIO is consistent with the current build out of the Precinct Structure Plan (PSP) and current industrial zoning of the land.

Integra sites B and C

In relation to sites B and C, Council submitted:

- sites B and C are:
 - located outside the Ballarat West PSP, but adjacent to precinct scale drainage infrastructure (identified as retarding basing RB3 and RB4 in the drainage strategy)
 - zoned Farming Zone
 - part of the site which has been identified to facilitate the 'Western Link Road'
- Integra is investigating operation for the development of Site B and C under the current zoning. Any proposal would need to be considered on its merits as part of a permit application process.
- any development of sites A and B would need to be consistent with precinct scale drainage infrastructure for the adjoining Ballarat West PSP and would also need to account for the land identified for the 'Western Link Road' and affected by the PAO.
- the Floodway Overlay should be removed from sites B and C.
- the LSIO could facilitate an acceptable outcome on the site that may be permitted under the existing zoning and in line with the adjacent infrastructure.

Bonshaw site

Council and Integra submitted that no change was required to the mapping on the Bonshaw Site.

(iii) Discussion

Integra Site A

Integra Site A has clearly been identified for industrial purposes and the current zoning and policy direction for the site provides a high degree of certainty about future built form and land use. There is an existing retarding basin and infrastructure available to service the site and a DCP in place to contribute funding for that infrastructure. Overall, the site will be transformed from a rural setting to an urban setting where industrial development is directed.

This site clearly meets the Panel's criteria for further 'policy-based review' (discussed in Chapter 4.1) given the high degree of certainty about the future of the land. The Panel agrees that it is appropriate to replace the Floodway Overlay with the LSIO on this site. This is consistent with the position of Council and Integra.

Integra sites B and C

The context and conditions at Integra sites B and C are substantively different from Site A, notably they are not:

- zoned for residential purposes
- located in an existing PSP or framework structure plan that indicated a higher density or intensity of development

- required to meet Council's housing targets (as explained by Council in the context of the Rodney Ventures Land discussed in Chapter 4.3.3).

The zoning and policy direction for the site, indicates that it should be developed and used for farming purposes (e.g. the continuation of the rural context). There does not seem to be any overriding zoning or policy imperative to conduct a 'policy-based' review'.

It is not clear to the Panel from submissions (and it was not explored in detail at the Hearing) as to why Council has agreed to remove the Floodway Overlay from these sites. Council's approach appears to be inconsistent with other sites in a rural setting (such as the Rodney Ventures land).

Given Integra Site B and C were not discussed in detail at the Hearing, the Panel considers that further work is required before the flood control mapping is amended at these sites. This will give affected parties the ability to comment. In particular, the sites need to be assessed Panel's 'principles' outlined in Chapter 4.1 for when a 'policy-based' review (or deviation from the hazard-based approach is warranted).

Bonshaw Site

The Panel agrees that no change is required to the flood mapping on this site.

(iv) Conclusions and recommendations

The Panel concludes:

- The Floodway Overlay can be replaced with the LSIO on Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A).
- No change is required to the flood control mapping at Lot 1 PS928934 Ross Creek Road, Bonshaw (Bonshaw Site).
- Further work is required before the Floodway Overlay can be removed from the land at 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C). Specifically:
 - Council should revisit the Floodway Overlay mapping against the planning principles identified at Chapter 4.1 of the Report, particularly in relation to circumstances where a deviation from the hazard-based approach may be warranted.
 - Compare or distinguish the approach on these sites to other sites in rural settings, where the Floodway Overlay has not been revisited or removed.

The Panel recommends:

Amend the Floodway Overlay Schedule 2 mapping to remove its application from the land at Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A).

Amend the Land Subject to Inundation Overlay Schedule 2 mapping so that it applies to that part of the land at Lot 2 Ballarat-Carngham Road, Alfredton (Integra Site A) that will be removed from the Floodway Overlay Schedule 2.

The Panel recommends further work:

Further work:

Ballarat City Council undertake further work to determine if the Floodway Overlay can be removed from the land at 271 and 301 Ballarat-Carngham Road, Alfredton (Integra Sites B and C), including:

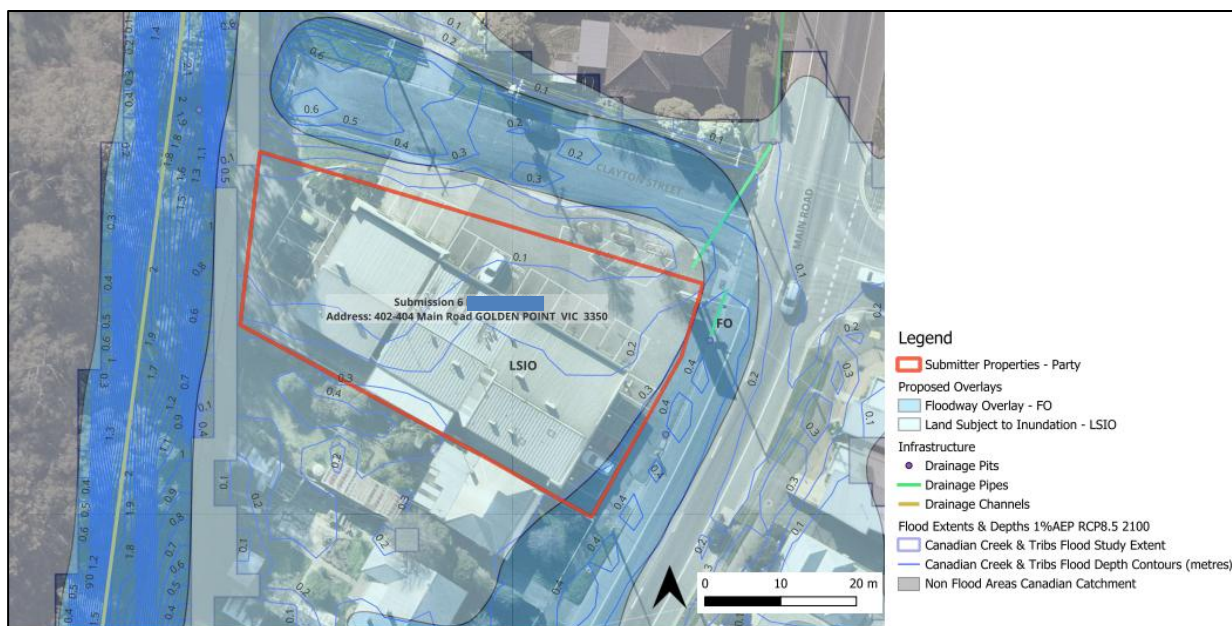
- b) review the flood controls against the principles identified at Chapter 4.1 of this report that outline circumstances when the hazard-based mapping approach could be revisited**
- c) compare the approach on this land to other sites in rural settings affected by this Amendment, where the Floodway Overlay has not been revisited or removed.**

4.3.5 402-404 Main Road, Golden Point

(i) Background

It is proposed to apply the LSIO to the whole of the land at 402-404 Main Road, Golden Point and the Floodway Overlay to part of the land.

Figure 6 Proposed flood control mapping at 402-404 Main Road, Golden Point



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 6 opposed the introduction of the flood control on the land and submitted:

- The mapping does not reflect the topography or title boundaries of the land.
- Site levels should be checked more carefully before the overlay is applied, particular the part of the land proposed to be included in the Floodway Overlay.
- The condition of the creek (including the build-up of tree roots and rubbish) is contributing to water flows and flood risk).
- There has been no history of flooding on the land.

Council submitted:

- The SBO mapping represents the modelled flood extent on the site and no change is necessary.
- It relied on the evidence of Mr Hughes in relation to the reliability of the modelling extent, including in relation to the construction of the layers and clipping process.
- It does not propose to further clip the Floodway Overlay, as that land abuts the LSIO.

(iii) Discussion

The Panel agrees that the flood control mapping accurately reflects the modelled extent of flooding. It accepts the evidence of Mr Hughes in relation to the clipping process. There was no evidence presented to indicate that the hazard mapping should be altered.

(iv) Conclusion

The Panel concludes the flood control mapping at 402-404 Main Road, Golden Point is appropriate.

4.3.6 107 Hickman Street, Ballarat

(i) Background

It is proposed to apply the LSIO to the whole of the land at 107 Hickman Street, Ballarat and the Floodway Overlay to part of the land.

Figure 7 Proposed flood control mapping at 107 Hickman Street, Ballarat



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 7 opposed the introduction of the flood control on the land and submitted:

- the land has recently been developed and flood risk was not identified as an issue through that process
- the levels need to be reviewed, particular in the back part of the land
- significant vegetation removal and the upgrade of the drainage in the Yarrowee River has reduced the risk of flooding
- no history of flooding at the land.

Council submitted:

- The flood control mapping represents the modelled flood extent on the site and no change is necessary.
- It had reviewed the relevant planning permit (PLP/2021/478) for the site and confirmed that flood risk had been considered. The CCMA provided advice that finished floor levels needed to be 300millimetres above the 1 per cent AEP.

(iii) Discussion

The Panel agrees that the flood control mapping accurately reflects the modelled extent of flooding. There was no evidence presented to indicate that the hazard mapping should be altered.

It appears that flood risk has been considered as part of the recent planning permit for the land. The proposed flood controls would trigger an equivalent consideration for any future development on the site, noting that exemptions would apply for minor building as works.

(iv) Conclusion

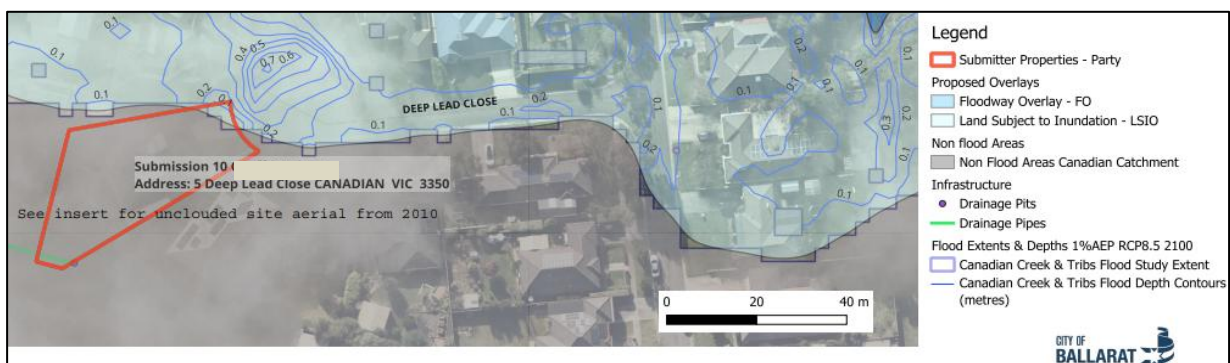
The Panel concludes the flood control mapping at 107 Hickman Street, Ballarat is appropriate.

4.3.7 5 Deep Lead Close, Canadian

(i) Background

It is proposed to apply the LSIO to part of the land at 5 Deep Lead Close, Canadian.

Figure 8 Proposed LSIO mapping at 5 Deep Lead Close, Canadian



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 10 opposed the introduction of the LSIO on the land and submitted:

- The mapping does not reflect the topography or conditions on the land.
- Site levels should be checked more carefully before the overlay is applied, particularly having regard to the broader catchment and the way that water flows.
- Any flooding risk could be mitigated upgrades to Council infrastructure.
- Given the only part of the site affected by the LSIO is already a driveway, there is no risk and the mapping can be removed.

Council submitted:

- The flood overlay mapping represents the modelled flood extent on the site and no change is necessary.
- It relied on the evidence of Mr Hughes in relation to the reliability of the modelling extent, including in relation to the construction of the layers and clipping process.

(iii) Discussion

The Panel agrees that the LSIO mapping accurately reflects the modelled extent of flooding. It accepts the evidence of Mr Hughes in relation to the clipping process. There was no evidence presented to indicate that the hazard mapping should be altered.

The Panel understand the submitter's concerns that the LSIO would only apply to a constructed driveway, however as discussed in Chapter 4.2 the Panel is satisfied with the clipping methodology and it is not necessary to complete a further refinement of the mapping.

As discussed in Chapter 4.2.3 it is not appropriate to alter the flood control on the basis of future infrastructure improvements.

(iv) Conclusion

The Panel concludes the LSIO mapping at 5 Deep Lead Close, Canadian is appropriate.

4.3.8 1 Boyd Court, Canadian

(i) Background

It is proposed to apply the LSIO to part of the land at 1 Boyd Court, Canadian.

Figure 9 Proposed LSIO mapping at 1 Boyd Court, Canadian



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 14 opposed the introduction of the LSIO on the land and submitted:

- The mapping does not reflect the topography or conditions on the land.
- Only a small part of the land is affected by the LSIO, so it should be removed.
- Site levels should be checked more carefully before the overlay is applied, particularly having regard to levels adjacent to the fence.

Council submitted:

- The flood overlap mapping represents the modelled flood extent on the site and no change is necessary.
- It relied on the evidence of Mr Hughes in relation to the reliability of the modelling extent, including in relation to the construction of the layers and clipping process.
- It had reviewed the extent of encroachment of the LSIO on the land, and it was more than 10 square metres (i.e. it did not meet the criteria to be clipped from the mapping).

(iii) Discussion

The Panel agrees that the LSIO mapping accurately reflects the modelled extent of flooding. It accepts the evidence of Mr Hughes in relation to the clipping process. There was no evidence presented to indicate that the hazard mapping should be altered.

The Panel understand the submitter's concerns that the LSIO would only apply to a constructed driveway, however as discussed in Chapter 3.2 the Panel is satisfied with the clipping methodology and it is not necessary to complete a further refinement of the mapping.

(iv) Conclusion

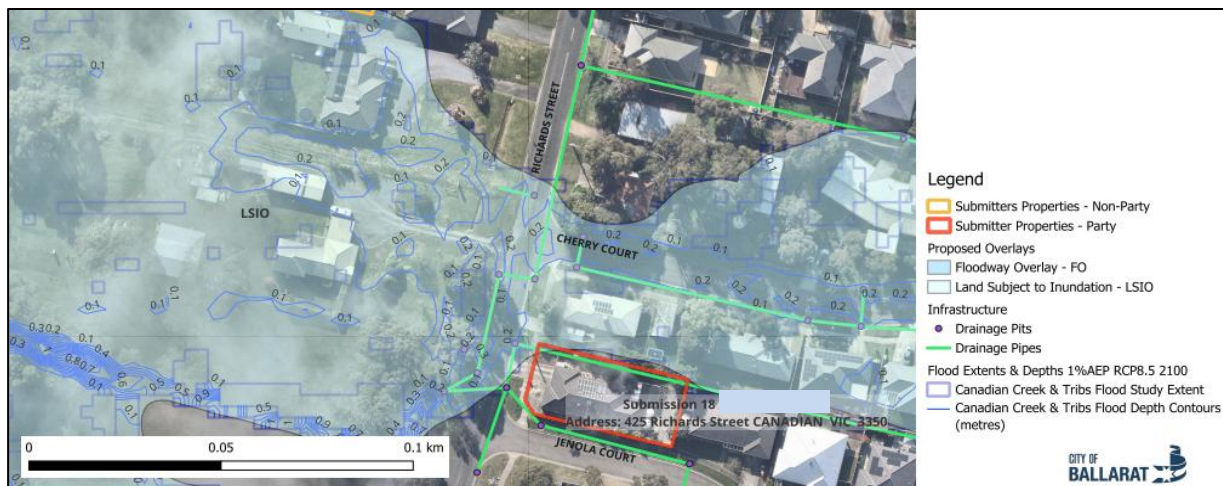
The Panel concludes the LSIO mapping at 1 Boyd Court, Canadian is appropriate.

4.3.9 425 Richards Street, Canadian

(i) Background

It is proposed to apply the LSIO to part of the land at 425 Richards Street, Canadian.

Figure 10 Proposed flood control mapping at 425 Richards Street, Canadian



(iii) Discussion

The Panel agrees that the flood control mapping should be removed from the site. Less than 10 square metres is proposed to be affected by the LSIO, as such this land should be clipped under the criteria that the Panel has accepted (discussed in Chapter 3.2).

(iv) Conclusions and recommendation

The Panel concludes:

- The flood control mapping at 425 Richards Street, Canadian is not appropriate.
- The LSIO should be removed from the land at 425 Richards Street, Canadian.

The Panel recommends:

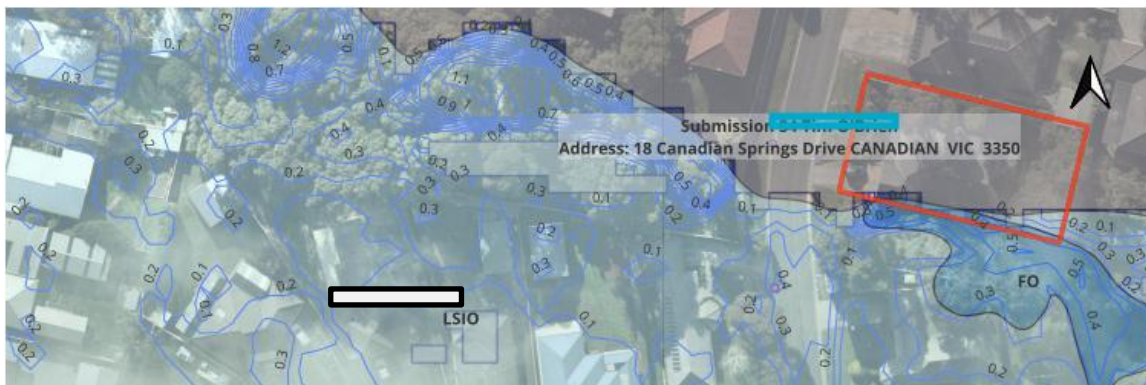
Amend the Land Subject to Inundation Overlay Schedule 2 mapping to remove its application from the land at 425 Richards Street, Canadian.

4.3.10 18 Canadian Springs Drive, Canadian

(i) Background

It is proposed to include part of the land at 18 Canadian Springs Drive, Canadian in the Floodway Overlay and the LSIO.

Figure 11 Proposed flood control mapping at 18 Canadian Springs Drive, Canadian



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 34 opposed the introduction of the flood controls and submitted:

- The modelling does not accurately reflect what would occur in the event of a flood and does not reflect the significant difference in ground level from one side of the fence to the other.
- The concrete structure along the property boundary will act as a weir or barrier to overland flows.
- Existing infrastructure and significant works undertaken in 2024 have not been appropriately accounted for.

Mr Hughes gave evidence that:

- works of a permanent nature could justify an amendment to the application of the overlay where they have the impact of rendering land 'dry'

- did not consider that the fence was such an improvement but that the driveway heights could be taken and measured against predicted flood levels.

Council submitted:

- It acknowledged the evidence of Mr Hughes and consequences of the works on the site.
- it proposes (subject to the submitter's consent) to survey levels of the improvements to the driveway to confirm whether the driveway improvements are above the flood levels and therefore the flood controls should be amended. This will occur prior to consideration of whether to adopt the Amendment.

(iii) Discussion

The Panel accepts the evidence of Mr Hughes that there may be some basis upon which to review the flood controls on this site. However, this does not alter the Panel's view (discussed in Chapter 3.1) that the flood modelling is appropriate for a study of this scale.

The Panel accepts that Council will undertake further work to confirm if the flood controls should be amended, however the Panel is not in a position to recommend any changes to the flood controls at this time.

(iv) Conclusions

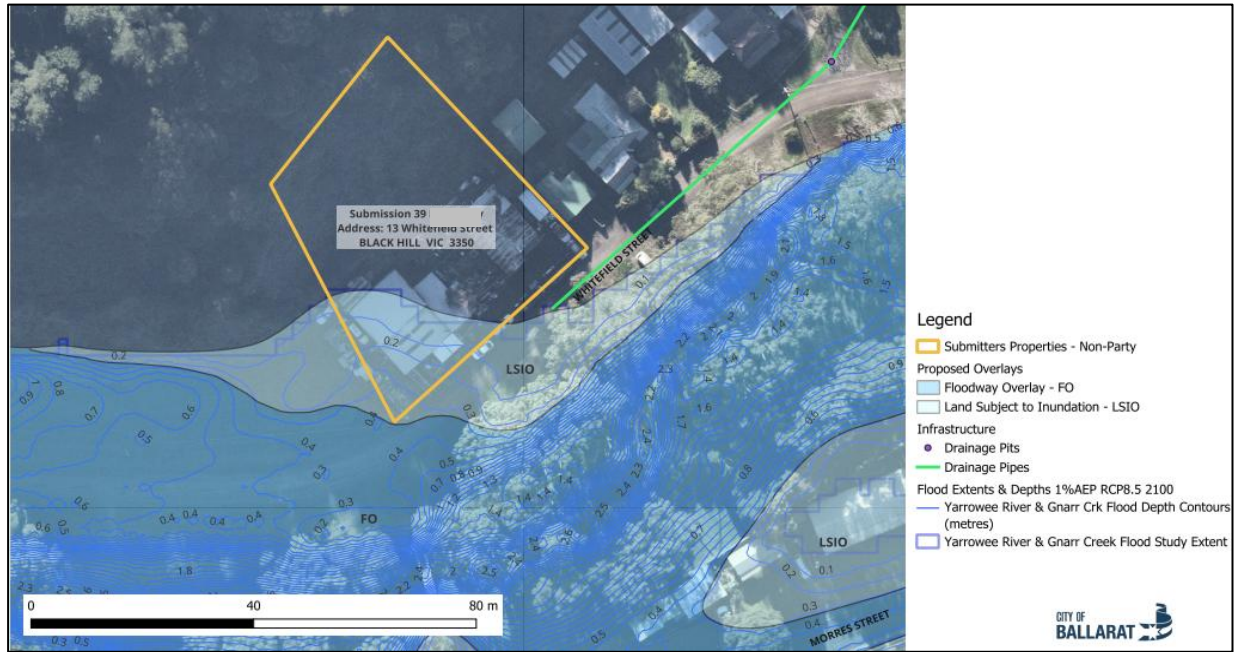
The Panel concludes the flood control mapping at 18 Canadian Springs Drive, Canadian is appropriate (based on the information currently available).

4.3.11 13 Whitefield Street, Blackhill

(i) Background

It is proposed to apply the LSIO to part of the land at 13 Whitefield Street, Blackhill.

Figure 12 Proposed LSIO mapping at 13 Whitefield Street, Blackhill



Source: Site visit maps produced by Council (the Panel notes that at the time the map was prepared the submitter was not party to the Hearing, but subsequently became a party)

(ii) Submissions

Submitters 39 and 65 opposed the LSIO mapping and submitted:

- Insufficient investment in road and drainage infrastructure is the cause of the flooding issues.
- The modelled extent of the flooding represents a drainage failure, rather than a natural flood risk.
- The modelled extent of flooding under the 1 per cent AEP and climate change assumptions are highly conservative and does not represent current day conditions.
- There is no history of flooding in the area and this should be taken into account.
- The modelling should be reviewed based on risk, conditions on the ground and having regard to future investment in infrastructure – before any SLIO mapping is applied.
- The LSIO mapping will affect the cost of insurance and future development opportunities.

Council submitted:

- It appreciated the significant involvement of the submitter in the process.
- The flood overlap mapping represents the modelled flood extent on the site and no change is necessary.

- It relied on the evidence of Mr Hughes in relation to the reliability of the modelling extent, including in relation to the construction of the layers and clipping process.
- The adopted of the 1 per cent AEP and climate change scenarios were appropriate and it relied on the views of the drainage experts in the conclave in relation to the accuracy of the modelling.

(iii) Discussion

The Panel agrees that the LSIO mapping accurately reflects the modelled extent of flooding. There was no evidence presented to indicate that the hazard mapping should be altered.

As discussed in Chapter 3.1, the Panel has accepted that the methodology used for the Flood Study is appropriate.

As discussed in Chapter 4.2.2, the Panel has accepted that impacts on development opportunities are not unreasonable. The mapping reflects an existing hazard and the LSIO does not prohibit future development – rather it triggers a consideration and appropriate risk assessment if a planning permit is sought.

As discussed in Chapter 4.2.3 it is not appropriate to alter the flood control mapping on the basis of future infrastructure improvements. If infrastructure improvements are made in the future, it may be appropriate to review the flood controls.

(iv) Conclusion

The Panel concludes the LSIO mapping at 13 Whitefield Street, Blackhill is appropriate.

4.3.12 21 Mimosa Avenue, Alfredton

(i) Background

It is proposed to include part of 21 Mimosa Avenue, Alfredton in the SBO.

Figure 13 Proposed SBO mapping at 21 Mimosa Avenue, Alfredton



Source: Site visit maps produced by Council

(ii) Submissions

Submitter 66 opposed the introduction of the SBO and submitted:

- Any flooding issues have arisen as a result of the nearby golf course development completed in around 2008.
- Insufficient investment in infrastructure is the cause of the flooding issues.

Council submitted:

- The SBO mapping represents the modelled flood extent on the site and no change is necessary.
- It acknowledged that in its broader municipal role (outside of the Amendment process) it would assess any capital works required in the area. If as a result of any capital works, the flooding regime changes then the mapping may be revised.

(iii) Discussion

The Committee agrees that the flood control mapping accurately reflects the modelled extent of flooding. There was no evidence presented to indicate that the hazard mapping should be altered.

As discussed in Chapter 4.2.3 it is not appropriate to alter the flood control mapping on the basis of future infrastructure improvements. The Council has reasonably

acknowledged the concerns of the submitter in relation to infrastructure as part of its broader municipal role.

(iv) Conclusion

The Panel concludes the SBO mapping at 21 Mimosa Avenue, Alfredton is appropriate.

4.4 Other issues

4.4.1 CBD land

(i) Issue

The issue is whether the Floodway Overlay mapping needs to be revisited in the Ballarat CBD area.

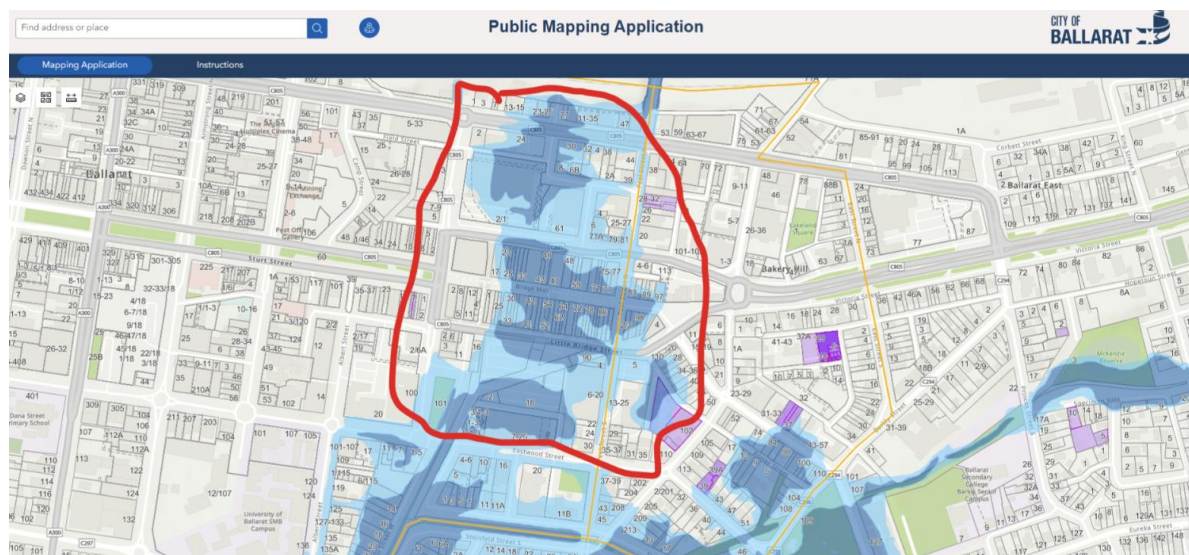
(ii) Evidence and submissions

In the conclave statement, all drainage experts agreed:

The FO in the CBD areas should be reconsidered to be a LSIO only and remove the FO. Urban centres, such as the Ballarat CBD, represent a specific scenario where greater flexibility for future development to enable flood mitigation is potentially better enabled through the LSIO schedule alone (as opposed to the FO).

During the Hearing Mr Hughes explained that the 'Ballarat CBD' meant the land between Mair Street and Eastwood Street and prepared a sketch of the area as shown in Figure 14.

Figure 14 Ballarat CBD as described by drainage experts



Source: Document 55(a)

The extent of the Floodway Overlays in the Ballarat CBD was not an issue specifically raised in submissions. However, the issue arose in the context of submissions about the Alfred Square land (which is located in the Ballarat CBD).

Initially Council indicated it supported the removal of the Floodway Overlay from land within the Ballarat CBD, as this land had similar attributes to the Alfred Square land. However, in closing Council submitted it was cognisant that:

- The concept of the Ballarat CBD arose from a conclave meeting focused on the Alfred Square Pty Ltd property in which that concept was not defined nor the process for identifying the Ballarat CBD recorded.
- While Mr Hughes advanced the sketch above and the other experts appear to provide general support for that area, the definition of the area at the perimeter has not been subject to close scrutiny or properly recorded.

Council submitted that:

- There should be a process of further review of the Ballarat CBD. It suggested the following further work, specifically Water Technology should be engaged to review whether the extent of the Ballarat CBD (as described by experts) represented the area of the CBD affected by riverine flooding and as zoned Commercial 1 Zone (noting that the commercially zoned land extends beyond the sketch prepared by the experts).
- It sought to ensure a consistent approach to any changes to the Floodway Overlay in the Ballarat CBD.
- If any changes were proposed as a result of its review, it would consult with the CCMA and any directly affected landowners (noting that any reduction in the extent of the Floodway Overlay would reduce the potential burden on those properties).

(iii) Discussion

As discussed in Chapter 4.1 the Panel does not support a technical risk-based assessment of sites as the driver of the hazard mapping review (i.e. it is not about the flood behaviour – this has already been determined by the Flood Study). Any re-assessment of the hazard-based overlay mapping should only be triggered based in circumstances where:

- the vulnerability of the future community, built form and infrastructure is known with a high degree of certainty at the time the flood control mapping is proposed to be introduced
- the hazard-based overlay mapping has clear adverse policy implications
- there is appropriate mitigation measure in place.

These same principles apply in the Ballarat CBD. A further analysis of the flood behaviour (e.g. riverine flooding) is warranted as this type of assessment is subjective and not driven by the technical considerations.

Instead, the Panel considers a policy-based review approach conducted for land within the Ballarat CBD (more specifically land zoned Commercial 1 Zone) might be more appropriate. This would be consistent with the Panel's recommendations in Chapter 4.1 and would represent a more consistent approach to the translation of the Flood study into the overlay maps.

(iv) Finding

The Panel finds that it may be appropriate for Council to conduct a policy-based review of the Floodway Overlay mapping of the land zoned Commercial 1 Zone in the Ballarat CBD based on the principles outlined by the Panel Chapter 4.1.

4.4.2 Other Amendment changes

(i) The issues

The issues are whether the:

- mapping changes shown in the Version 1 Amendment documents are appropriate
- the drafting changes to the LSIO Schedule 2 shown in the Version 2 Amendment documents are appropriate.

(ii) Background

The Version 1 Amendment documents (discussed in Chapter 1.6) show updated mapping in draft format. Most changes to the mapping were the result of the clipping process (discussed in Chapter 3.2) including the removal of 140 properties from the flood controls after the updated clipping process. Two of these properties were the subject of submissions; from submitter 12 (non-party) and submitter 18 (party).

The Version 1 Amendment documents also:

- reduce the extent of the overlays in response to updated technical information about infrastructure at 36 Ross Creek Road, Bonshaw (submitter 48)
- replace the Floodway Overlay with the LSIO on two properties controlled by Integra (discussed in Chapter 4.3.4).

The Version 2 Amendment documents were filed by Council on the last day of the Hearing, incorporating the following decision guidelines into Schedule 2 of the LSIO:

The following decision guidelines apply to an application for a permit under Clause 44.04, in addition to those specified in Clause 44.04 and elsewhere in the scheme which must be considered, as appropriate, by the responsible authority:

- The flood risk report.

See 44.04-8 for relevant provisions.

(iii) Evidence and submissions

Version 1 mapping changes

Council submitted that the changes resulting from the clipping process were logical and should be supported. Several submitters at the Hearing suggested that their sites also met the threshold for clipping and additional sites should be 'clipped' from the flood control mapping. These submissions are discussed in more detail in Chapter 3.2.

Integra supported the replacement of the Floodway Overlay with the LSIO on two of its landholdings. These submissions are discussed in more detail in Chapter 4.3.4.

Version 2 drafting changes

The inclusion of a decision guideline to explicitly require the consideration of the Flood Risk Report under the LSIO was uncontroversial between the parties.

This was not a matter raised in submissions however Council submitted it would improve the operation and clarity of the control (and would be more consistent with the approach in the Floodway Overlay).

(iv) Discussion

Version 1 mapping changes

As discussed in Chapter 3.2, the Panel supports the approach to smoothing and clipping of the overlay maps (including the 10 square metre incursion threshold). It is unclear from the mapping or submissions which overlay applies to the 140 properties to be removed the Amendment as a result of the clipping process. The Panel however has no concerns with the removal of flood controls from the 140 properties if they are no longer required.

The Panel is also satisfied with the reduction in the extent of the mapping in Ross Creek Road, Bonshaw based on updated drainage information, as reflected in the Version 1 documents.

However, as discussed in Chapter 4.3.4, further work is required before the Floodway Overlay can be removed from Integra Sites B and C. The change to Integra Sites B and C shown in the Version 1 Amendment documents is not supported at this time.

Version 2 drafting changes

The inclusion of a decision guideline to explicitly require the consideration of the Flood Risk Report under the LSIO was uncontroversial between the parties. This was not a matter raised in submissions, however, Council said it would improve the operation and clarity of the control (and would be more consistent with the approach in the Floodway Overlay).

Arguably the decision guideline is not needed, as the decision guidelines in the LSIO parent clause already calls up the matters that will be addressed in the Flood Risk Report. However, the Panel has no objection to including this to improve clarity.

The Panel supports the inclusions of a decision guideline in the LSIO, subject to the deletion of the words 'See 44.04-8 for relevant provisions' as this is just an explanatory part of the form and content guide.

(v) Conclusions and recommendations

The Panel concludes:

- Some of the mapping changes presented in the Version 1 Amendment documents are appropriate
 - It is appropriate to remove the 140 properties from the Floodway Overlays based on the updated clipping process
 - It is appropriate to reduce the extent of the Floodway Overlays in response to updated technical information at 36 Ross Creek Road, Bonshaw
 - It is not appropriate to delete the Floodway Overlay from Integra Sites B and C at this time until the completion of further work as recommended in Chapter 4.3.4.
- The drafting changes to the LSIO schedule shown in the Version 2 Amendment documents are appropriate.

The Panel recommends:

Amend the relevant Floodway Overlay Schedule 2, Land Subject to Inundation Overlay Schedule 2 and Special Building Overlay Schedule 1 mapping to:

- a) remove its application from:**
 - the 140 properties shown in the Version 1 Amendment documents (resulting from the updated clipping process)
- b) realign and reduce its application to:**
 - 36 Ross Creek Road as shown in the Version 1 Amendment documents.

Amend the Land Subject to Inundation Overlay Schedule 2 to include the following decision guideline:

The following decision guidelines apply to an application for a permit under Clause 44.04, in addition to those specified in Clause 44.04 and elsewhere in the scheme which must be considered, as appropriate, by the responsible authority:

- *The flood risk report.*

Appendix A Subject landmaps

The following maps are sourced from the exhibited Expandatory Report.

Figure 15 Bonshaw and Redan Creeks



Figure 16 Yarrowee River and Gnarr Creek

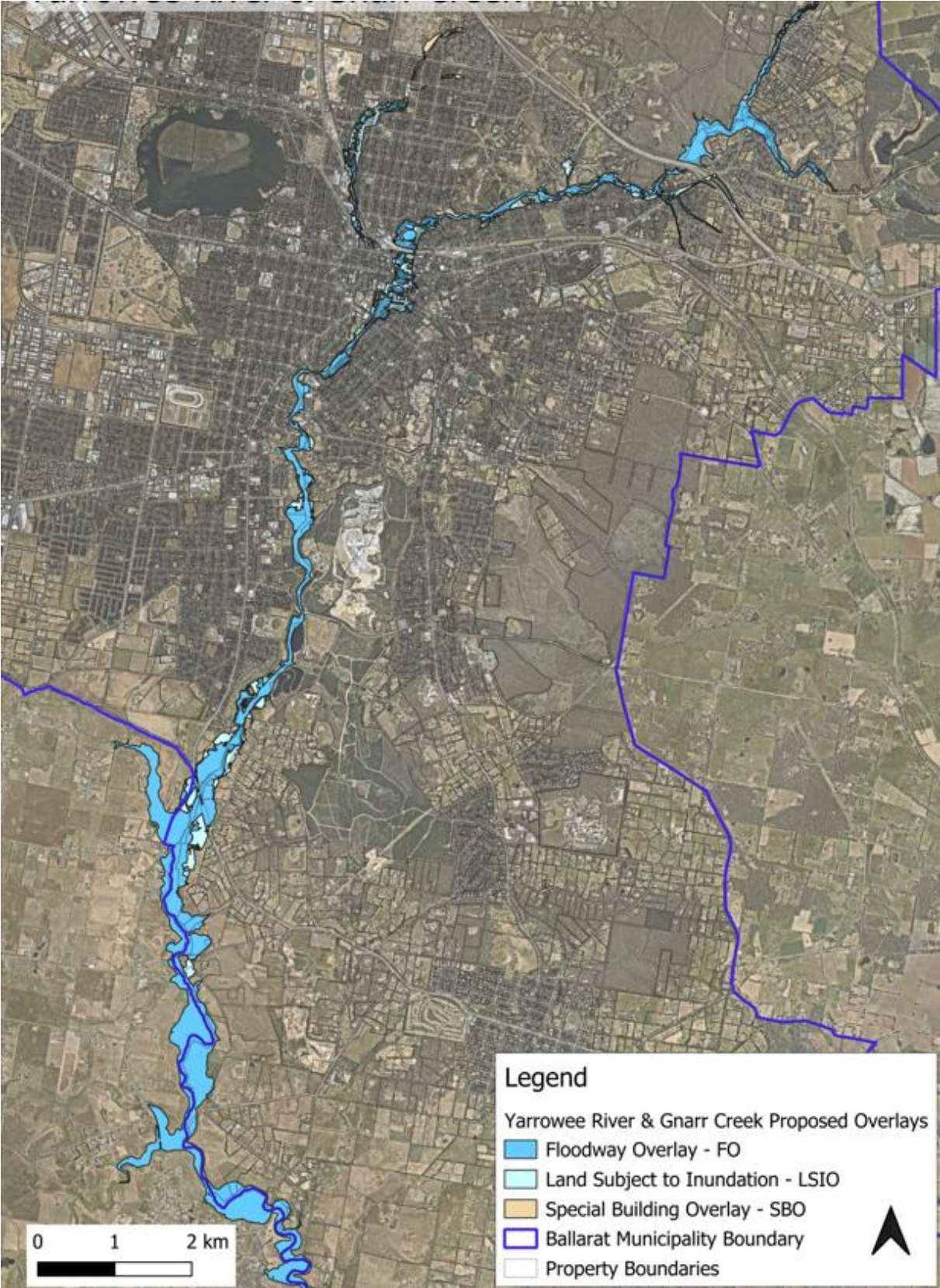


Figure 17 The Chase Waterway

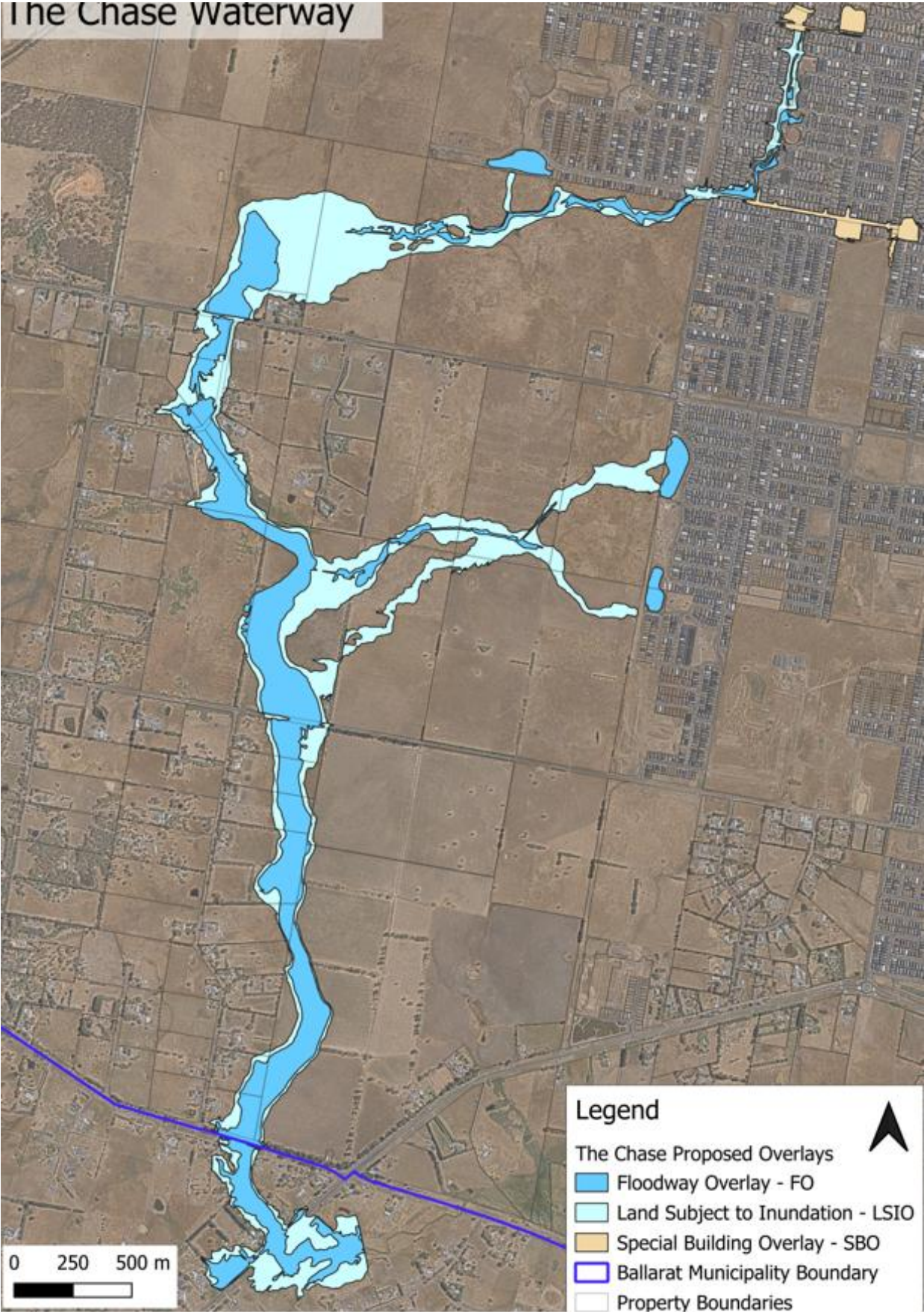


Figure 18 Kensington Creek

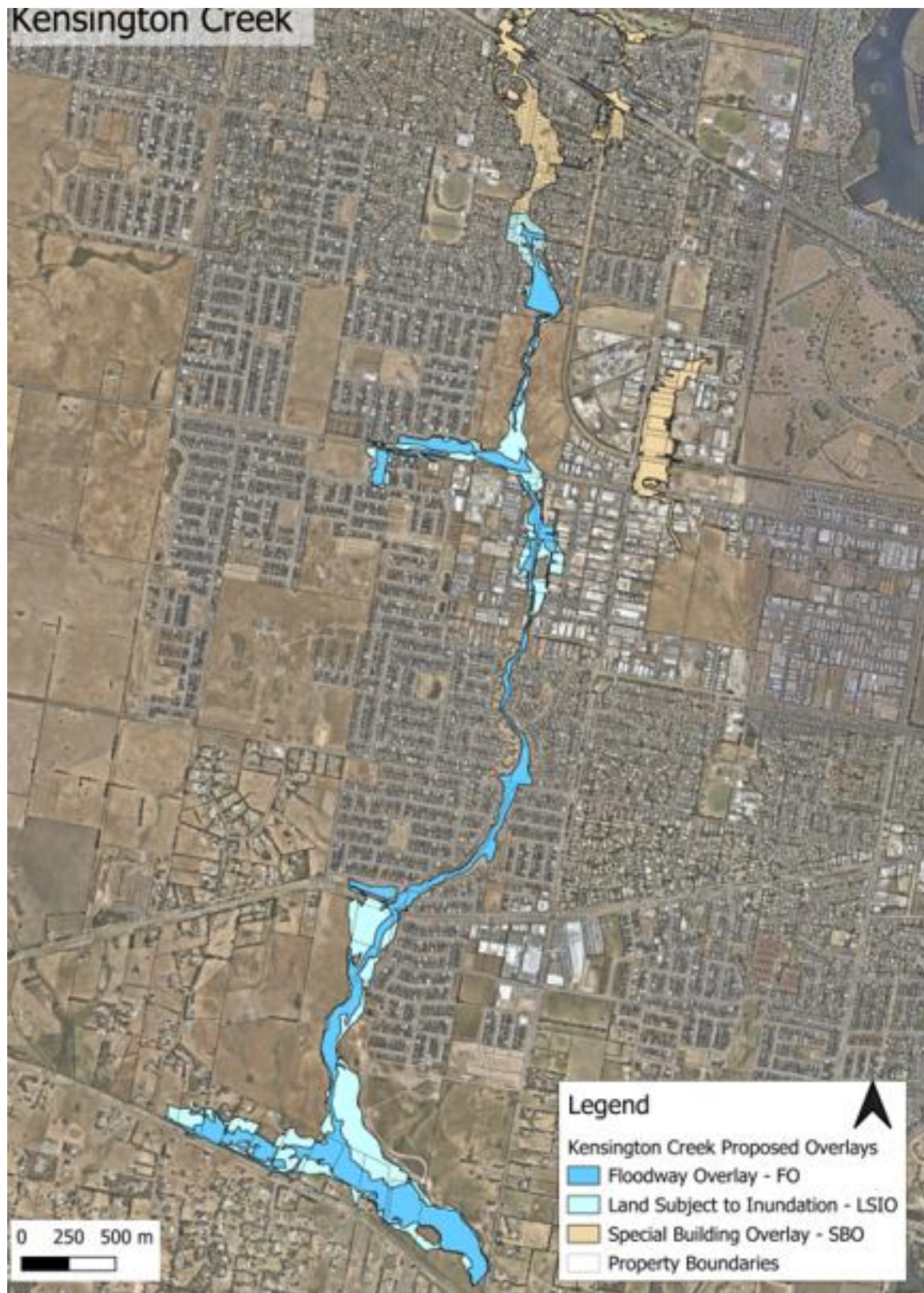


Figure 19 Canadian Creek and tributaries

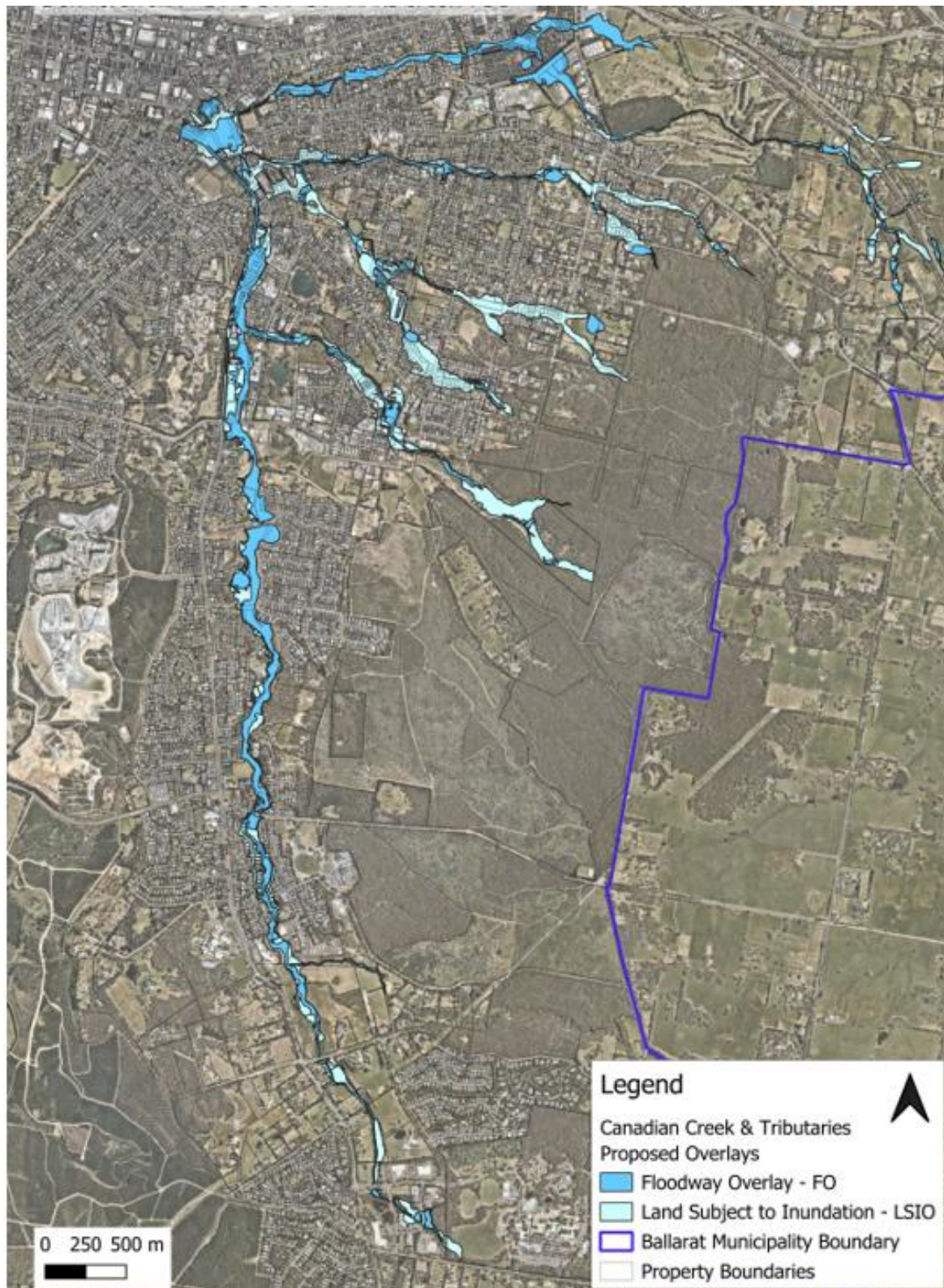
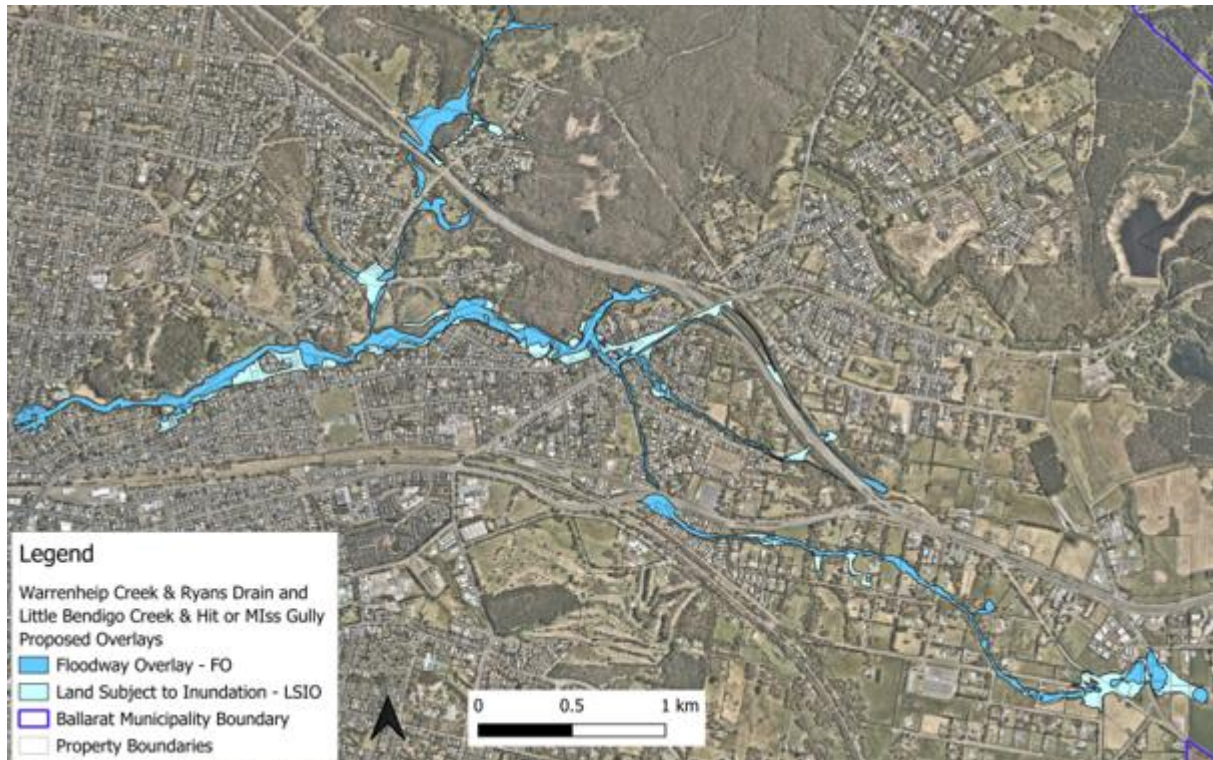


Figure 20 Warrenheip Creek & Ryan's Drain and Little Bendigo Creek & Hit or Miss Gully



Appendix B Document list

No.	Date	Description	Provided by
Referred documents			
1	19 July 26	Amendment documents: a. Explanatory Report b. Instruction sheet c. FO2 d. LSIO2 e. SBO1 f. Clause 72.03 Schedule g. Clause 72.08 Schedule h. Ballarat Planning Scheme maps	Ballarat City Council (Council)
2	19 July 26	Council's Planning Delegated Committee 8 July 2026 report and minutes relating to consideration of submissions and request for a Panel	Council
3	19 July 26	Submissions (66)	Council
4	30 July 26	Late submission	Council
Tabled documents			
5	4 Aug 26	Panel Directions and Hearing Timetable (version 1)	Planning Panels Victoria (PPV)
6	4 Aug 26	Authorisation letter from Department of Transport and Planning, 26 February 2026	Council
7	4 Aug 26	Summary Report Ballarat 11 Waterways Flood Study Flood, Water Technology, 29 July 2025	Council
8	4 Aug 26	Little Bendigo Creek & Hit or Miss Gully Flood Mapping Project Hydrology and Hydraulics Report, Water Technology, December 2023	Council
9	4 Aug 26	Kensington Creek Flood Mapping Project Hydrology and Hydraulics Report, Water Technology, December 2023	Council
10	4 Aug 26	Redan Creek Flood Mapping Project Hydrology and Hydraulics Report, Water Technology, December 2023	Council
11	4 Aug 26	Bonshaw Creek Flood Mapping Project Hydrology and Hydraulics Report, Water Technology, December 2023	Council
12	4 Aug 26	Canadian Creek and Tributaries Hydrology and Hydraulics Ballarat Flood Modelling Update, Water Technology, December 2023	Council
13	4 Aug 26	Yarrowee River and Gnarr Creek Hydrology and Hydraulics Ballarat Flood Modelling Update, Water Technology, December 2023	Council

No.	Date	Description	Provided by
14	4 Aug 26	Warrenheip Creek and Ryans Drain Hydrology and Hydraulics Ballarat Flood Modelling Update, Water Technology, December 2023	Council
15	4 Aug 26	The Chase Waterway Flood Mapping Report Hydrology and Hydraulics Report, Water Technology, December 2023	Council
16	7 Aug 26	Part A submission (Background and Context)	Council
17	20 Aug 26	Part A submission – Appendix 1 - CCMA determination	Council
18	20 Aug 26	Part A submission – Appendix 2 – Response to key themes	Council
19	20 Aug 26	Part A submission – Appendix 3 – CCMA email	Council
20	20 Aug 26	Part A submission – Appendix 4 – Submissions summary officer response 8 July 2026	Council
21	20 Aug 26	Part A submission – Appendix 5 (a) – Officer report extract - 8 July 2026 Planning Delegated Committee meeting minutes	Council
22	20 Aug 26	Part A submission – Appendix 5 (b) – Draft 8 July 2026 Planning Delegated Committee meeting minutes	Council
23	20 Aug 26	Part A submission – Appendix 5 (c) - 3 December 2025 Planning Delegated Committee officer report	Council
24	20 Aug 26	Part A submission – Appendix 5 (d) – 3 December 2025 Planning Delegated Committee meeting minutes	Council
25	20 Aug 26	Part A submission – Appendix 6 (a) – 2025 Community Engagement Report	Council
26	20 Aug 26	Part A submission – Appendix 6 (b) – 2019 Capire Community Engagement Report	Council
27	20 Aug 26	Part A submission – Appendix 7 – Ballarat Housing Strategy 2041	Council
28	20 Aug 26	Part A submission – Appendix 8 (a) – General response memorandum	Council
29	20 Aug 26	Part A submission – Appendix 8 (b) – Integra response memorandum	Council
30	20 Aug 26	Part A submission – Appendix 8 (c) - Beveridge Williams response memorandum	Council
31	20 Aug 26	Part A submission – Appendix 8 (d) – Urban Development Institute of Australian response memorandum	Council
32	20 Aug 26	Part A submission – Appendix 8 (e) – Victoria School Building Authority response memorandum	Council
33	24 Aug 26	Expert statement – Ben Hughes	Council
34	24 Aug 26	Expert statement - Christine Lauchlan Arrowsmith	Council

No.	Date	Description	Provided by
35	24 Aug 26	Expert statement – Rob Swan	Rodney Ventures P/L
36	24 Aug 26	Expert statement – Rhys Quick	Rodney Ventures P/L
37	24 Aug 26	Final submission	Submitter 34
38	24 Aug 26	Submission – Appendix – image 1	Submitter 34
39	24 Aug 26	Submission – Appendix – image 2	Submitter 34
40	24 Aug 26	Submission – Appendix – property line comparison	Submitter 34
41	24 Aug 26	Mesh Planning report	Rodney Ventures P/L
42	24 Aug 26	Expert statement - Nina Barich	Alfred Square P/L
43	10 Aug 26	Panel Hearing Timetable (version 2)	PPV
44	11 Aug 26	Email contained declaration by the Chair	PPV
45	13 Aug 26	Panel Hearing Timetable (version 3)	PPV
46	26 Aug 26	Panel Hearing Timetable (version 4)	PPV
47	28 Aug 26	Site visit maps	Council
48	28 Aug 26	Joint expert statement	Council
49	29 Aug 26	Council Version 1 Amendment documents: a) 10sqm clipped sites b) Clipping submission 12 site c) Clipping submission 18 site d) Clipping Jones Lane & Ross Creek Road submission 48 e) Jones Lane & Ross Creek Road supporting materials f) Changes sites A, B and C submitter 49	Council
50	29 Aug 26	Council main submissions a) LCEPC The 2022 flood event, Inquiry final report b) Section 173 agreement 1-61 Curtis Street, Ballarat Central c) Plan for subdivision PS710718R d) Ministerial Direction 22 (Climate change considerations) e) Planning Practice Note 12 (Applying the flood provisions in Planning Schemes) f) DELWP Guidelines for Development in Flood Affected areas	Council

No.	Date	Description	Provided by
		g) DELWP implementation snapshot 2016 – 2022 six years of delivery h) Advisory Notes for Delineating Floodways Revised (July 1998) i) DELWP Victorian Floodplain Management Strategy j) Plan for Victoria	
51	31 Aug 26	Submission	Submitter 6
52	31 Aug 26	Submission (with images)	Submitter 37
53	31 Aug 26	Submission	Submitter 18
54	1 Sept 26	Revised oral submission	CCMA
55	1 Sept 26	Screenshot of mark ups provided by Mr Hughes: a) Ballarat CBD extent b) Rodney Ventures Land depressions	Council
56	1 Sept 26	Materials referenced in submissions: a) Elsworth Street (Rodney Ventures Land) site hazard and depth mapping b) Slide presentation	CCMA
57	1 Sept 26	Materials referenced in submissions: a) Mount Alexander Amendment C82 Flood Study extract b) Mount Alexander Amendment C82 Panel report c) Buloke Amendment C27 Panel report	Council
58	1 Sept 26	Final submission and questions	Submitter 34
59	2 Sept 26	Submission including: a) Dot point questions for drainage experts	Submitter 65
60	2 Sept 26	Response to Panel questions (arising from submissions)	CCMA
61	3 Sept 26	Submission	Integra
62	3 Sept 26	Submission	Alfred Square
63	4 Sept 26	Submission	Rodney Ventures
64	7 Sept 26	Closing submission, including: a) Ballarat IGAF b) HCAP extract c) Moyne Amendment C69 Panel report d) Greater Shepparton VCAT decision e) Wallan Environment Group VCAT decision f) Innacone VCAT decision	Council
65	7 Sept 26	Version 2 Amendment documentation (LSIO Schedule 2)	Council

Appendix C Planning context

C: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.

Victorian planning objectives

The State policy objectives are set out in section 4 of the PE Act. They include to:

- provide for the fair, orderly, economic and sustainable use, and development of land
- provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity
- secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria
- conserve and enhance buildings, areas or places which are of scientific, aesthetic, architectural or historical interest or special cultural value
- protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community
- facilitate development in accordance with the above objectives
- facilitate the provision of affordable housing in Victoria
- balance the present and future interests of all Victorians.

Clause 2 (Municipal Planning Strategy)

The MPS includes the following key directions relevant to the Amendment:

- Clause 02.03-3 (Environmental risks and amenity) which seeks to:
 - Preserve the natural functions and values of floodplain environments.
 - Discourage development within flood prone areas that presents an unacceptable risk to life or property.

Clause 11 (Settlement) Relevant subclauses include:

- **Clause 11.01-1S (Settlement)** which seeks to facilitate the sustainable growth and development of Victoria and deliver choice and opportunity for all Victorians through a network of settlements. Strategies include facilitating environmentally resilient settlements by:
 - Integrating the management of water resources into the urban environment in a way that supports water security, public health, environment and amenity outcomes.
 - Minimising exposure to natural hazards
- **Clause 11.01-1S (Settlement – Regional Victoria)** includes strategies to deliver networks of high-quality regional settlements (including Ballarat) by:
 - Building on strengths and capabilities of each region across Victoria to respond sustainably to population growth and changing environments.
 - Developing settlements that will support resilient communities and their ability to adapt and change.
- **Clause 11.02-1S (Development capacity)**. Strategies include that planning for urban growth should consider:
 - The limits of land capability and natural hazards and environmental quality

Service limitations and the costs of providing infrastructure.

- **Clause 11.03-1L-1 (Ballarat CBD).** Strategies include:

Ensure development in flood prone areas of the CBD is designed to minimise the risk to life and property.

Clause 12.03 (water bodies and wetlands) Relevant subclauses include:

- **Clause 12.03-1S (River and riparian corridors, waterways, lakes, wetlands and billabongs)** seeks to protect and enhance waterway systems. Strategies include:

Address the impacts of use and development on drought and flooding events at a catchment and site scale to protect the health and natural function of waterway systems and their surrounding landscape and environment

Design and site development to maintain and enhance the natural environment of waterway systems including by avoiding impeding the natural flow of waterways and future flood events.

Clause 13 (Environmental risks and amenity) Relevant subclauses include:

- **Clause 13.01-1S (Natural hazards and climate change)** which seeks to minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning. Strategies include:

Respond to the risks associated with climate change in planning and management decision making processes.

Identify at risk areas using the best available data and climate change science.

Ensure planning controls allow for risk mitigation and climate change adaptation strategies to be implemented.

- **Clause 13.03-1S (Floodplain management)** which seeks to assist the protection of:

Life, property and community infrastructure from flood hazard, including coastal inundation, riverine and overland flows.

The natural flood carrying capacity of rivers, streams and floodways.

The flood storage function of floodplains and waterways.

Strategies include:

Identify land affected by flooding, including land inundated by the 1 in 100 year flood event (1 per cent Annual Exceedance Probability) or as determined by the floodplain management authority in planning schemes.

Avoid intensifying the impact of flooding through inappropriately located use and development.

Plan for the cumulative impacts of use and development on flood behaviour.

- **Clause 19.03-3S (Integrated water management)** which seeks to sustainably manage water supply and demand, water resources, wastewater, drainage and stormwater through an integrated water management approach. Strategies include:

Plan and coordinate integrated water management, bringing together stormwater, wastewater, drainage, water supply, water treatment and re-use, to:

- Take into account the catchment context.
- Protect downstream environments, waterways and bays.
- Minimise drainage, water or wastewater infrastructure and operational costs.
- Minimise flood risks.
- Provide urban environments that are more resilient to the effects of climate change.

C:2 Other relevant planning strategies and policies

i) Plan for Victoria

Plan for Victoria identifies a series of actions to deliver the plan. *Action 19 Better communicate and manage flood, bushfire and climate hazard risks* seeks to provide more information about flood risk. It identifies that this action is important because:

The parliamentary inquiry into the 2022 Victorian floods found we need to identify flooding risks and communicate them to the community. Good flood management needs good flood modelling, but planning schemes aren't keeping up with the latest flood models.

Some locations simply aren't suitable for more homes. The increasing impacts of climate change and risks associated with rising sea levels, intense rainfall and flooding, droughts, heatwaves and bushfires mean it's not safe or appropriate to build homes in some areas. We need to clearly identify which areas so these impacts and risks can be considered in decision-making. We also need better guidance about the design of buildings in areas with a flood risk but where there can be some development.

As we update modelling for Melbourne and regional Victoria, some areas we now see as low risk of flooding will be identified as being at high risk, which means that the risk will be greater than a one per cent chance of flooding each year, the benchmark we use to decide if the flood risk is too high.

ii) Ballarat Housing Strategy 2041

The Housing Strategy was adopted by the Ballarat Council in 2024 and provides the City of Ballarat with a framework for managing population and housing growth. The strategy seeks to achieve the following outcomes:

- Ballarat has sufficient housing supply to support population growth.
- Ballarat's infrastructure supports higher density housing.
- Ballarat provides housing choice in locations close to schools, jobs, transport and services.
- Ballarat is distinctive for heritage, character and design.
- Ballarat is a resilient city.

Among its strategic directions are to:

Managing housing growth to avoid development in locations where there is risk to life, property, the natural environment and infrastructure from natural hazards such as bushfire and flooding.

In relation to flooding the Housing Study identifies:

The City of Ballarat has a history of localised flooding which is mainly due to flash flooding after high intensity rainfall often associated with thunderstorms. Other flooding is associated with flooding from rivers and creeks overflowing after prolonged rainfall. In 1991 and 2011, areas affected by flooding included Ballarat East, Central Ballarat, Miners Rest, Ballarat East, Delacombe and Alfredton.

The City of Ballarat works closely with the North Central Catchment Management Authority, Corangamite Catchment Management Authority and Glenelg Hopkins Catchment Management Authority to ensure flood risk is managed. Consideration of how to manage flood risk is currently underway for 11 waterways including the Yarrowee River that flows through the Ballarat CDB.

Avoiding development in locations where there is risk to life, property and infrastructure from hazards associated with flooding is necessary. Consideration of the flood risks when identifying the change areas determined that due to the limited extent of the flood risk and mitigation options available it is unlikely that it will have significant impact on the ability for land to be developed for residential use. In areas where significant change has been

identified structure planning will provide the opportunity and mechanisms to manage flooding risks.

C:3 Planning scheme provisions

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

i) Floodway Overlay

The purposes of the Floodway Overlay 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.

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

A schedule to the overlay can contain:

- Floodway management objectives to be achieved
- A statement of risk.

A schedule to the overlay can identify:

- buildings and works which do not require a permit under the overlay
- additional information required to be provided with a permit application
- additional decision guidelines

ii) Land Subject to Inundation Overlay

The purposes of the Land Subject to Inundation Overlay 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.

A schedule to the overlay can contain:

- Management objectives to be achieved
- A statement of risk.

A schedule to the overlay can identify:

- buildings and works which do not require a permit under the overlay
- additional decision guidelines.

iii) **Special Building Overlay**

The purposes of the Floodway Overlay are:

To identify land in urban areas liable to inundation by overland flows from the urban drainage system as determined by, or in consultation with, the floodplain management authority.

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

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.

A schedule to the overlay can contain:

- Flooding management objectives to be achieved
- A statement of risk.

A schedule to the overlay can identify:

- buildings and works which do not require a permit under the overlay
- additional information required to be provided with a permit application.

iv) **Permits required under the Flooding Overlays**

A planning permit is required under the header provisions of the Floodway Overlay, Land Subject to Inundation and SBO for all subdivision and buildings and works including:

- a fence
- Roadworks, if the water flow path is redirected or obstructed
- Bicycle pathways and trails
- Public toilets
- a domestic swimming pool or spa and associated mechanical and safety equipment
- Rainwater tank with a capacity of not more than 10,000 litres
- a pergola or verandah, including an open-sided pergola or verandah to a dwelling or a small second dwelling with a finished floor level not more than 800mm above ground level and a maximum building height of 3 metres above ground level
- a deck, including a deck to a dwelling or a small second dwelling with a finished floor level not more than 800 millimetres above ground level
- a disabled access ramp.

Table 4 summarises the buildings and works identified in FO2, LSIO2 and SBO1 which do not require a permit.

A permit is required for subdivision in all zones and all applications required an application to be referred to the floodplain management authority (CCMA in this instance).

Table 4 Buildings and works specific exemptions from overlay header provisions

Buildings and works	FO2	LSIO2	SBO1
Buildings and works on land subject to a s173 agreement	The ground level of the approved development is to be finished at least 300 millimetres above the applicable 1% AEP flood level; and Survey plans are prepared by a licensed Land Surveyor confirming that the ground level of the completed development has been constructed in accordance with the requirements of a planning permit, restriction or legal agreement; and Any buildings and works do not lower the natural ground level or result in a finished floor level for a building that is below 300 millimetres above the applicable 1% AEP level as determined by the Floodplain Management Authority.	Same as FO2	Same first 2 dot points for FO2 and: Any buildings and works do not lower the natural ground level or result in a finished floor level for a building that is below 300 millimetres above the applicable 1% AEP level as determined by the City of Ballarat.
External alterations to a building	Provided: • The original building footprint remains the same; and • The alterations do not enclose previously open areas beneath the building; and • The alterations do not involve changes to the building's foundations or subfloor structure; and • The works do not obstruct the free passage of floodwater or reduce flood storage capacity	Same conditions as FO2 but identified as 'Replacement buildings'	No specific exemption
Ground level extensions	Covered by above provisions	The floor level of the extension is at least 300 millimetres above the applicable 1% AEP level; or The floor level of the extension is not lower than the existing floor level and the gross floor area of	No specific exemption

Buildings and works	FO2	LSIO2	SBO1
		the extension is no greater than 20 square metres.	
Upper-level extensions to existing buildings	Provided: - There is no increase in the ground floor building footprint; and - The extension does not enclose previously open areas beneath the building; and - The extension does not require a new or altered on-site wastewater treatment system; and - The works do not obstruct the free passage of floodwater or reduce flood storage capacity	Provided there is no increase in the ground floor building footprint and the extension does not require a new or altered on-site wastewater treatment system.	No specific exemption
Repairs and routine maintenance of existing fences	Provided the location, design and materials remain the same	Same as FO2	No specific exemption
New or replacement fencing	Provided the fence is at least 50% permeable to allow for the passage of flood waters up to the applicable 1% AEP flood level and complies with any relevant Floodplain Management Authority design guidelines for fencing in flood prone areas	Same as FO2	No specific exemption
Works associated with roads, roadsides or any other access ways (public or private) carried out by a public authority	With the written consent of the relevant Floodplain Management Authority	Same as FO2	No specific exemption
Minor earthworks or landscaping	Works do not raise the natural ground level	Same as FO2	No specific exemption

Buildings and works	FO2	LSIO2	SBO1
Minor earthworks, including earthworks that raise the natural ground level	On land that is above the applicable 1% AEP flood level as advised in writing by the relevant Floodplain Management Authority within 12 months of the commencement of the works	Same as FO2	No specific exemption
Levee or embankment repairs and routine maintenance	Do not affect the originally designed height, length or location of a levee or embankment.	Same as FO2	No specific exemption
A building	Which is open on all sides and built at natural ground level	Same as FO2	No specific exemption
A verandah or decking area	With a floor raised on stumps or piers and with unenclosed foundations	Same as FO2	No specific exemption
A trough	Associated with agriculture	Same as FO2	No specific exemption
A boardwalk	Provided it is elevated and constructed above 300 millimetres above the applicable 1% AEP flood level to the satisfaction of the relevant Floodplain Management Authority.	Same as FO2	No specific exemption
Roadworks or works to any other access way (public or private)	Do not change the finished level of the road surface or drainage infrastructure	Same as FO2	No specific exemption
Bicycle or pedestrian paths	Where there is no alteration in the natural ground level.	Same as FO2	No specific exemption
A domestic rainwater tank	Provided the tank is on a stand more than 300 millimetres above the applicable 1% AEP flood level and which allows for the free passage of floodwater.	Same as FO2	No specific exemption
A shed (including a pump shed)	Less than 10 square metres gross floor area	Same as FO2	No specific exemption

Buildings and works	FO2	LSIO2	SBO1
An in-ground domestic swimming pool or spa and associated mechanical and safety equipment in association with an existing building used for accommodation	No specific exemption	Provided: The excavated soil is removed from within the applicable 1% AEP floodplain; and The perimeter edging of the pool and finishing surfaces are a maximum of 150mm above existing ground level.	No specific exemption
Buildings and works	Subject of a current planning permit application lodged before the approval date of this schedule, where natural ground levels remain unchanged and the finished floor levels of any proposed habitable buildings are at least 300 millimetres above the applicable 1% AEP flood level. For which a building permit has been issued before the approval date of this schedule, where a planning permit was not previously required. Where a building surveyor was appointed to issue a building permit before the approval date of this schedule and has certified in writing that substantial progress was made on the design prior to that date. A building permit must be issued within 12 months of the approval date of this schedule.	Same as FO2	Same as FO2

C:4 Ministerial Directions, Planning Practice Notes and guides

Ministerial Directions

The Explanatory Report discusses how the Amendment meets the relevant requirements of Ministerial Direction 11 (Strategic Assessment of Amendments) and *Planning Practice Note 46: Strategic Assessment Guidelines*, August 2018 (PPN46). That discussion is not repeated here.

Ministerial Direction 22 (Climate Change Considerations) specifies the matters relating to climate change a planning authority must have regard to when preparing and amendment to a planning scheme in accordance with section 12(2A) of the PE Act.

Planning Practice Note 12

PPN12 provides guidance about applying the flood provisions, including preparation of policy, identifying land affected by flooding, preparing a local floodplain development plan and the application and operation of the flood provisions.

PPN12 identifies:

Flooding is a natural hazard but, unlike most other natural hazards, floods are to a great degree predictable in terms of their location, depth and extent. This means that appropriate measures can be developed to reduce flood damage. Land use planning is recognised as being the best means of avoiding future flooding problems.

Through careful planning, flood risks to life, property and community infrastructure can be minimised and the environmental significance of our floodplains protected.

PPN12 identifies four types of flood provisions available; the Urban Floodway Zone, Floodway Overlay, Land Subject to Inundation Overlay and SBO based on the type of flooding and potential risk to life and property. The level of planning control in each provision is commensurate with the potential flood risk.

PPN12 Table 1 and Figure 2 identify when and how the Urban Floodway Zone and flood controls should be applied.

PPN12 also provides drafting guidance on flood control overlay schedules

Practitioner's Guide

A Practitioner's Guide to Victorian Planning Schemes Version 7, June 2024 (Practitioner's Guide) sets out key guidance to assist practitioners when preparing planning scheme provisions. The guidance seeks to ensure:

- the intended outcome is within scope of the objectives and power of the PE Act and has a sound basis in strategic planning policy
- a provision is necessary and proportional to the intended outcome and applies the VPP in a proper manner
- a provision is clear, unambiguous and effective in achieving the intended outcome.