

Glenelg Planning Scheme Amendment C15gelg
Dartmoor and Nelson Flood Study

Panel Report

Planning and Environment Act 1987

22 July 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

Glenelg Planning Scheme Amendment C115gelg

Dartmoor and Nelson Flood Study

22 July 2026



Michael Ballock, Chair



Ross Edwards, Member

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Glossary and abbreviations

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ARR	Australian Rainfall and Runoff
BMT	BMT coastal sub-consultant
CC1 and CC2	Climate Change scenarios 1 (0.8 metre sea level rise) and 2 (1.2 metre sea level rise)
Council	Glenelg Shire Council
DEM	Digital Elevation Model
DTP	Department of Transport and Planning
FO1	Floodway Overlay Schedule 1
GHCMA	Glenelg Hopkins Catchment Management Authority
LFDP	Glenelg Shire Local Floodplain Development Plan
LiDAR	Light Detection and Ranging
LSIO1	Land Subject to Inundation Overlay Schedule 1
McInnes paper	<i>An assessment of current and future vulnerability to coastal inundation due to sea-level extremes in Victoria, southeast Australia 2013</i> by McInnes et al from the International Journal of Climatology
PE Act	<i>Planning and Environment Act 1987</i>
Planning Scheme	Glenelg Planning Scheme
RORB	Runoff Routing over Basins
SSP5-8.5	Shared Socioeconomic Pathway 5-8.5 of the Sixth Assessment Report of the United Nations Intergovernmental Panel on Climate Change for 2081 to 2100
Streamology review	Technical review of Dartmoor and Nelson Flood Study Flood Modelling Report-Technical note 2023 undertaken by Streamology
the Study	Dartmoor and Nelson Flood Study (Venant Solutions, 2024)
TUFLOW	Two-Dimensional Unsteady Flow

Overview

Amendment summary

The Amendment	Glenelg Planning Scheme Amendment C115gelg
Common name	Dartmoor and Nelson Flood Study
Brief description	The Amendment seeks to ensure the Glenelg Planning Scheme manages the risk posed by riverine and ocean storm tide flooding to land between the township of Dartmoor and the mouth of the Glenelg River at the township of Nelson. It does this by applying the Floodway Overlay Schedule 1 and Land Subject to Inundation Overlay Schedule 1 according to the findings of the <i>Dartmoor and Nelson Flood Study</i> .
Subject land	The Amendment applies to land along the Glenelg River and surrounding land from the north of Dartmoor to the river mouth south of Nelson.
Planning Authority	Glenelg Shire Council
Authorisation	21 October 2025, with conditions
Exhibition	11 December 2025 to 6 February 2026
Submissions	Number of Submissions: 6 Opposed: 4 Warrick Biggs Camilla Jackson Alan and Iris Wilkinson Gregory Nash Patricia Lomas Glenelg Hopkins Catchment Management Authority

Panel process

The Panel	Michael Ballock (Chair) and Ross Edwards
Directions Hearing	By video, 4 May 2026
Panel Hearing	By video, 18 June 2026
Parties to the Hearing	Glenelg Shire Council – represented by Matt Berry, Planning and Development Manager Warrick Biggs
Citation	Glenelg PSA C115gelg [2026] PPV
Date of this report	22 July 2026

Executive summary

Glenelg Planning Scheme Amendment C115gelg (the Amendment) seeks to implement the findings of the *Dartmoor and Nelson Flood Study 2024* through the application of local policy and overlays for the Lower Glenelg River catchment. The Amendment also proposes changes to the drafting of the Floodway Overlay Schedule 1 and the Land Subject to Inundation Overlay Schedule 1, replaces the *LFDP* (March 2022) with an updated version (May 2025) and consequential updates to the Schedule to Clause 72.04.

The Amendment was exhibited from 11 December 2025 to 6 February 2026 and received 4 opposing submissions. Key issues raised in submissions included:

- the impact on the future use and development potential of affected land
- the potential impact on property values, insurance costs and financing
- the accuracy and reliability of the flood modelling, topographic survey information and data utilised to prepare the flood mapping and planning scheme maps
- inconsistency with historical flood behaviour or observed inundation extents
- the calibration of the flood model and reliance on the 2014 storm tide event and 2016 riverine flood event within the modelling process
- the adoption of the 1.2 metre sea level rise scenario
- the impact of local estuary behaviour, restricted wave action at the mouth of the Glenelg River, tidal dissipation and the management of the river mouth opening regime
- consideration of local hydrological features including Long Swamp, estuarine processes and local topographic conditions within Nelson
- the mapping is based on projected 'worst case' flooding scenarios
- requests for site-specific review, amendment or removal of overlays.

Glenelg Planning Scheme clauses 13.01-1S and 13.01-2S specifically require risk-based planning for climate change and coastal hazards, including a minimum 0.8 metre sea level rise allowance by 2100. The Amendment exceeds this by adopting a 1.2 metre scenario, reflecting current best practice. Clause 13.03-1S requires identification of land affected by the 1 per cent annual exceedance probability flood event and avoidance of intensified flood impacts through poorly located development. The Amendment applies current, Glenelg Hopkins Catchment Management Authority-endorsed mapping that triggers permit requirements for flood-sensitive assessment. Clause 14.02-2S (water quality protection) is also supported, as the controls discourage incompatible development that could affect downstream water quality or flow volumes.

The technical evidence base which is a peer reviewed contemporary flood study filling a known data gap and the Planning Policy Framework provisions, demonstrates that the Amendment is firmly anchored in statutory obligations and a consistent hierarchy of state, regional and local planning policy, all of which support a precautionary, risk-based approach to flood management in Dartmoor and Nelson.

The *Dartmoor and Nelson Flood Study 2024* was prepared using contemporary best-practice methods consistent with Australian Rainfall and Runoff 2019 and the *Victorian*

Guideline for Modelling the Interaction of Catchment and Coastal Flooding and therefore is fit for the purpose of supporting the Amendment.

The input data, calibration and validation, climate change assumptions and representation of estuary and coastal processes are appropriate. Technical concerns raised in submissions have not identified a methodological error.

The proposed overlays are based on the 1 per cent annual exceedance probability design flood levels under the adopted 2100 climate change scenario and are correctly applied to the subject land and with the corroboration of the independent peer review and published analysis, the coastal component is adequate for the purpose of the Amendment.

The flood modelling is reliable and suitable for the Amendment, and no changes are needed to the Amendment on flood modelling grounds.

While no change to the flood modelling basis of the Amendment is required, however, for completeness and to address community understanding, the Panel suggests that Council and the Glenelg Hopkins Catchment Management Authority record the design flood levels in the explanatory report, the publicly available background material and the *Glenelg Shire Local Floodplain Development Plan*.

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

- 1. Adopt Glenelg Planning Scheme Amendment C115gelg as exhibited.**

1 Introduction

1.0 The Amendment

(i) Amendment description

The purpose of Glenelg Planning Scheme Amendment C115gelg (the Amendment) is to implement the findings of the Dartmoor and Nelson Flood Study 2024 (the Study) through the application of local policy and overlays for the Lower Glenelg River catchment. The Amendment proposes changes to the drafting of the Floodway Overlay Schedule 1 (FO1) and the Land Subject to Inundation Overlay Schedule 1 (LSIO1), replaces the *Glenelg Shire Local Floodplain Development Plan, March 2022* (LFDP) with an updated version (May 2025) and consequential updates to the Schedule to Clause 72.04.

The Amendment also proposes to update:

- the Municipal Planning Strategy to include the flood risk for the towns of Dartmoor and Nelson
- the existing LFDP incorporated document
- the schedules to the Floodway Overlay and the Land Subject to Inundation Overlay
- other planning scheme ordinance as required.

Specifically, the Amendment proposes to make the following changes to the planning scheme ordinance:

- amend Clause 02.03-3 Environmental risks and amenity
- amend FO1 to update and align with the Victoria Planning Provisions and the form and content requirements of Ministerial Direction s7(5)
- amend LSIO1 to update and align with the Victoria Planning Provisions and the form and content requirements of the Ministerial Direction s7(5)
- amend Clause 72.03 Schedule to list the new LSIO1-FO1 maps
- amend Clause 72.04 Schedule to replace the incorporated document LFDP (March 2022) with the updated LFDP (May 2025)
- amend Clause 72.08 Schedule to include the Study as a background document.

The Amendment also makes associated changes to the Planning Scheme maps.

(ii) The subject land

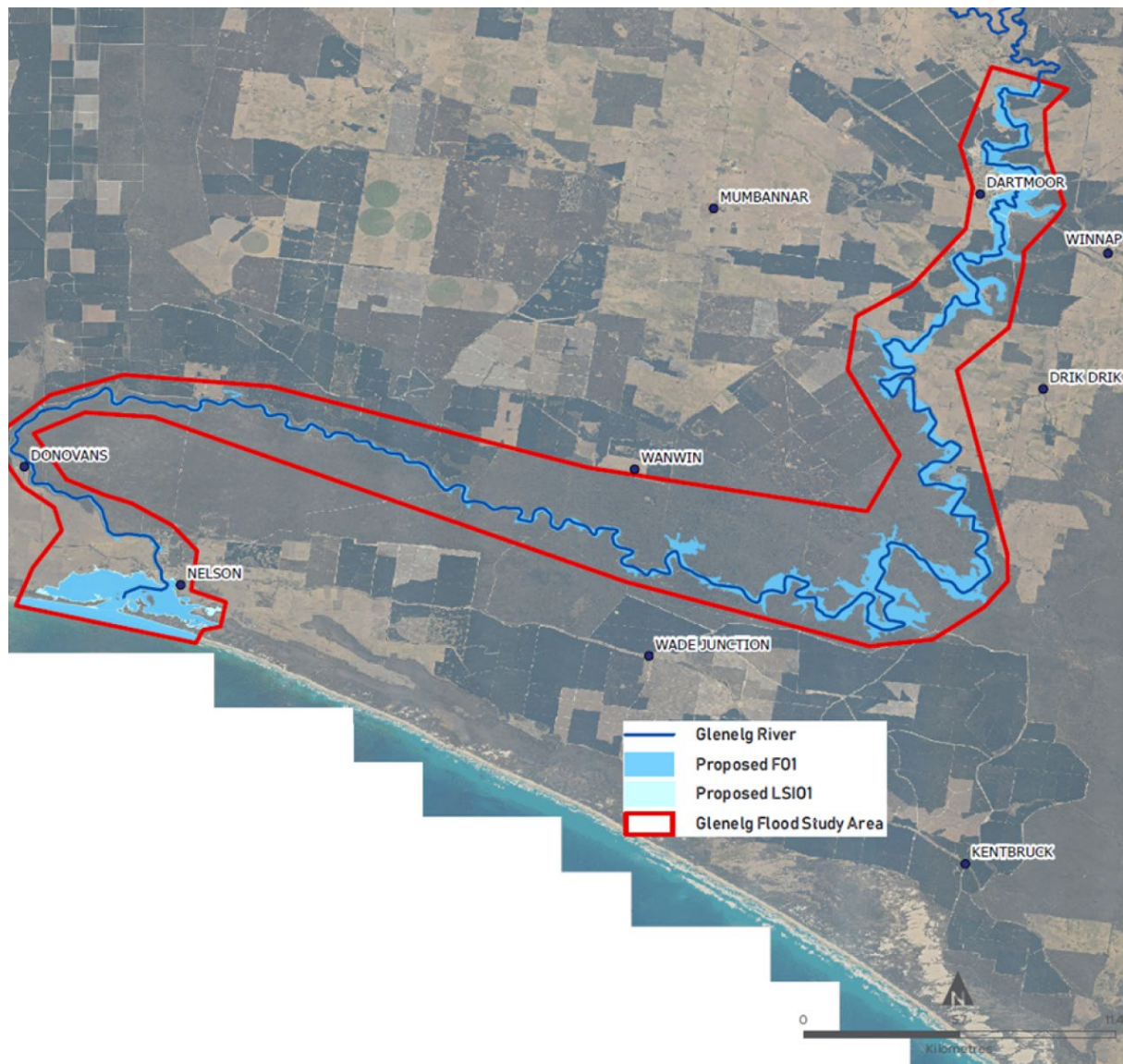
The Amendment applies to land along the Glenelg River and surrounding land running from north of Dartmoor to the river mouth south of Nelson. The Glenelg River extends more than 500 kilometres from its headwaters in the Grampians to the Southern Ocean, draining a catchment of roughly 12,700 square kilometres and fed by seven tributaries. Its estuary, the longest in Victoria at up to 75 kilometres, becomes increasingly influenced by tidal and estuarine processes as the channel broadens toward Nelson and the river mouth.

Dartmoor is a small town of about 350 residents situated west of the Glenelg River, around 68 kilometres northwest of Portland and 50 kilometres east of Mount Gambier. It sits among rural residential and township development, a golf course, agricultural land

and road reserves, with an economy built on grazing, forestry, timber milling and transport. The township is traversed by the Princes Highway and the Dartmoor to Hamilton Road, which carry important regional freight links between Victoria and South Australia and is surrounded by a predominantly rural catchment of grazing land, timber plantations and conservation reserves tied to the Lower Glenelg National Park.

Nelson lies about 95 kilometres west of Portland and 35 kilometres southeast of Mount Gambier, forming the southern terminus of the river system before it discharges into the Southern Ocean. Dissected by the Glenelg River, the township combines residential development, caravan park accommodation, public recreation infrastructure and agricultural land and its population of roughly 200 swells during holiday periods as a tourism, recreation and boating destination. The surrounding landscape is largely rural, comprising conservation reserves associated with Oxbow Lake, Discovery Bay Coastal Park, the Lower Glenelg National Park and Nelson State Forest, alongside grazing land and timber plantations.

Figure 1 Land to which the Amendment applies



1.1 Background

A chronology of the key strategic documents and activities that led to the preparation and progression of the Amendment is outlined below:

- In 2017, the *Glenelg Hopkins Regional Floodplain Management Strategy* (Glenelg Hopkins Catchment Management Authority, 2018-2027) reported that improved flood risk information was required for the townships of Nelson and Dartmoor.
- In 2022, Council successfully obtained funding through the Australian Government's Preparing Australian Communities – Local Stream program to prepare the Dartmoor and Nelson Flood Study.
- During 2024, Council began consultation with the Glenelg Hopkins Catchment Management Authority (GHCMA) and Department of Transport and Planning (DTP) on implementing the recommendations of the Study, including planning scheme maps and an updated floodplain development plan.
- On 2 December 2024, the Study was formally completed.
- In January 2025, letters and a FAQ Sheet were sent to all Dartmoor and Nelson landholders and affected owners to provide advance notice of the draft Amendment.
- On 28 January 2025, Council resolved to seek authorisation from the Minister for Planning to prepare and exhibit the Amendment documents.
- Following lodgement of an authorisation request on 6 February 2025, DTP requested Council further review the FO1, the LSI01 and the *Glenelg Shire Local Floodplain Development Plan*.
- Between March–July 2025, Council consulted with DTP and the GHCMA to complete a review of the schedules and *Glenelg Shire Local Floodplain Development Plan*, resulting in drafting changes to the schedules to standardise exemptions and flooding mitigation measures.
- Due to the extent of changes undertaken that were beyond the scope of original Council resolution and clarification requested on the Amendment pathway, it was referred back to another Council meeting to seek authorisation.
- On 26 August 2025, Council resolved to seek authorisation from the Minister for Planning to prepare and exhibit the Amendment.
- The chosen pathway was the standard planning scheme amendment process and not the Standing Advisory Committee for floodplain related amendments.
- In September 2025, an authorisation request was lodged with the Minister for Planning. On 21 October 2025, authorisation was received under delegation by DTP.
- From 11 December 2025 to 6 February 2026, the Amendment was exhibited. Two community drop-in sessions were held on 17 December 2025 in Dartmoor and Nelson.

1.2 The Panel's approach

Key issues raised in submissions were:

- the impact on the future use and development potential of affected land
- the potential impact on property values, insurance costs and financing

- the accuracy and reliability of the flood modelling, topographic survey information and data utilised to prepare the flood mapping and subsequent planning scheme maps
- inconsistency with historical flood behaviour or observed inundation extents
- the calibration of the flood model and reliance on the 2014 storm tide event and 2016 riverine flood event within the modelling process
- the adoption of the 1.2 metre sea level rise scenario
- the impact of local estuary behaviour, restricted wave action at the mouth of the Glenelg River, tidal dissipation and the management of the river mouth opening regime
- consideration of local hydrological features including Long Swamp, estuarine processes and local topographic conditions within Nelson
- the mapping is based on projected 'worst case' flooding scenarios
- requests for site-specific review, amendment or removal of overlays.

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 exhibition of the Amendment, 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
- Flood modelling
- Planning scheme provisions.

1.3 Procedural matters

Given the technical nature of some of the issues raised in submissions and questions the Panel had for Council and its expert Dr Jempson, the Panel provided Council and the other parties with a list of its questions prior to the commencement of the Hearing. This approach was intended to provide Council and its expert with sufficient time to prepare an appropriate response. At the Hearing, Council advised that some of the data was held by the GHCMa and could not be provided at the Hearing but would be circulated to all parties as soon as possible. That information was provided the following day, 19 June 2026 (Document 11). One submitter responded (Document 12) to this information.

Questions asked by the Panel were:

- **Light Detection and Ranging (LiDAR) / Digital Elevation Model (DEM) reconciliation:** Can a table be provided that reconciles the Two-Dimensional Unsteady Flow (TUFLOW) model DEM elevation at each submitter's property against their licensed survey data, identifying which LiDAR dataset applies at each location and explaining any discrepancy?
- **Climate Change scenario 1 (CC1) vs Climate Change scenario 2 (CC2) spatial comparison:** What are the specific spatial differences in the FO1 and LSIO1 extents between CC1 (0.8 metre sea level rise) and CC2 (1.2 metre sea level rise)

for the Nelson township, identifying which (if any) submitter parcels would fall outside the overlay under CC1. There does not appear to be a modelled scenario that holds sea level rise constant and varies increased rainfall intensity, or the reverse. It is therefore not possible to tell how much of the difference in flood extents between CC1 and CC2 is driven by extra rainfall intensity (9 per cent) or extra sea level rise (0.4 metre) as the two variables do not seem to have been disentangled.

- **Rainfall intensity source:** Confirm the source of the 32 per cent (CC1) and 41 per cent (CC2) increased rainfall intensity figures and whether independent sensitivity testing on rainfall intensity has been undertaken separately from sea level rise.
- **Transparency of Peer Review:** Identify the peer reviewer, the scope of the review (desktop report review or full model file review) and provide the peer review report or a summary to the Panel.
- **Wave setup sensitivity:** Can further information be provided or discussed at the Hearing as it relates to setup sensitivity analysis (8 per cent vs 12 per cent) in terms of design flood level change at Nelson and provide the basis for adopting the 12 per cent factor given the intermittently closed and open estuary characteristics of the Glenelg River mouth? Although sensitivity is expressed in document figures (5-33 of the *Dartmoor and Nelson Flood Study Flood Modelling Report 2024*) the numerical difference in design flood levels does not seem to have been provided.
- **3.43 metre Australian Height Datum (AHD), clarification:** Confirm what event, scenario and annual exceedance probability (AEP) the 3.43 metre AHD figure cited in GHCMA responses represents. Provide the 1 per cent AEP CC2 design water level at each submitter's property location.
- **Freeboard:** Confirm whether a freeboard allowance was applied above the modelled 1 per cent AEP CC2 water surface to define the FO1 and LSIO1 boundaries, if so, the quantum applied.
- **Donovans 1946 flood marker:** Confirm whether the Donovans (South Australia) 1946 flood marker referred to by Submission 2 was reviewed during the validation process and whether modelled 1946 flood levels are consistent with its elevation.

2 Strategic issues

2.1 Planning context

This chapter identifies planning context relevant to the Amendment.

Table 1 Planning context

	Relevant references
Victorian planning objectives	- section 4 of the PE Act
Municipal Planning Strategy	- Clause 2
Planning Policy Framework	- Clauses 11.01 (Victoria), 11.01-1L (Settlement) , 11.02-1S (Development capacity) - Clause 13.01-1S (Natural Hazards and Climate Change), Clause 13.01-2S (Coastal inundation and erosion), Clause 13.03-1S (Floodplain Management) - Clause 14.02-2S (Water quality)
Other planning strategies and policies	- Plan for Victoria Pillar 4
Planning scheme provisions	- Floodway Overlay - Land Subject to Inundation Overlay
Ministerial directions	- Ministerial Direction 11 (Strategic Assessment of Amendments) - Ministerial Direction 19 (Ministerial Direction on the Preparation and Content of Amendments that may Significantly Impact the Environment, Amenity and Human Health)
Planning practice notes	- Planning Practice Note 46: Strategic Assessment Guidelines, September 2022 - Planning Practice Note 12 (PPN12): Applying the Flood Provisions in Planning Schemes

2.2 Strategic justification

(i) Submissions

None of the submissions challenged the strategic justification of the Amendment.

Council submitted that the Study was prepared on its behalf in partnership with the GHCMa to address a flood data gap. The initial flood overlays, introduced in 1998, were based on the indicative 1 per cent AEP extents modelled by the Victorian Flood Data Transfer Project for the townships of Sandford, Heywood, Nelson, Dartmoor, Tyrendarra, Casterton, Portland and Condah and for rural areas in the Glenelg Shire. The indicative mapping for Dartmoor and Nelson was never implemented due to accuracy errors, leaving these two townships without proper flood controls for over 25 years. Aside from

earlier studies covering Casterton (2011 and 2016), no prior flood investigation had been undertaken for the Lower Glenelg River through Dartmoor and Nelson. The Study rectifies this shortcoming and uses hydrologic Runoff Routing over Basins (RORB) and hydraulic TUFLOW modelling to produce flood risk mapping that reflects real-world extent, depth and velocity of flooding. This technical output forms the basis for the planning controls recommended for incorporation into the Planning Scheme.

(ii) Discussion

The Amendment's strategic foundation rests on clear legislative obligations. The *Planning and Environment Act 1987* (PE Act) requires planning authorities to ensure flood information is shown in planning schemes and considered in permit assessments, with section 6(2)(e) specifically enabling schemes to regulate development in hazardous or potentially hazardous areas. This is reinforced by the *Local Government Act 2020*, which embeds climate change risk mitigation as a governance principle and the *Building Regulations 2018*, which require councils to map "designated special areas" including land liable to flooding.

In the Planning Policy Framework, Clause 02.03-3 already identifies flood risk across the Shire and commits to a precautionary approach in flood-prone areas. The Amendment implements this by ensuring flood-affected land is properly identified for future decision-making. At the state and regional level, the Amendment is supported by a suite of Planning Policy Framework clauses: Clause 11.01 (sustainable settlement growth informed by best-available data), Clause 11.01-1L (restricting development in environmentally sensitive, flood-prone areas) and Clause 11.02-1S (ensuring natural hazards are factored into development capacity planning).

Clauses 13.01-1S and 13.01-2S specifically require risk-based planning for climate change and coastal hazards, including a minimum 0.8 metre sea level rise allowance by 2100 and the Amendment exceeds this by adopting a 1.2 metre scenario, reflecting current best practice. Clause 13.03-1S requires identification of land affected by the 1 per cent AEP flood event and avoidance of intensified flood impacts through poorly located development; the Amendment satisfies this by applying current, GHCMA-endorsed mapping that triggers permit requirements for flood-sensitive assessment. Clause 14.02-2S (water quality protection) is supported, as the controls discourage incompatible development that could affect downstream water quality or flow volumes.

Together, the technical evidence base which is a peer reviewed contemporary flood study filling a known data gap and the Planning Policy Framework provisions demonstrate that the Amendment is firmly anchored in statutory obligations and a consistent hierarchy of state, regional and local planning policy, all of which support a precautionary, risk-based approach to flood management in Dartmoor and Nelson.

(iii) 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:

- 1. Adopt Glenelg Planning Scheme Amendment C115gelg as exhibited.**

3 Flood modelling

3.1 Background

This Chapter deals with the technical issues raised about the flood modelling that underpins the Amendment. The Amendment applies the FO1 and the LSIO1 using the flood extents produced by the Study. The Study comprises a hydrologic RORB model and the hydraulic TUFLOW model of the Lower Glenelg River catchment, estuary and coast.

(i) Dartmoor and Nelson Flood Study 2024

The Study contains the following summary of the report.

Despite the flood risk being relatively well known for the upper and middle reaches of the Glenelg River catchment, with several detailed flood studies completed in the last decade, little information currently exists defining the flood risk in Dartmoor and Nelson. Dartmoor was identified in the *Glenelg Hopkins Regional Floodplain Management Strategy 2017* as requiring improved flood information to be able to accurately assess risk. This is represented by Action 33 of the Regional Work Plan presented in Table 8 of the strategy to:

Investigate funding opportunities to undertake flood investigations for Dartmoor and Nelson and subsequent planning controls.

Grant funding from the Australian Government through the Australian Government Preparing Australian Communities – Local Stream Program was received allowing the Glenelg Shire Council in partnership with GHCSMA to engage Venant Solutions to undertake the Study to utilise contemporary flood modelling methods to produce high reliability, ‘climate change ready’ riverine and storm tide flood risk data that can be used for land use and development planning and to inform flood emergency response, planning and education improvement.

The flood study has been undertaken in accordance with the latest guidance and parameters provided in the ARR 2019 and the *Victorian Guideline for Modelling the Interaction of Catchment and Coastal Flooding*. The climate change guidance provided by *Australian Rainfall and Runoff* (Geoscience Australia 2023), which accounts for the effect of increased and increasing rainfall intensity on flood risk, has also been accounted for. The hydrology and hydraulic model elements of the project including all adopted parameters and assumptions have been independently peer reviewed.

The reliability of the flood model developed to underpin the assessment of flood risk was confirmed through its ability to accurately represent actual flood extents and depths for both riverine and storm tide events that have occurred in the past. For riverine events, facilitated by the availability of good stream gauge records throughout the catchment three events were able to be replicated as calibration and validation events. Data

existed for only one past storm tide event for calibration. A good calibration to this event was achieved.

A suite of riverine and storm tide design flood event mapping and flood intelligence information has been produced covering the 20 per cent, 10 per cent, 5 per cent, 2 per cent, 1 per cent, 1 in 200, 1 in 500 AEP events, in addition to an estimate of the probable maximum flood – including a tsunami at Nelson.

The flood mapping and intelligence information produced for the Study includes the flood depth, level, velocity and hazard mapping, identification of inundated properties, buildings and roads, estimation of expected flood travel times and the estimation of monetary flood damages. Current climate (present day at the time of writing this study) 1 per cent AEP flood depth mapping for riverine and storm tide events is presented in various figures. A 1 per cent AEP riverine event is expected to result in the inundation of 121 properties, one building (the Nelson Kiosk at the lower ground level) and 13 roads while a 1 per cent AEP storm tide is expected to result in the inundation of 26 properties, five roads and no buildings.

(ii) Dartmoor and Nelson Flood Modelling Review 2023

The peer review of the Study was undertaken by Streamology (Document 11(c)) and included the following summary:

A review of the Dartmoor and Nelson Flood Investigation report and model that Venant Solutions and its subcontractor BMT, used to create flood risk mapping for the 1 per cent AEP riverine and 1 per cent AEP storm tide scenarios is broadly in accordance with guidance from ARR2019. Although the adequacy of the sensitivity analyses undertaken for all elements of the study was robust, there is scope for further work to reduce the uncertainty in the parameters adopted.

3.2 Accuracy of input data, topography and survey

(i) The issue

The issue is whether the input data, topography and survey used to prepare the flood mapping is accurate, reliable and appropriate.

(ii) Evidence and submissions

There were submissions that considered:

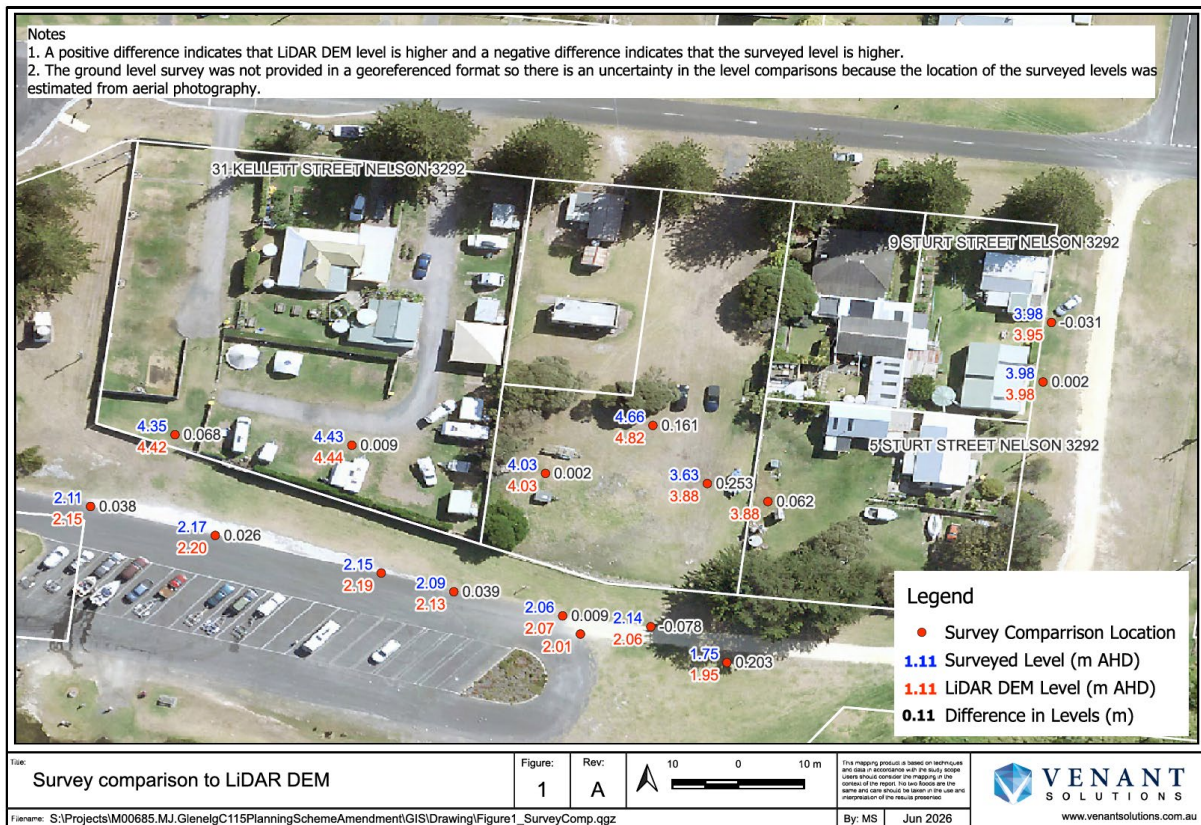
- the topographic and survey data underpinning the flood modelling are outdated, unproven and of insufficient detail or too coarse to support planning controls
- the survey *“...only has an accuracy of 5 metres”*
- independent licensed survey of their properties (completed in January 2026) recorded lowest ground levels of 3.82–3.93 metres AHD, which is above the flood level relied on in the Study so both overlays should be removed from their properties.

The Panel sought a table reconciling the model DEM elevation at each submitter's property against their licensed survey, identifying the dataset used and explaining any discrepancy. In response, Council provided the following information, provided by the GHCMA, to all parties after the Hearing ended (Document 11):

- the GHCMA confirmed that the VicMap Elevation Coastal 1 metre LiDAR DEM (captured 2007–2009, stated vertical accuracy ± 0.1 metres at 68 per cent confidence) was used to represent ground levels in Nelson
- that the DEM was verified against 156 survey control marks and road centreline elevations, with 94 per cent of points within ± 0.1 metres and a mean difference of $+0.04$ metres
- that it was used in the TUFLOW model without adjustment.

In addition, Council provided a figure comparing the DEM with the submitters' survey, showing the surveyed levels generally within ± 0.1 metres of the DEM (Figure 2).

Figure 2 Comparison of DEM and survey data



Council advised that the GHCMA confirmed the '5 metre accuracy' figure was a misunderstanding of some submitters and a 5 metre DEM was used only in the South Australian reach where 1 metre coverage was unavailable, not at Nelson.

Dr Jempson gave evidence on behalf of Council which confirmed that 94 per cent of 156 check points were within ± 0.1 metres (mean $+0.04$ metres) and his formal comparison of the submitters' survey to the DEM showed that "*LiDAR represents the ground levels accurately, with levels generally being within the ± 0.1 metres*", which made it suitable for two-dimensional hydraulic flood modelling.

The Streamology review examined the model build and recommended, as a matter of presentation, a map of the dataset extents and accuracies, but it did not identify an error in the terrain data.

(iii) Discussion

The Panel is satisfied that the topographic and survey basis of the Study is sound and that the reconciliation of the data sought has been provided. The Panel accepts Council's submission that the '5 metre accuracy' concern arises from a misreading of how the datasets were applied and the Nelson township, where the objecting properties are located, is covered by a 1 metre LiDAR verified to ± 0.1 metres. The submitters' own surveys do not contradict the model terrain, with the formal comparison showing them to be consistent with it, or where they differ, slightly lower than the DEM, which would tend to increase modelled depth at those properties.

(iv) Conclusions

The Panel concludes:

- The topographic and survey data underpinning the Study are accurate and fit for flood modelling.
- The data provided by submitters does not undermine the flood mapping or support removal of the overlays.

3.3 Model calibration, validation and historical flood events

(i) The issue

The issue is whether the calibration and validation of the model and its consistency with historical flood events (including 1946, 2014 and 2016) is appropriate.

(ii) Evidence and submissions

Submissions contended the Amendment is based on incorrect data and 'worst case' assumptions that do not accord with their lived experience. They stated:

- the overlay is based on storm tide rather than riverine flooding and relies on only a single historical event for calibration
- the 2014 and 2016 events shown in Figure 3 and Table 4-3 in the Study were incorrect.

They provided photographs of the 2016 flood that show their land and the Nelson kiosk were not inundated.

One submission contended:

- a 1946 flood marker at Donovans (South Australia) was overlooked and would be more reliable than data taken from Dartmoor some 75 kilometres upstream
- the overlay is based on a storm tide (storm surge) level of 3.43 metres AHD, above which much of the land on that property sits.

Another submission supported the overlays and recollected three major floods that did not reach the Byways, Annie's Reserve or Liston Farm properties.

Council responded that the model was calibrated and validated against multiple historical events:

- The RORB hydrologic model was calibrated to the September 1983 and September 2016 riverine events and validated to the March 1946 event.
- The TUFLOW hydraulic model was calibrated to the September 2016 riverine event and the June 2014 storm tide event.

Council explained that the September 2016 event was approximately a 15 per cent AEP (about a one in six) riverine event. This is far smaller than the 1 per cent AEP design event used to set the overlays. Therefore, the absence of flooding in 2016 does not establish that land is not inundated in the design event. Council further explained that the figures the submitters relied on (Figure 3 and Figure 4-3 of the Study) depict the 1 per cent AEP storm tide peak flood depth and not the 2016 extent. The modelled 2016 extent (Table 3-6 of the Study) shows inundation of about half of the Nelson Boat Ramp car park, which compares well with the submitters' photographs.

In its written response of 19 June 2026, Council stated that the GHCMA confirmed that the 3.43 metre AHD figure is not the planning standard and provided a comparison between the DEM and survey provided by the submitters (Figure 2). Council added that the overlays are set by the 1 per cent AEP design flood level under the adopted 2100 climate change scenario, derived from a joint probability assessment. At the Nelson residential properties this is of the order of 4.04–4.05 metres AHD – higher than the 3.43 metre figure because of the 20 per cent AEP storm tide boundary applied in the joint probability assessment.

Dr Jempson confirmed the calibration and validation events noted in the previous section, using methodologies outlined in ARR 2019 and the *Victorian Guideline for Modelling the Interaction of Catchment and Coastal Flooding*. Regarding the 2016 photographs, he noted that the submitted aerial imagery shows the river mouth closed, whereas satellite imagery and Estuary Entrance Management Support System records confirm the mouth was open throughout September 2016. The imagery was therefore unlikely to have been captured during the September 2016 riverine event (Dr Jempson suggested June 2016, when high estuary levels sat behind a closed mouth).

In relation to the 1946 event, Dr Jempson confirmed that the Donovans marker was not known to the modelling team at the time. The Dartmoor gauge was used as the model's upstream inflow because it is the location of the stream gauge and prior hydrologic analysis. He stated that the modelled 1946 extent does match well with 1954 aerial photography shown in Figure 3-1 of his evidence statement.

On the design standard, Dr Jempson explained that the overlay extent is defined by the greater of the 1 per cent AEP riverine event with a coincident 20 per cent AEP storm tide, or the 1 per cent AEP storm tide event without riverine flooding, under the adopted climate change scenario. This produces the design flood levels summarised in Table 3.

Dr Jempson stated that the 1 per cent AEP riverine event has not occurred since 1946 and that a 1 per cent AEP storm tide has only about a 50 per cent chance of occurring in any 76-year period since 1950. Therefore, the absence of observed flooding is statistically expected and is not inconsistent with the mapping. He provided the example of 5 Sturt Street, which is not inundated in the 2 per cent AEP event but is inundated in the 1 per cent AEP event.

The Streamology review, which included the model run files, found the calibration and validation was appropriate for the purpose of the Study. It also recommended to further document flood volumes, as well as additional sensitivity testing of antecedent catchment conditions and the estuary entrance configuration.

(iii) Discussion

The Panel considers the model to be appropriately calibrated and validated against multiple riverine and storm tide events, consistent with the findings of the independent peer review. The proposition that the model relies on a single event is incorrect. The central source of the community's concern is a comparison of small, recent or historical events and misreading of the 3.43 metre figure against the 1 per cent AEP and the year 2100 design standard that the planning controls are required to reflect. These are not the same thing. The GHCMA's confirmation that 3.43 metres is a storm tide figure and that the governing design levels are of the order of 4.04–4.05 metres AHD at the Nelson properties, is an important point to note. It explains why properties whose surveyed levels (3.82–3.93 metres AHD) sit below those levels are correctly mapped and resolves apparent inconsistency the submitters identified. The Panel is therefore satisfied that extents of the 1946 and 2016 flood events have been used to calibrate and validate the flood modelling. The absence of recent flooding aligns with a control of this standard, because it is modelled off a worst-case event (a 1-in-100-year flood level projected out to 2100).

The residual matters raised by the Streamology review further document flood volumes and sensitivity testing of initial conditions and the entrance configuration. These go to the need for robustness and transparency of the modelling, rather than highlighting error. Sensitivity testing reported in the Study indicates a 'no scour' river mouth would raise peak flood levels at Nelson by some 0.7 to 0.9 metres. The adopted assumption of an open, scoured mouth is therefore not conservative, but rather support the mapped extents.

(iv) Conclusions

The Panel concludes:

- The calibration and validation of the model and its consistency with historical flood events (including 1946, 2014 and 2016) is appropriate.

3.4 Climate change and sea level rise

(i) The issue

The issue is whether the climate change and sea level rise assumptions, particularly the adopted 1.2 metre sea level rise scenario are appropriate.

(ii) Evidence and submissions

Several submissions considered:

- the climate change projections relied on in the Study are speculative and unproven
- the adopted 1.2 metre sea level rise scenario is inappropriate, and 0.8 metres is more appropriate
- the following should be relied on:
 - coastalrisk.com.au website which states a highest tide of 0.84 metres by 2100
 - An assessment of current and future vulnerability to coastal inundation due to sea-level extremes in Victoria, southeast Australia 2013 by McInnes et al (the McInnes paper) from the International Journal of Climatology
- the 3.43 metre figure is inaccurate for 2100.

Council submitted that two climate change scenarios were modelled, these being:

- projecting a 0.8 metre sea level rise with a 32 per cent rainfall intensity increase
- CC1CC2 projecting a 1.2 metre sea level rise with a 41 per cent rainfall intensity increase.

Council added that the 1.2 metre scenario was adopted in accordance with GHCMA guidance, representing the upper-limit (95th percentile) estimate of the *Shared Socioeconomic Pathway 5-8.5* scenario of the Sixth Assessment Report of the United Nations Intergovernmental Panel on Climate Change for 2081 to 2100 (SSP5-8.5). The rainfall intensity increases are sourced from the draft update to the climate change chapter update in Book 1 chapter 6 of the ARR 2019. Council submitted that 1.2 metres exceeds and therefore complies with the 0.8 metre minimum in Clause 13.01-2S and is enabled by the *Marine and Coastal Policy* 2020. Council noted the coastalrisk.com.au figure was from a privately operated source using a less accurate 'bucket-fill' method and is at odds with the recorded June 2014 storm tide level of 1.29 metres AHD. Council referred to the Moyne C69 Panel report, which recommended 0.8 metres, while noting that the Minister approved that amendment based on 1.2 metres.

A comparison of the 0.8 metre and 1.2 metre overlay extents over the subject parcels was provided to the Panel by Council.

Dr Jempson confirmed that 1.2 metres of sea level rise was adopted pursuant to GHCMA guidance as the upper-limit estimate of the SSP5-8.5 scenario for 2100. The increase in rainfall intensity was defined in accordance with Department of Climate Change, Energy, the Environment and Water 2023 guidance, the latest available when the modelling was undertaken. Dr Jempson noted that, under climate change conditions, Nelson is strongly

storm tide dominated, so the rainfall intensity increase bears principally on the riverine component.

(iii) Discussion

The Panel considers the climate change basis of the Study to be defensible and consistent with state planning policy and current guidance. The projections are not, as Submission 1 suggested, speculative, instead being drawn from the SSP5-8.5 scenario and applied through recognised national and Victorian guidance. The rainfall intensity source has similarly been confirmed. The adoption of 1.2 metres exceeds the 0.8 metre policy minimum and is expressly permitted by the *Marine and Coastal Policy 2020*. The Panel gives little weight to the coastalrisk.com.au figure, which is not a substitute for purpose-built modelling and is inconsistent with the recorded 2014 storm tide level.

The Panel acknowledges that the choice between the 0.8 metre and 1.2 metre scenarios is a genuine policy question on which panels have differed, as the Moyne C69 Panel illustrates. The choice is in fact material here with 9 Sturt Street not impacted by the LSIO1 under the 0.8 metre scenario. The comparison of the two scenarios on the subject properties was provided. The modelling does not appear to hold sea level rise constant while varying rainfall intensity (or the reverse), so it is not possible to separate how much of the difference between the scenarios is driven by the additional rainfall intensity (about 9 per cent) and how much by the additional sea level rise (0.4 metres). Although when asked during the Hearing, Dr Jempson considered it would have limited influence.

On balance, the Panel considers that adopting a precautionary upper-bound scenario for a 2100 planning horizon is consistent with GHCA and DTP guidance and the Minister for Planning's position on Moyne Amendment C69. It is therefore a sound and appropriate basis for the Amendment, particularly given the long design life of the controls and the storm tide dominance at Nelson.

(iv) Conclusions

The Panel concludes:

- The climate change and sea level rise assumptions are appropriate.
- The adoption of the 1.2 metre sea level rise scenario and the associated rainfall intensity increases is consistent with state planning policy and current best-practice guidance.
- The 1.2 metre sea level rise scenario provides an appropriate basis for the Amendment and no change to the climate change basis of the Study is warranted.

3.5 Estuary, storm tide and coastal process

(i) The issue

The issue is whether the representation of the estuary, storm tide and coastal processes, including wave action at the river mouth, tidal dissipation, the river mouth opening regime, Oxbow Lake and Long Swamp are appropriate.

(ii) Evidence and submissions

one submission considered the following matters were relevant to the estuary, storm tide and coastal process aspects of the modelling:

- The storm tide assessment does not account for the restricted wave action at the mouth of the Glenelg River or for the dissipation of wave energy as the storm tide enters the estuary, Oxbow Lake and Long Swamp.
- With Nelson situated on the deep Discovery Bay, it should be treated as a location where storm surge is less significant and that Long Swamp was not taken into account, when water would flood the swamp before reaching properties in Nelson.

The submission observed that the river mouth is actively managed and opened to maintain water levels. It challenged the data upon which the Amendment was based and stated that the McInnes paper supported this position.

Council submitted that the TUFLOW model extends from the coast through Nelson to the lower estuary. The assessment addressed storm tide behaviour, estuarine interaction and joint probability flooding. In response to concerns raised about wave action, it explained there is a distinction between waves and wave setup. Individual waves are not modelled, however, wave setup (the increase in mean water level at the coast caused by breaking waves) is included in the adopted storm tide levels. The attenuation of the storm tide as it propagates from the coast up the estuary, including any dissipation at the river mouth, is represented directly in the TUFLOW model, rather than assumed. Council stated that the submitter's concern that wave dissipation was ignored was incorrect because it was addressed by the hydraulic modelling itself.

Council submitted that Long Swamp and Oxbow Lake are included in the model, which extends into Long Swamp east of Beach Road, that the hydraulic analysis shows water levels are relatively flat through Oxbow Lake and the area south of the Nelson Boat Ramp. Council did not agree the swamp diverts floodwater away from Nelson. The GHCMa confirmed the river mouth opening regime *"has been factored into the modelling"*. Council noted that opening the mouth reduces riverine flooding but increases the effect of a coastal event.

Dr Jempson confirmed that the storm tide design events were derived from extreme value analysis of the residuals at the Portland tide gauge applied to the underlying lunar tides at Port MacDonnell. He added the derived levels compare well with the McInnes paper relied on by the submitter which estimated a 1 per cent AEP storm tide at Portland of about 1.0 metre above mean sea level without wave setup – matching that used in the

Study. He confirmed that a 12 per cent factor of offshore wave height was used to represent wave setup, calibrated to the June 2014 storm tide event and that regional wave setup factors were adopted based on the classification of the Glenelg River estuary.

The Streamology review classified the estuary as an intermittently closed estuary (attracting a 12 per cent wave setup factor), which corrected an earlier draft classification. The review recommended further justification and sensitivity testing of the estuary entrance configuration, which it identified as having a significant influence on flood levels at Nelson.

Council submitted that the final version of the Study has responded to the peer review comments to include the following aspects:

- **Sensitivity testing undertaken (Section 5.4.3):** the final report tests entrance scour directly, with a 'no scour' mouth raises peak flood levels through Nelson by 0.7–0.9 metres; a –2 metre scoured mouth lowers them by 0.40–0.55 metres and concludes peak levels *"are sensitive to the depth and extent of mouth scour."*
- **Justification via imagery/records:** the peer review recommended comparing the entrance to satellite imagery. The final report fixes mouth width (250–300 metres) from September 2016 satellite imagery confirmed by Estuary Entrance Management Support System records, with calibrated geometries for the 2016 riverine and 2014 storm tide events
- **Wave setup sensitivity** (8 per cent versus 12 per cent is addressed in Figure 5-33 of the *Flood Modelling Report*).

Following the Hearing, a submitter wrote to the Panel raising what was described as a fundamental issue concerning Dr Jempson's standing as an expert witness on coastal matters. The submission stated that, when questioned about the influence of the offshore Bochara Canyon on wave behaviour, Dr Jempson acknowledged that the coastal effects of flooding were not his field of expertise and that this work had been undertaken by another organisation, which was not present at the Hearing to be examined. The submission added that this admission goes directly to the submitters' concerns about the effect of sea level rise on their coastal properties.

(iii) Discussion

The Panel considers that the estuary, storm tide and coastal processes have been represented to a contemporary best-practice standard. The distinction between wave action and wave setup is important. The quantity that governs still-water flood levels (wave setup) is represented and the dissipation of the storm tide up the estuary is captured by a model that extends to the coast. The 'deep bay' argument is answered by the derivation of the storm tide from the Portland gauge and the independent cross-check against the McInnes paper. Long Swamp and Oxbow Lake are included in the model and the river mouth opening regime has been accounted for.

The Panel notes that the estuary entrance configuration is the most technically sensitive variable in the Study, with the modelled flood levels at Nelson changing materially with assumed mouth scour and depth. In its questions the Panel sought the numerical design-level difference between the 8 per cent and 12 per cent wave setup factors at

Nelson (sensitivity having only been shown graphically in Figure 5-33 of the *Flood Modelling Report*), as well as the basis for the 12 per cent factor given the intermittently closed and open character of the mouth. The 12 per cent factor is consistent with the peer reviewer's classification of the estuary and the adopted open, scoured mouth assumption is, if anything, not conservative (a 'no scour' condition would raise levels at Nelson).

The Panel notes that much of the detail relevant to this section is contained in relevant sections in the Study which answer questions raised in submissions. Given the confusion evident in submissions, it would assist transparency for these matters to be summarised in plain language in the publicly available background material.

With respect to the weight given to Dr Jempson's evidence on coastal matters, Dr Jempson is a highly qualified hydrologist and hydraulic engineer with extensive experience in estuary and floodplain modelling, with the Panel giving weight to his evidence as to the hydrologic and hydraulic modelling and its calibration. The Panel accepts, however, that the coastal components of the Study, in particular the derivation of storm tide levels and wave behaviour, were undertaken in part by a coastal sub-consultant (BMT) rather than by Dr Jempson personally, noting he acknowledged the limits of his expertise on that aspect during the Hearing. The inability to test that coastal work directly through the expert is a limitation that the Panel has taken into account in weighing the evidence on storm tide and wave behaviour.

Weighing against that limitation, the Panel notes that the coastal component is not however, supported by Dr Jempson's evidence alone. The storm tide derivation was corroborated by the independent peer review of the modelling by Streamology, which reviewed the storm tide and wave setup elements. There is the published analysis in the McInnes paper, against which the derived storm tide levels compare well. The design flood levels at the subject properties are, for most of the affected parcels, governed by the riverine (joint probability) event rather than the storm tide event alone as discussed above, which reduces the weight that the coastal derivation carries in determining the overlay at those properties. The Bochara Canyon point and the deep-water bathymetry of Discovery Bay more generally, were raised in submissions as reasons the storm surge at Nelson may be overstated. However, the derivation of the storm tide from the Portland gauge residuals and its consistency with the McInnes paper provide an independent basis for the levels adopted.

On balance, the Panel has considered the multiple lines and weight of evidence, rather than rendering any one unreliable. It is considered that the corroborating independent material provides a sufficient basis to be satisfied the coastal component is adequate for the purpose of the Amendment. Nonetheless, it is recognised the issue was raised by a submitter and the relevant coastal modeller was not available to be examined during the Hearing.

(iv) Conclusions

The Panel concludes:

- The coastal component is considered adequate for the purpose of the Amendment.
- The estuary, storm tide and coastal processes have been appropriately represented, that the submissions do not identify a modelling error and that no change to the Amendment is warranted on this basis.

3.6 Request for site specific review and removal of overlays

(i) The issue

The issue is whether requests for site specific review or removal of the overlays from individual properties are appropriate.

(ii) Evidence and submissions

Submissions requested the overlays be reviewed, amended or removed from their land based on independent surveys, aerial photography, local flood observations and historical evidence. The properties are 2 Keil Drive, 5 Sturt Street and 25 Kellett Street, 9 Sturt Street and 31 Kellett Street. The submitters relied on surveyed lowest ground levels of 3.82–3.93 metres AHD as showing that their land sat above the flood.

Council did not propose any change to the Amendment. In response to the Panel's question, the Council provided the GHCMA modelled 1 per cent AEP design flood levels under the adopted (CC2) scenario at each property, distinguishing the riverine (joint probability) level from the storm tide level. These are set out in the following Table 3.

Table 2 Modelled 1 per cent AEP (CC2) design flood levels at submitter properties

Property	Modelled 1 per cent AEP CC2 design flood level (metres AHD)
2 Keil Drive	Riverine 3.84; storm tide 3.28
5 Sturt Street	Riverine 4.05; storm tide 3.28
25 Kellett Street	Riverine 4.05; storm tide 3.28
9 Sturt Street	Riverine 4.05; storm tide – not flooded
16 Kellett Street	Not flooded
31 Kellett Street	Riverine 4.04; storm tide – not flooded (minor slivers within the boundary reflect grid alignment with the retaining wall)

Source: Council written response to the Panel, (Document 11).

Dr Jempson stated the overlays are based on the 1 per cent AEP design flood level under the adopted climate change scenario, derived from the joint probability assessment. Council provided Table 3 in response to the Panel's question to demonstrate that the governing (riverine joint probability) level at the affected Nelson residential properties is of the order of 4.04–4.05 metres AHD, above the surveyed lowest ground levels of those properties (3.82–3.93 metres AHD). Council submitted that this data, provided by the

GHCMa, in comparison with the submitters' survey data confirms the terrain is accurate at those properties.

(iii) Discussion

The Panel considers there is no technical case to remove the overlays from the subject parcels. Each of the affected Nelson properties sit below the governing design flood level, with the independent surveys confirming rather than contradicting the modelling. The Panel further notes the absence of flooding within living memory is not inconsistent with a control based on the 1 per cent AEP, year 2100 standard.

The Panel is satisfied the FO1 and LSIO1 have been delineated in accordance with the Guidelines for Development in Flood Affected Areas, with the Floodway Overlay applied to higher-hazard land and the Land Subject to Inundation Overlay to the broader 1 per cent AEP extent. The Panel noted that a freeboard was not applied above the modelled water surface in setting the overlay boundary.

(iv) Conclusion

The Panel concludes that the requests for site specific review or removal of the overlays are not supported by the evidence, that the overlays are correctly applied to the subject land and that they should be retained as exhibited.

3.7 Overall discussion and conclusions – flood modelling

Overall, the Panel finds that the Dartmoor and Nelson Flood Study was prepared in accordance with ARR 2019 and *the Victorian Guideline for Modelling the Interaction of Catchment and Coastal Flooding*. Further, it was calibrated and validated against multiple historical events, was independently peer reviewed by Streamology (including a review of the model files) and is fit for the purpose of supporting the FO1 and LSIO1 controls.

The technical concerns raised by submitters can be attributed to misunderstandings of the data, most significantly being the comparison of a 3.43 metre storm tide figure, as well as small or historical events, against the 1 per cent AEP year 2100 design standard reflected in the overlays. These do not however, identify any methodological error in the Study.

The clarifications the Panel sought were substantially provided including:

- the DEM was reconciled with the submitters' survey
- the governing design flood levels at each property were tabled
- the rainfall intensity source and the peer reviewer and scope were confirmed
- confirmation that a freeboard was not applied
- a comparison of the 0.8 metre and 1.2 metre scenarios.

The matters that remained open or partly open at the close of the Hearing were the inability to separate the rainfall and sea level rise contributions to the climate change difference and the availability of the coastal modeller (BMT) for examination during the

Panel Hearing. The Panel has considered these matters as going to the completeness, transparency and weight of the evidence, including the extent to which it is supported by multiple lines of analysis. They do not, however, reflect negatively on the validity of the modelling or the correctness of the overlays.

The Panel concludes:

- The Study was prepared using contemporary best-practice methods consistent with ARR 2019 and the Victorian Guideline for Modelling the Interaction of Catchment and Coastal Flooding, therefore is fit for the purpose of supporting the Amendment.
- The input data, calibration and validation, climate change assumptions and representation of estuary and coastal processes are appropriate. Technical concerns raised in submissions have not identified a methodological error.
- The proposed overlays are based on the 1 per cent AEP design flood levels set out in Section 3.3.6, Table 3 under the adopted 2100 climate change scenario and are correctly applied to the subject land.
- The concession as to the limits of the expert's coastal expertise goes to the weight rather than the admissibility of the coastal evidence. With the corroboration of the independent peer review and published analysis, the coastal component is adequate for the purpose of the Amendment.
- The flood modelling is reliable and suitable for the Amendment and that no changes are needed to the Amendment on flood modelling grounds.
- For completeness and to address community understanding, Council and the GHCMa should record the design flood levels in the explanatory report, the publicly available background material and the LFDP.

4 Planning scheme provisions

4.1 The application of the FO1 and LSIO1

(i) The issues

The issues are:

- whether the proposed overlays would sterilise or significantly constrain the future use and development potential of affected land, including land previously considered suitable for residential development
- whether the potential impact of the Amendment on property values, insurance costs, financing, land marketability and perceived loss of development rights are relevant considerations

(ii) Submissions

One submission expressed concern that applying the FO1 and LSIO1 would sterilise land, reduce development potential, diminish property values and is unlawful.

Council submitted that the Amendment does not seek to prohibit development. It ensures that future use and development respond appropriately to flood hazard and risk, applying contemporary flood information through controls established in the Victoria Planning Provisions. It advised that no specific development proposal or active permit application has been put forward by the submitter and prior Council decisions do not preclude new controls where updated strategic or technical information identifies flood risk. The application of the mapping is lawful, being enabled by section 6(2)(e) of the PE Act and required by regulation 148 of the Building Regulations 2018. In addition, the flood mapping is highly reliable, purposefully prepared for planning use and represents the best available strategic flood information for the Lower Glenelg River floodplain and estuary system. Council submitted that failing to apply controls to land known to be flood-affected would expose decision makers, landowners and the community to unacceptable risk and would amount to a *"dereliction of duty"* to disregard the Study.

Council submitted that overlays are only one of many factors affecting property value including:

- planning considerations such as zoning, existing overlays and local policy requirements
- property inspections
- building and planning permits
- recent sales and leasing in an area
- lot sizes
- types of surrounding properties
- the level of infrastructure, amenities and services in the surrounding area
- tenancy opportunities
- prevailing trends in the 'market cycle'
- the social profile of areas
- the quality and maintenance of individual buildings.

Council added that identifying flood-affected land does not create or alter flood risk but simply recognises an existing condition. Council relied on the established Panel position, as expressed in the Amendment C221 Stonnington Panel Report, that potential effects on property value or insurance premiums do not justify setting aside a flood-related planning scheme amendment.

Council submitted that the proposed flood mapping and the changes introduced by the Amendment are lawful, appropriate and strategically justified and that no changes to the Amendment are warranted in response to the submission.

(iii) Discussion

As discussed in the previous chapter, the flood mapping underpinning the Amendment reflects the best available strategic information for the Lower Glenelg River floodplain and estuary system. In addition, the translation of that data and mapping into the FO1 and LSI01 gives effect to Council's regulatory obligations. On that basis, the overlays are properly and lawfully applied, they implement known hazard information rather than create new risk and nothing in the material supports a finding that Council has acted beyond its statutory function.

The land will not be sterilised by the controls. The FO1 and LSI01 introduce a permit trigger calibrated to flood hazard rather than an outright prohibition and no permit application or concrete development scenario has been tested against the overlays to demonstrate that a reasonable use of the land is precluded. The zone and other current overlays such as the Bushfire Management Overlay also have permit requirements and the amended LFDP, which is an incorporated document, provides clear permit guidance on proposals on the Floodway Overlay and Land Subject to Inundation Overlay.

The Panel accepts Council's submission that private financial implications and property values are not a relevant consideration in the application of planning controls. The role of the Panel is to determine whether the overlays are properly applied. Property-specific concerns about resale value, development cost, financing or future marketability do not assist in answering that threshold question. Market outcomes are affected by many variables and may shift over time, whereas the application of the flood overlays must focus on the identified risk to human health and property. To elevate private financial consequences into the significance assessment would distort the statutory and policy framework and risk displacing the central question with matters more appropriately considered, if necessary, in the context of a specific proposal. In that sense, property value and financial implications are not relevant criteria when deciding whether the FO1 or LSI01 should be applied.

Requests to assess the impact of an overlay on individual properties are best tested through the permit process, where site-specific survey and technical evidence can be assessed against the flood model detail and the overlay requirements, rather than resolved by excision at the Amendment stage. Having regard to the reliability of the flood study and the statutory imperative to reflect known hazard in the Planning Scheme, the Amendment, including the extent of the FO1 and LSI01, is appropriate and the issues raised in submissions are not supported.

(iv) Conclusions

The Panel concludes:

- The proposed flooding overlays do not sterilise or significantly constrain the future use and development potential of affected land, including land previously considered suitable for residential development.
- The potential impact of the Amendment on property values, insurance costs, financing, land marketability and perceived loss of development rights is not relevant when considering whether to apply the FO1 and LSI01.

Appendix A Document list

No.	Date	Description	Provided by
1	07-May-26	Panel Directions and Hearing Timetable (version 1)	Planning Panels Victoria (PPV)
2	18-May-26	Submitter location map	Glenelg Shire Council (Council)
3	20-May-26	Email to PPV withdrawing from the Hearing	Submitter 2
4	25-May-26	Flood modelling data and documents a) Draft Data Review Report Feb 2023 b) Flood Modelling Report Aug 2024 c) Flood Damages Assessment Report Sept 2024 d) Flood Warning Feasibility Assessment Report Nov 2024 e) Planning Scheme maps GIS files f) Flood animations g) Draft Planning Scheme Overlay Mapping h) Municipal Emergency Plan Updates - Glenelg Shire MFEP DNFS Updates – RIV - Glenelg Shire MFEP DNFS Updates – TID	Council
5	25-May-26	Part A submission a) Attachment 1 – Glenelg C115gelg Directions and Timetable V1 b) Attachment 2 – Authorisation Letter c) Attachment 3 – Submission Summary with Objector's names d) Attachment 4 – Submissions e) Attachment 5 – Glenelg Hopkins response to submissions f) Attachment 6 – Venant Solution g) Attachment 7 – Venant Solutions – Exec Summary – Draft Planning Overlay Mapping report h) Attachment 8 – Venant Solutions – Flood modelling i) Attachment 9 – Submitter Location Map C115gelg j) Attachment 10 – Council meeting minutes 24 Mar 2026 k) Attachment 11 – Council Report for Amendment C115gelg	Council

No.	Date	Description	Provided by
6	25-May-26	Expert witness statement – Dr Mark Jempson	Council
7	11-Jun-26	Hearing Timetable (version 2)	PPV
8	17-Jun-26	Email with a list of questions for Council	PPV
9	17-Jun-26	Part B submission	Council
10	17-Jun-26	Hearing Submission	Submitter 1
11	19-Jun-26	Written response to questions from the Panel: a) Property flood levels comparison diagram b) CC1 and CC2 comparison aerial photos c) Dartmoor and Nelson Flood Modelling Review – Technical Note	Council
12	19-Jun-26	Further submission	Submitter 1