

Planning and Environment Act 1987

Panel Report

**Greater Geelong Planning Scheme Amendment C394ggee
Land Subject to Inundation Overlay – Coastal Inundation
and Hazard**

3 April 2020

How will this report be used?

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

The planning authority must consider this report before deciding whether or not to adopt the Amendment [section 27(1) of the *Planning and Environment Act 1987* (the 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 may also recommend to the Minister that a permit that applies to the adopted Amendment be granted. The Minister may grant or refuse the permit subject to certain restrictions [sections 96G and 96I of the Act].

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 Act, and regulation 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 Act].

Planning and Environment Act 1987

Panel Report pursuant to section 25 of the Act

Greater Geelong Planning Scheme Amendment C394ggee

Land Subject to Inundation Overlay – Coastal Inundation and Hazard

3 April 2020



Sarah Carlisle, Chair



Geoffrey Carruthers, Member

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Glossary and abbreviations

Act	<i>Planning and Environment Act 1987</i>
AEP	Annual Event Probability (a 1% AEP event has a chance of occurrence of once in 100 years, or 0.01 in any given year)
CCMA	Corangamite Catchment Management Authority
Council	Greater Geelong City Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DELWP	Department of Environment, Land, Water and Planning
DPO21	Development Plan Overlay Schedule 21, which applies to 'The Point' residential and commercial development at Point Lonsdale
EES	Environmental Effects Statement
FO	Floodway Overlay
LCHA	<i>Bellarine Peninsula – Corio Bay Local Coastal Hazard Assessment, Inundation Report, Cardno, December 2015</i>
LiDAR	Light imaging, detection and ranging (a remote sensing method that uses a pulsed laser to generate three dimensional information about the surface of the earth)
LSIO	Land Subject to Inundation Overlay
Moolap Plan	<i>Moolap Coastal Strategic Framework Plan August 2019</i>
PPN12	<i>Planning Practice Note 12: Applying the Flood Provisions in Planning Schemes</i>
PPN15	<i>Planning Practice Note 15: Managing coastal hazards and the coastal impacts of climate change</i>
SBO	Special Building Overlay
the Scheme	Greater Geelong Planning Scheme
VCS	<i>Victorian Coastal Strategy 2014</i>
VPP	Victoria Planning Provisions

Overview

Amendment summary	
The Amendment	Greater Geelong Planning Scheme Amendment C394ggee
Common name	Land Subject to Inundation Overlay – Coastal Inundation and Hazard
Brief description	<p>Implements the <i>Bellarine Peninsula – Corio Bay Local Coastal Hazard Assessment, Inundation Report</i> by introducing a Land Subject to Inundation Overlay in coastal areas of Corio Bay and the Bellarine Peninsula that are anticipated to be subject to coastal inundation and hazard.</p> <p>Associated policy changes in the Municipal Strategic Statement.</p>
Subject land	Public and private land along the coastline of Corio Bay and the Bellarine Peninsula. See Figure 1.
Planning Authority	Greater Geelong City Council
Authorisation	13 June 2019, subject to conditions
Exhibition	11 July to 12 August 2019
Submissions	Number of Submissions: 43 Opposed: 39

Panel process	
The Panel	Sarah Carlisle (Chair), Geoffrey Carruthers
Directions Hearing	Geelong, 16 December 2019
Panel Hearing	Geelong, 28 February 2020
Site inspections	Not required
Appearances	<p>Council: Peter Smith, Coordinator Strategic Implementation, calling oceanography/coastal engineering evidence from Dr David Provis of Cardno</p> <p>DELWP Barwon South West Region: Samantha Culver, Planning Approvals Program Officer, supported by Geoff Brooks, Program Manager Planning Approvals</p> <p>Corangamite Catchment Management Authority: Dr Geoff Taylor</p>
Citation	Greater Geelong PSA C394ggee [2020] PPV
Date of this Report	3 April 2020

Executive summary

Greater Geelong Planning Scheme Amendment C394ggee (the Amendment) seeks to implement the *Bellarine Peninsula - Corio Bay Local Coastal Hazard Assessment* December 2015 (LCHA). It includes policy changes to the Municipal Strategic Statement, introduces a new Land Subject to Inundation Overlay Schedule 2 (LSIO2), and applies the LSIO2 to the properties identified as being subject to future flood events and sea level rise.

Specifically, the Amendment seeks to:

- amend Clause 21.05 (Natural environment) of the Municipal Strategic Statement to refer to the LCHA and include a new objective and strategy at Clause 21.05-5 Climate Change relating to coastal impacts of climate change
- introduce a new Schedule 2 to Clause 44.04 Land Subject to Inundation Overlay titled 'Coastal Inundation and Hazard'
- apply the LSIO2 to land identified in the LCHA as being inundated by the combined effects of the 1% Average Event Probability (AEP) flood event plus 0.8 metre sea level rise
- amend the Schedule to Clause 72.03 to update the list of maps forming part of the Greater Geelong Planning Scheme (the Scheme).

The LSIO2 will apply to 1,614 coastal properties on the Bellarine Peninsula and Corio Bay at Avalon, Lara, Corio, Geelong, East Geelong, Newcomb, Moolap, Leopold, Bellarine, Portarlington, Indented Head, St Leonards, Swan Bay, Ocean Grove, Wallington, Barwon Heads, Connewarre and Breamlea.

A total of 43 submissions were received – 39 submissions objected, and 4 submissions either supported, did not object or provided comments.

Key issues raised in submissions included:

- concerns over the accuracy of the modelling in the LCHA
- whether the application of the LSIO2 is premature
- whether the flood mapping should be regularly reviewed (say, every 15 years)
- whether certain properties or areas should be included in the LSIO2, based on
 - their physical characteristics
 - the small extent of the property likely to be affected by flooding
 - other flood studies (including that which informed the Portarlington Structure Plan) do not show the area as subject to flooding or coastal inundation
- whether building height limits within the LSIO2 area should be increased to account for the need for higher floor levels due to inundation, and whether requirements relating to height and scale of buildings more generally should be relaxed for properties within the LSIO2
- impacts on the ability to develop, and the cost of developing
- impacts on property values, rates and land tax and insurance costs
- impacts on the Moolap Coastal Strategic Framework Plan and the future redevelopment of Point Henry
- whether Council should be doing more to combat coastal inundation with infrastructure.

Clause 13.01-2S (Coastal inundation and erosion) of the Planning Policy Framework requires planning authorities to plan for and manage the coastal impacts of climate change. Clause 21.05-4 (Coastal environments) requires planning authorities to respect and manage coastal processes, and Clause 21.05-5 (Climate change) requires them to plan for and adapt to the impacts of climate change.

Victorian Government policy requires all Councils to plan for a 0.8 metre sea level rise by the year 2100 (relative above 1990 levels). The LCHA was consequently prepared, and released in December 2015. It considers the combined impacts of a 0.8 metre sea level rise and a 1% AEP storm surge event.

The LCHA was prepared as part of the 'Our Coast' project. This project identified properties that will be subject to future flood events and sea level rise, and is the basis for this Amendment. The project was a Victorian Government funded initiative, and covers the area from Breamlea to Point Wilson. It expands on two previous climate change coastal research projects undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Victorian Government (Future Coasts). The 'Our Coast' assessment is therefore known as the '3rd pass' assessment.

Having considered the material referred to it, including the Victorian Climate Science Report 2019, the Panel considers that the science on climate change is well and truly settled. Climate change is happening, and its impacts are becoming more keenly felt. The 'precautionary principle' should be applied when considering the risks associated with climate change. Planning for the impacts of climate change in coastal areas achieves State planning policy and responds to the science.

After considering all written submissions and expert evidence, the Panel concludes that the Amendment is supported by, and implements, the Planning Policy Framework, and is consistent with the relevant Ministerial Directions and Practice Notes. The LSIO is the current and most appropriate planning tool available to address the risk of sea level rise and storm-tide surge. The Amendment is well founded and strategically justified, and provides net community benefit and sustainable development consistent with the requirements of Clause 71.02-3 of the Scheme. Council is to be commended for its forward looking and proactive approach in preparing the Amendment.

The Panel concludes:

- The modelling in the LCHA has been prepared on the best available information, and the Panel is satisfied as to its technical basis and accuracy. The minor discrepancies between the modelling in the LCHA and the LSIO mapping are not significant enough to affect the Amendment.
- Those properties in the Barwon River estuary and around Reedy Lake that are within the Floodway Overlay and that are identified in the LCHA as being subject to coastal inundation should be included in the LSIO2, subject to the owners and occupiers of the affected properties being notified of the proposed extension of the LSIO2 and being given the opportunity to make submissions.
- Excluding Point Lonsdale from the LSIO2 at this time is appropriate, given the waterway and drainage system at 'The Point' is not yet complete. A future LSIO2 amendment should be progressed by the Greater Geelong and Queenscliff Councils once 'The Point' waterway is constructed, and further modelling is compiled. In the

interim, Schedule 21 to the Development Plan Overlay provides appropriate minimum floor level controls for 'The Point' development before the LSIO2 is considered for Point Lonsdale.

- There is no justification for removing the properties in Portarlington or St Leonards from the LSIO2.
- The permit exemption for coastal protection works is appropriate, subject to changing the wording to that agreed between Council and DELWP.
- No additional permit exemptions are required for buildings or works undertaken by a public authority relating to watercourse management, environmental improvements or infrastructure services.
- It is appropriate for the views of the relevant floodplain management authority to be taken into account, but this is already provided for under the referral provisions in Clause 66.03 of the Scheme and the decision guidelines in the LSIO head clause. The first dot point in Clause 5.0 of the LSIO2 should therefore be deleted.
- It is not appropriate as part of this Amendment to amend existing planning controls in other parts of the Scheme to allow height limits to be exceeded to accommodate possibly higher floor levels that may be required under the LSIO2. This could be monitored and be the subject of a future amendment if required.
- It is not necessary for the LSIO2 to include requirements relating to overflow relief gully outlets. These are appropriately dealt with as part of the building permit process.
- Consideration of specific coastal protection works projects is beyond the scope of this Amendment. The Panel notes, however, that the 'Our Coast' project is progressing coastal protection works projects.
- The LSIO2 does not prevent development in Moolap and Point Henry. Rather, it will ensure that development appropriately addresses the potential coastal inundation risks.
- Impacts on property values, insurance costs, and rates are not relevant planning considerations.

Recommendations

Based on the reasons set out in this Report, the Panel recommends that Greater Geelong Planning Scheme Amendment C394ggee be adopted as exhibited subject to the following recommendations:

1. **Before adopting the Amendment, Council should check the accuracy of the 2007 LiDAR data used to inform the modelling in the Local Coastal Hazard Assessment (which in turn informed the mapping of the Land Subject to Inundation Overlay Schedule 2) against the 2019 LiDAR data. If discrepancies appear, Council should undertake further modelling and make any necessary adjustments to the Overlay mapping that may be required.**
2. **Apply the Land Subject to Inundation Overlay Schedule 2 to those properties identified in the Local Coastal Hazard Assessment as being subject to coastal inundation, but that were removed from the Amendment prior to exhibition on the basis that they were covered by the Floodway Overlay. Ensure a process is put in place to notify the owners and occupiers of the affected properties, and provide them with the opportunity to**

make submissions and (if necessary) have their submissions considered by an independent panel.

3. Amend the Land Subject to Inundation Overlay Schedule 2 to:

a) include the following exemption in Clause 3.0:

Works that have been granted consent under the Marine and Coastal Act 2018 and are conducted by or on behalf of a Public Land Manager or Committee of Management appointed under the Crown Land (Reserves) Act 1978.

b) delete the first dot point in Clause 5.0.

1 Introduction

1.1 The Amendment

(i) Amendment description

The Amendment proposes to implement the *Bellarine Peninsula - Corio Bay Local Coastal Hazard Assessment, Inundation Report* (LCHA) prepared by Cardno in December 2015. Specifically, the Amendment proposes to:

- change Clause 21.05 (Natural Environment) of the Municipal Strategic Statement to:
 - include a new objective and strategy relating to coastal impacts of climate change
 - refer to the LCHA
- introduce a new Schedule 2 to the Land Subject to Inundation Overlay (LSIO2) and apply it to properties identified in the LCHA as being subject to future flood events caused by sea level rise and storm surges.

(ii) The subject land

The Amendment applies to private and public land along the coastline of Corio Bay and the Bellarine Peninsula. Affected land covers a total of 1,614 properties. Refer to Figure 1.

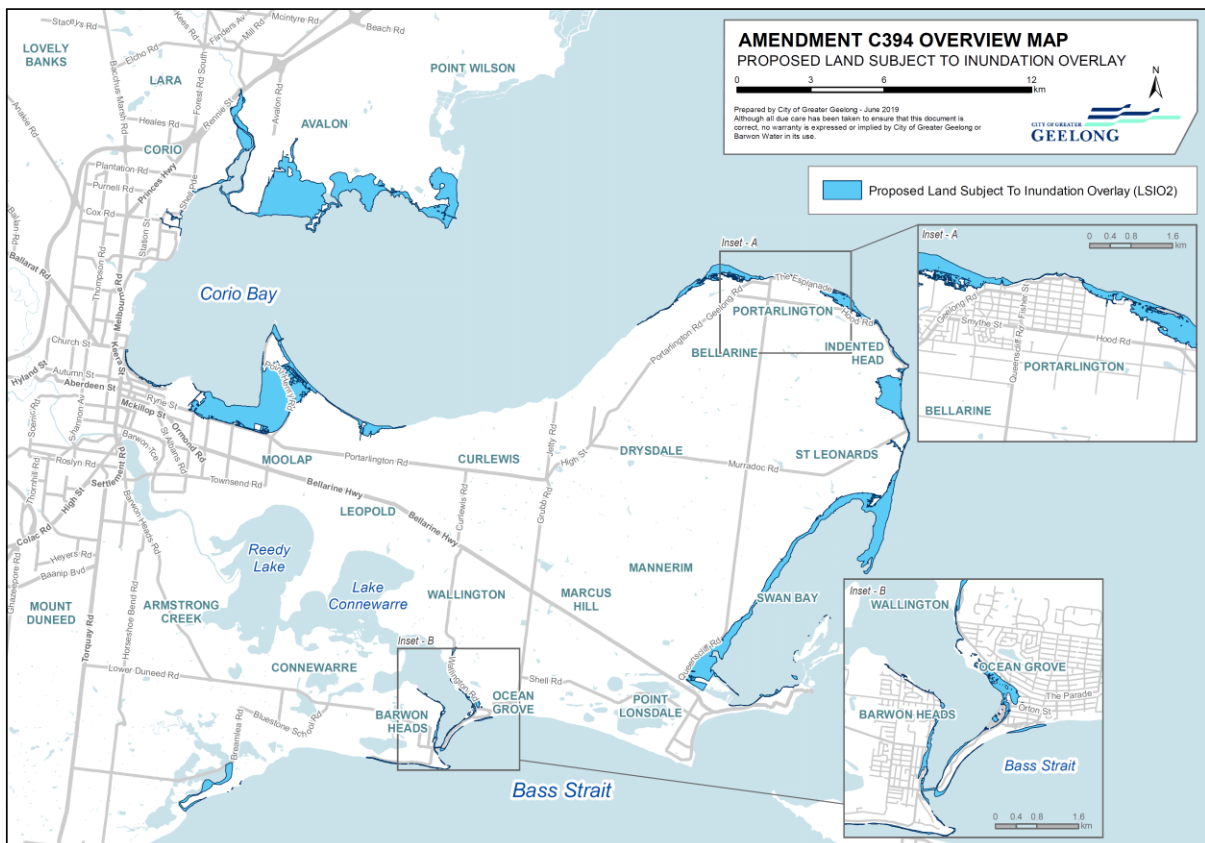


Figure 1 Land affected by the Amendment

1.2 The Local Coastal Hazard Assessment

The LCHA was prepared by Cardno and commissioned through a joint partnership between Greater Geelong City Council, the Borough of Queenscliffe, the Department of Sustainability and Environment (now the Department of Environment, Land, Water and Planning (DELWP)) and the floodplain manager (Corangamite Catchment Management Authority (CCMA) as part of DELWP's 'Future Coasts Program'.

The LCHA study area included the entire Bellarine Peninsula and the northern side of Corio Bay, from Point Wilson to Breamlea. The study area was divided into nine compartments. The key aim of the study was to provide a comprehensive understanding of the extent of coastal hazards and the impacts on the coastal environments within the study area. The study addressed coastal, estuarine/riverine and climate change challenges. The study modelled the extent of inundation assuming a 0.8 metre sea level rise plus storm surge in a 1% Average Event Probability (AEP) flood event.

1.3 The conditions of authorisation

The Department of Environment, Land, Water and Planning (DELWP) authorised Council to prepare and exhibit the Amendment on 13 June 2019. The authorisation was subject to conditions, including the following:

1. Reconcile the extent of overlap of the proposed LSIO mapping with existing flood provisions, in particular the Floodway Overlay mapping at Barwon Heads, Lake Connewarre and Reedy Lake.

Several properties in the Barwon River estuary area and around Reedy Lake are affected by the Floodway Overlay (FO). Council originally proposed to include these properties in the LSIO2, but removed them pursuant to the conditions of authorisation. The Panel addresses this issue in Chapter 5.1.

1.4 Summary of issues raised in submissions

(i) Planning Authority

The key issue for Council was ensuring that long term planning is in place to manage the impacts on the municipality's coastal areas of future sea level rise, coastal inundation, and hazards associated with climate change.

(ii) Relevant agencies

DELWP, the Corangamite Catchment Management Authority (CCMA) and Barwon Water all supported the Amendment.

The key issues for Barwon Water were:

- whether permit exemptions should be included for buildings and works undertaken by a public authority relating to watercourse management, environmental improvements or infrastructure services
- whether permits should include a standard requirement that the overflow relief gully be located 150mm above the flood level
- how flooding may impact on servicing requirements.

The key issue for DELWP was whether permit exemptions should be included for buildings and works undertaken by a public land manager to repair existing structures such as sea walls, visitor facilities or other works consented to under the coastal protection legislation.

The key issue for the CCMA was the need to understand the differences between riverine and urban flooding and coastal inundation in assessing future permit applications under the LSIO.

(iii) Opposing submitters

The key issues by opposing submitters were:

- concerns over the accuracy of the modelling in the LCHA
- whether the application of the LSIO is premature
- whether the flood mapping should be regularly reviewed (say, every 15 years)
- whether certain properties or areas should be included in the LSIO, based on
 - their physical characteristics
 - the small extent of the property likely to be affected by flooding
 - other flood studies (including that which informed the Portarlington Structure Plan) do not show the area as subject to flooding or coastal inundation
- whether building height limits within the LSIO2 area should be increased to account for the need for higher floor levels due to inundation, and whether requirements relating to height and scale of buildings more generally should be relaxed for properties within the LSIO2
- impacts on the ability to develop, and the cost of developing
- impacts on property values, rates and land tax and insurance costs
- impacts on the Moolap Coastal Planning Framework and the future redevelopment of Point Henry
- whether Council should be doing more to combat coastal inundation with infrastructure.

These submissions remain outstanding.

1.5 The Panel's approach

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:

- Planning context
- Strategic justification
- The accuracy of the modelling
- The appropriateness of the LSIO mapping
- Application issues
- Other issues.

2 Planning context

2.1 Planning policy framework

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

Clause 13.01-2S Coastal inundation and erosion

The Amendment is consistent with the following objectives and strategies:

- To plan for and manage the potential coastal impacts of climate change.
- Plan for sea level rise of not less than 0.8 metres by 2100 and allow for the combined effects of tides, storm surges, coastal processes and local conditions such as topography and geology when assessing risks and coastal impacts associated with climate change.
- In planning for SLR, an increase of 0.2 metres over current 1 in 100 year flood levels by 2040 may be used for new development in close proximity to existing development (urban infill).
- Ensure that land subject to coastal hazards is identified and appropriately managed to ensure that future development is not at risk.
- Avoid development in identified coastal hazard areas susceptible to inundation.

Clause 13.03-1S Floodplain management

The Amendment is consistent with the following objectives and strategies:

- To assist the protection of:
 - Life, property and community infrastructure from flood hazard.
 - 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 health.
- Identify land affected by flooding, including land inundated by the 1 in 100 year flood event or as determined by the floodplain management authority in planning schemes.
- Avoid intensifying the impact of flooding through inappropriately located use and development.

Clause 21.05-4 Coastal environments

The Amendment is consistent with the following objectives and strategies:

- To protect, maintain and enhance the coast, estuaries and marine environment.
- To respect and manage coastal processes.
- Setback future land use and development from coastal areas, estuaries and coastal wetlands to provide a buffer which is adequate to accommodate coastal recession and the landward migration of coastal wetland vegetation communities such as mangroves and salt marshes.

Clause 21.05-5 Climate change

The Amendment is consistent with the following objectives and strategies:

- To plan for and adapt to the impacts of climate change.
- Avoid land use and development within areas considered at risk of coastal erosion or inundation from flooding, storm surge or rising sea levels.

Clause 21.05-7 Flooding

The Amendment is consistent with the following objectives:

- To protect floodplains.
- To minimise the potential for damage and risks to public safety and property from flooding.

2.2 Other relevant planning strategies and policies**(i) Victorian Coastal Strategy**

The Victorian Coastal Strategy 2014 (VCS) outlines five key inter-related issues for coastal planning and management. They include adapting to a changing climate, and managing coastal land and infrastructure.

The VCS sets out a sea level rise planning benchmark for Victoria of not less than 0.8 metres by 2100. This benchmark was contained in the 2008 Victorian Coastal Strategy, and has been implemented in the Planning Policy Framework (in Clause 13.01-2S). The VCS states as follows in relation to the sea level rise planning benchmark (at page 21):

While there are instances of sea level rise around the globe, recorded increases vary widely due to factors such as prevailing winds, changing ocean currents and the gravitational pull of the polar ice sheets. Monitoring stations at Lorne and Stony Point have recorded rises of 2.8 mm/year and 2.4mm/year respectively since 1991 (DSE (b) 2011).

... A sea level rise planning benchmark manages these risks for new development, provides consistency for decision-making and reduces the level of uncertainty for public infrastructure providers, land managers, individuals, businesses and communities.

(ii) Victorian Flood Management Strategy

This strategy includes the following at Policy 15e:

Planning scheme controls must be applied to all priority coastal areas, identified through Regional Floodplain Management Strategies, expected to be at risk of inundation by the 1% AEP flood level, taking into account a rise in mean sea level of at least 0.8 metres.

Statutory planning decisions for planning permits triggered by the relevant planning scheme controls:

- must be based on the risk of inundation taking into account a rise in mean sea level of at least 0.8 metres for subdivisions outside existing town boundaries and for all development accommodating emergency and community facilities
- may be based on the current 1% AEP flood level for all other development inside town boundaries and for development on existing lots outside town boundaries
- should include an additional 0.2 metres on top of the normal freeboard applied for decisions based on the current 1% AEP flood level.

(iii) Guidelines for Coastal Catchment Management Authorities: Assessing development in relation to sea level rise

These Guidelines were approved by the Minister for Water in 2012. They specifically apply the policies set out in Clause 13.01-2S of the Planning Policy Framework. The objectives require:

- planning for sea level rise and storm surge to 2100

- that land subject to coastal inundation is identified and appropriately managed to ensure that future development is not at risk
- that the precautionary principle is applied when considering the risks associated with climate change.

(iv) Geelong Settlement Strategy

Council is currently progressing Amendment C395 to implement a new municipal Settlement Strategy. The Strategy proposes to decrease the share of housing development on the Bellarine Peninsula over time and re-direct greenfield development to the growth areas at Geelong. It also proposes permanent settlement boundaries for towns on the Bellarine. Council submitted that permanent settlement boundaries will reduce pressure for coastal township expansion and coastal development.

(v) Bellarine Peninsula Distinctive Areas and Landscape project

Council advised that the project, currently being undertaken by DELWP, is also likely to implement permanent settlement boundaries around the Bellarine peninsula townships.

(vi) Marine and Coastal Policy 2020

DELWP advised the Panel on 23 March 2020 (post the Hearing) that this Victorian Government policy was released 6 March 2020, and the proposed amendment represents a direct response to the policy's recommendations to plan for sea level rise and prevent development in areas that are vulnerable to coastal hazard risks.

2.3 Planning scheme provisions

(i) Existing zones and overlays

The properties affected by the proposed LSIO2 are in a range of zones including residential, rural, public and commercial zones. A range of overlays also apply.

(ii) Purposes of the LSIO2

The purposes of the proposed LSIO2 are:

- To protect land vulnerable to coastal inundation from inappropriate development.
- To plan for projected sea level rises to ensure that the community and assets are not exposed to an unacceptable level of risk associated with the coastal impacts of climate change.
- To identify land in coastal areas that may be inundated by the combined effects of the 1% Average Event Probability (AEP) flood event plus 0.8 metre sea level rise.
- To ensure that any new development is suitably designed to ensure that it is compatible with the identified flood hazard and local drainage characteristics.

2.4 Ministerial Directions and Practice Notes

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 13 (Managing coastal hazards & the impacts of climate change) is not directly relevant to the Amendment, as it relates primarily to rezoning of coastal land for urban development. Nevertheless, it reflects State Government policy that:

- current and future risks of sea level rise and storm surge are appropriately addressed
- new development is located, designed and protected from potential coastal hazards
- management arrangements are put in place to ensure ongoing risk minimization
- development in coastal areas considers the view of the relevant floodplain manager.

Planning Practice Notes

Planning Practice Note 12: Applying the Flood Provisions in Planning Schemes (PPN12) provides guidance about applying the flood provisions in planning schemes including the preparation of policy, identifying land affected by flooding, preparing a local floodplain development plan and the application and operation of the flood provisions. It describes the different types of flooding, and identifies the appropriate Victoria Planning Provision (VPP) tool to manage the impacts of the different types of flooding.

PPN12 discusses two types of flooding – mainstream flooding (which occurs when rivers and streams break their banks due to heavy rainfall), and stormwater or overland flooding (which occurs when the stormwater system backs up and no provision has been made for overland flows). It does not discuss flooding from coastal inundation or storm surge events, or provide any guidance on the appropriate tool to manage coastal inundation.

PPN12 states:

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 [Urban Floodway Zone] or FO areas. The LSIO can be applied in three situations (see Cases 5 to 7 in Table 1 and Figures 2.1, 2.2 and 2.3).

Cases 5 to 7 are described as follows:

Case 5 (see Fig. 2.1)

- Rural or urban areas where the extent of the floodway has not been identified and only the extent of land subject to inundation is known
- Areas that cover the total extent of land subject to inundation, including the higher risk floodway component
- LSIO can be applied as an interim measure until further mapping of the floodway is carried out.

Case 6 (see Fig. 2.2)

- Rural land that is mainly undeveloped
- Areas where the extent of the floodway has been identified and LSIO covers the balance of land subject to inundation, excluding the floodway component
- Lower flood depths and/or flow velocities
- Lower potential flood risk.

Case 7 (see Fig.2.3)

- Urban land that is fully or substantially developed ('flood fringe')
- Areas where the extent of the floodway has been identified and the LSIO covers the balance of land subject to inundation, except the floodway component
- Lower flood depths, lower flow velocities
- Lower potential flood risk.

Planning Practice Note 15: Managing coastal hazards and the coastal impacts of climate change (PPN15) provides guidance on managing coastal hazards, the decision-making process for assessing coastal hazard risk and planning for development in coastal areas. It states:

The Victorian Coastal Strategy 2008 identifies that during this century our coastline is likely to be impacted by climate change. Impacts such as possible sea level rise and an increase in the frequency and severity of storm events are projected which are likely to lead to greater coastal inundation and erosion that may cause damage and loss to property, infrastructure and the environment.

PPN15 references the policy and strategic direction set out in the VCS, including the need to respond to coastal hazard risks in the context of climate change, and the Victorian sea level rise planning benchmark of 0.8 metres by 2100.

3 Strategic justification

3.1 The issues

The issues are:

- whether there is a sufficient evidence base for sea level rise
- whether the Amendment is premature
- whether (and how often) the mapping should be reviewed
- whether the LSIO is the appropriate tool.

3.2 Evidence and submissions

Many submissions raised issues with the timeline of the projected impact of sea level rise and inundation. Several submissions took issue with the timeframe of predicted inundation (to the year 2100), and considered that this was too far distant in the future to warrant applying an LSIO now and that the Amendment is premature. Some submitters considered that the evidence on which the 2100 levels are based was inaccurate. Some considered that Council should wait until there is actual evidence of sea level rise, rather than predictions based on modelling, before it applies flood controls. Others suggested that the report and/or mapping should be updated every 15 to 20 years.

Council called Dr Provis to provide expert evidence in relation to the preparation of the LCHA, including the modelling. Dr Provis recognised and accepted that the State Government has decided that the LSIO2 is the appropriate tool to manage coastal inundation at this time, but he expressed some concerns over whether the LSIO2 appropriately deals with sea level rise and coastal inundation. Dr Provis noted that the LSIO2 has been developed to manage overland and riverine flooding, which differs in some important respects to flooding caused by coastal inundation. This issue is explored more fully in Chapter 6.1.

One of the issues highlighted by Dr Provis is the fact that the LSIO2 is being applied to manage a future risk, not a current risk. Dr Provis demonstrated this graphically in Figure 4 of his report (at page 15), illustrating the projections for the extreme storm-tide at Lorne (which is representative of the sea-level along the Bass Strait coast of the Bellarine Peninsula).

Dr Provis stated (at page 15 of his expert witness statement, Document 2):

The non-stationarity of coastal inundation means that land which is subject to the LSIO may not be subject to inundation at present, or indeed for many years to come. Thus, the risk of inundation is a future risk, not applicable at the present day ...

He went on to state (at page 16):

... even with the upper range of uncertainty, storm-tide levels are not projected to reach the LSIO2 level until after 2090 and hence the land within the LSIO2 is not "subject to inundation" for a significant length of time.

I acknowledge that the Corangamite Catchment Authority has made some allowance for these factors in their proposed assessment criteria as set out in their submission to this Panel, and I support the aims of these criteria, however it is still a conservative approach.

Whilst the LSIO is the best available planning tool at present for providing guidance in dealing with coastal inundation and the effects of climate change, I do not believe it is the best possible tool. I believe the risks associated with coastal inundation and coastal

erosion would be better dealt with by means of a separate overlay, for example a “Coastal Management Overlay”.

Council agreed that a specific planning tool to deal with sea level rise and the associated coastal inundation and hazard, such as suggested by Dr Provis, would be best practice. However, Council’s position was that it is beyond the scope of this Amendment to seek changes to the VPP.

The CCMA provided a useful and informative submission to the Panel outlining its approach to assessing permit applications that will be referred to it under the LSIO2. Its approach varies depending on whether the application is for ‘intensification development’ or a single dwelling or building in infill areas. The criteria that the CCMA will apply are summarised in Table 1.

Table 1 CCMA criteria for assessing permit applications under the LSIO2

Development Type	LSIO2 assessment criteria once amendment is implemented	
	CCMA	
	Minimum Flood and Floor Level Assessment Criteria	Minimum Access Depth Assessment Criteria (maximum allowable depth = 0.3m)
(i) Intensification in existing (urban) residential areas and Greenfield areas	1% AEP storm surge flood level with 0.8m sea level rise + 0.3m freeboard	1% AEP storm surge flood level with 0.8m sea level rise
(ii) Single/replacement dwelling/commercial building in existing residential area	Current 1% AEP storm surge + 0.7m freeboard (freeboard includes 0.4m sea level rise based on 50 year timeframe estimate for building life span, with 0.3m freeboard)	Current 1% AEP storm surge flood level

Source: CCMA submission (Document 8)

These sea level rises and freeboard levels are based on research undertaken by the CSIRO and the Bureau of Meteorology in 2015, taken from the Victorian Climate Science Report 2019. The freeboard level for single buildings in existing residential areas is based on an assumed 0.4 metre sea level rise over 50 years. The CCMA preferred this to the 0.2 metre sea level rise by 2040 referred to in Clause 13.01-2S and the Victorian Flood Management Strategy, because the 2040 levels only allow for 20 years of sea level rise whereas the generally accepted lifespan of a new building is 50 years.

3.3 Discussion

Clause 13.01-2S (Coastal inundation and erosion) of the Planning Policy Framework requires planning authorities to plan for and manage the coastal impacts of climate change. Clause 21.05-4 (Coastal environments) requires planning authorities to respect and manage coastal processes, and Clause 21.05-5 (Climate change) requires them to plan for and adapt to the impacts of climate change.

Based on the material referred to the Panel including the Victorian Climate Science Report 2019 (Document 9), the Panel considers that the science on climate change is well and truly settled. Climate change is happening, and its impacts are becoming more keenly felt. Planning

for the impacts of climate change in coastal areas is consistent with State planning policy, and the science.

The VCS refers to studies undertaken at Lorne and Stony Point that have recorded rises of 2.8 millimetres each year and 2.4 millimetres each year respectively since 1991. Dr Provis cited these studies and provided extracts from them in his evidence to the Panel (Document 6). The Panel is satisfied on the basis of these studies that sea level rise is already occurring. The Panel does not consider that the 'wait and see' approach advocated for by some submitters would be a responsible approach. Nor would it be consistent with the Planning Policy Framework.

The Panel acknowledges that planning for an 80 year horizon (to 2100) is a conservative approach. It accepts Dr Provis' evidence that in effect, much of the land to which the LSIO2 will be applied may not be inundated for many years to come – perhaps even until after the life cycle of buildings that may be erected on the land in the next couple of years. However, the policy framework is clear that planning authorities should be taking the long view, and should be planning for a sea level rise of 0.8 metres by 2100. This is consistent with Clause 13.01-2S, PPN15, the VCS, the Guidelines for Coastal Catchment Management Authorities and the Victorian Flood Management Strategy. The Panel is satisfied that Council has planned for the appropriate level of sea level rise over the appropriate time horizon (0.8 metres by 2100).

The Panel acknowledges the concerns expressed by Dr Provis about the suitability of the LSIO2 to manage coastal inundation, given it has different characteristics to overland or riverine flooding. The Coastal Climate Change Advisory Committee [2010] PPV 140 recommended (among other things) the development of tools specifically designed to deal with climate change related coastal inundation, including a new Coastal Adaptation Zone and a Coastal Hazard Overlay. The Government at the time did not support these recommendations, and current Government policy appears to be to apply the existing VPP flood tools to both coastal inundation and overland or riverine flooding.

The Panel accepts the position of Council, Dr Provis and the CCMA that a LSIO is the current and most appropriate planning tool available to address the risk of sea level rise and storm-tide surge. It has been consistently applied by other Councils who have introduced planning tools to deal with climate related coastal inundation and hazard, including Bass Coast Shire Council (with Amendment C82 to the Bass Coast Planning Scheme), South Gippsland Shire Council (with Amendment C81 to the South Gippsland Planning Scheme) and Mornington Peninsula Shire Council (with Amendment C216 to the Mornington Peninsula Planning Scheme). While the LSIO is not perfect, there is currently no more suitable tool in the VPP to manage coastal inundation.

Council (as the responsible authority) and the CCMA (as a referral authority) will need to be mindful of the differences between coastal inundation and riverine flooding when assessing permit applications under the LSIO2, and will need to ensure that their responses are tailored to the specific characteristics of coastal inundation. The Panel is satisfied that both Council and the CCMA are aware of the differences, and will tailor their responses accordingly. This issue is explored more fully in Chapter 6.1.

In response to submissions suggesting that the mapping should be regularly reviewed, the LCHA itself recommends that the study be updated every 5-10 years to incorporate revised sea level rise guidance and measured increases. It also recommends that the findings of the

study be monitored to ensure better certainty in the inundation hazard assessments, and updated to take account of new coastal management changes and works carried out.

The Panel asked Council to provide advice on its response to the recommendations of the LCHA. Council submitted:

The City of Greater Geelong and the Borough of Queenscliffe are 2 of the 10 municipalities that are covered in part by the Port Phillip Bay Coastal Hazard Assessment (PPBCHA), release of final report is schedule for mid 2020.

The PPBCHA will provide new data that will enable a comparison with the extent of the coastal inundation from the [LCHA]. The PPBCHA has incorporated revised sea-level rise guidance and measured increases as well as monitoring findings to ensure better certainty in the inundation hazard assessments.

Further work being undertaken by the City of Greater Geelong and the Borough of Queenscliffe as part of the Coastal Inundation and Catchment Flooding Adaptation Emergency Response Planning project will review and consider coastal inundation where management has changed, action has been taken and works carried out.

The Panel is satisfied that this ongoing monitoring and updating approach will enable any necessary adjustments to the LSIO2 mapping to ensure that the mapping is based on the most accurate and up to date information.

For these reasons, the Panel concludes that the Amendment is supported by, and implements, the relevant sections of the Planning Policy Framework, and is consistent with the relevant Ministerial Directions and Practice Notes. The Amendment is well founded and strategically justified, and delivers net community benefit and sustainable development consistent with the requirements of Clause 71.02-3. Council is to be commended for its forward looking and proactive approach in preparing the Amendment. The Amendment should proceed subject to addressing the more specific issues raised in submissions as discussed in the following chapters.

3.4 Conclusions and recommendations

The Panel concludes:

- The Amendment is strategically justified and should proceed, subject to the specific recommendations in the following chapters.

The Panel recommends:

Adopt the Amendment as exhibited, subject to the Panel's specific recommendations.

4 The accuracy of the modelling

4.1 The issue

The issue is whether the technical basis of the modelling relied upon in the LCHA is correct.

4.2 Evidence and submissions

Nine submissions questioned the technical information contained within the LCHA, the methods used, the accuracy of this information and the meaning of inundation. Concerns included whether the LCHA utilised the contour intervals prior to the development of Swan View Estate, or if the information was obtained from the finished floor levels from the survey company that subdivided the land within the estate. Submissions that raised specific concerns in relation to Portarlington, St Leonards and Moolap are dealt with in Chapters 5.4, 5.5 and 7.4.

Council explained that the data and accuracy of the information contained within the LCHA is known as a '3rd pass assessment', with two previous assessments having been undertaken by the CSIRO (for the Commonwealth and Victorian Governments) starting in 2009 as part of the Our Coast and Future Coasts projects.

Council responded that the LCHA provides suitable informed and well researched information about the extent of coastal hazards and the impacts on the coastal environments subsequent risk and mitigation assessments. The information contained within the report has provided Council with sufficient information to provide the policy support required for the proposed implementation of the LSIO2 to affected properties. The Amendment is based on modelling prepared by expert consultants that reflects Victorian Government policy requirements. The process of measurements used within the LCHA, and survey heights used to inform this study, have been undertaken within a tolerance that is accepted best practice used in coastal engineering.

Dr Provis' expert evidence was (at paragraph 2.4 of his witness report, Document 2):

The type of assessment undertaken in this project has some inherent uncertainties that must be considered when using the information to inform subsequent applications. Each assessment has its own uncertainty and there are some generalised project-related uncertainties which are noted in Table 1. This type of assessment uses the best scientific practice to produce the best outcomes possible with the information available. The results are fit for a defined purpose, but are not to a level of detail to facilitate detailed design. The purpose of this study is to inform strategic flood and erosion management decisions and provide an insight into what may happen in future. The LSIO2 is an appropriate use, however the application of the LSIO2 must take account of these uncertainties.

At Table 1 of his witness report, he summarised the sources and implications of these uncertainties, and how they had been addressed, covering data sources, modelling, and mapping. His conclusion was that the LCHA uses dynamic modelling and appropriate inputs to compute the inundation under a 1% AEP storm tide, taking into account river flows where applicable.

The LSIO2 uses slightly modified inundation mapping extents compared to the LCHA, to define the land areas liable to inundation under the 1% AEP storm tide event and a 0.8 metre sea level rise. The main modification is the removal of localised areas of inundation caused by

backflow in the stormwater drainage system. Council submitted that recent upgrades to the Ozone Road drain in Barwon Heads, including the installation of a backflow prevention valve, will prevent these areas from being inundated (*Source: Document 11*). Dr Provis' conclusion was that the modifications are reasonable and valid.

Council's Part B submission detailed monitoring programs being undertaken at a limited number of sites along the coastline utilising aerial drones to collect imagery to generate beach profiles and calculate volumes of sand moving along the beaches. Figure 3 in Council's Part B submission showed the locations where updated LiDAR data had been acquired in 2019.

4.3 Discussion

Dr Provis acknowledged that the input data had some gaps but that Council had taken the best possible practical measures to address them. He concluded that there were no obvious errors in the mapping. The 2007 LiDAR data is currently the only available data being relied upon for all coastal LSIO mapping in Victoria.

Neither Council nor the CCMA had undertaken any on-site ground-proving of the accuracy of the mapping in response to the issues raised in submissions. Potential anomalies typically arise due to ongoing changes in the built form (referred to by Cardno and Dr Provis) at specific sites.

The LCHA acknowledged that the LiDAR data from 2007 has associated uncertainty relating to ongoing changes to landforms, roads, carparks, and built development. There are also changes to the shoreline position due to erosion. In implementing the recommendations in the LCHA (at section 7.3), Council has established a beach monitoring program for selected locations at Ramblers Foreshore near Portarlington, and Edgewater Beach Clifton Springs which includes the collection of the 2019 LiDAR data.

In the absence of any evidence to the contrary, the Panel relies upon Dr Provis' review, and his conclusion that no obvious errors are apparent in the LCHA or the LSIO2 mapping. It accepts that the LCHA is based on the best available information, and acknowledges that there are some gaps in the information (including the fact that the LiDAR data relied upon is now 13 years old). The Panel recommends cross checking the 2007 LiDAR data with the coincident 2019 LiDAR data where practical before adopting this Amendment. This would identify any significant built form and shoreline changes since 2007, and provide additional certainty to the LSIO2 mapping.

Council's Part B submission stated that the Victorian Government is currently undertaking a coastal hazard assessment of Port Phillip Bay, that would guide future government policy. Greater Geelong and the Borough of Queenscliffe are two of the ten municipalities covered in this assessment. The final report is scheduled for mid 2020, and should provide another data source against which the accuracy of the LCHA modelling can be checked.

4.4 Conclusion and recommendations

The Panel concludes:

- The modelling in the LCHA has been prepared on the best available information, and the Panel is satisfied as to its technical basis and accuracy.

The Panel recommends:

Before adopting the Amendment, Council should check the accuracy of the 2007 LiDAR data used to inform the modelling in the Local Coastal Hazard Assessment (which in turn informed the mapping of the Land Subject to Inundation Overlay Schedule 2) against the 2019 LiDAR data. If discrepancies appear, Council should undertake further modelling and make any necessary adjustments to the Overlay mapping that may be required.

5 The appropriateness of the LSIO mapping

5.1 Properties covered by the Floodway Overlay

(i) The issue

The issue is whether it is appropriate to exclude properties covered by the FO from the LSIO2.

(ii) Submissions

As noted in Chapter 0, DELWP's authorisation for Council to prepare the Amendment was subject to the following condition:

1. Reconcile the extent of overlap of the proposed LSIO mapping with existing flood provisions, in particular the Floodway Overlay mapping at Barwon Heads, Lake Connewarre and Reedy Lake.

Council explained that, in response to the condition, it removed several properties in the Barwon River estuary area and around Reedy Lake that are within the FO.

In response to questions from the Panel, Council indicated that it did not consider it necessary to remove these properties from the LSIO2 simply because they are subject to another flood control. Council preferred to apply both, where more than one flood risk applies.

The CCMA indicated that while it has no difficulty in principle with two flood tools applying, the main concern is to ensure that at least one control applies so that permit applications are referred to the CCMA. Once permit applications are referred, the CCMA will assess the risk on the basis of all known information, and would not limit its assessment to the particular type of flooding addressed in the overlay if the land was known to be susceptible to another type of flooding.

(iii) Discussion

PPN12 states:

Which flood zone or overlay should apply?

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 [Urban Floodway Zone] 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 [Urban Floodway Zone], 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 Panel understands the desire to minimise unnecessary overlaps or doubling up of planning controls. This is consistent with the State Government's Smart Planning program, which seeks to simplify and streamline Victoria's planning system.

PPN12 indicates that the FO is intended to apply to areas that convey active flood flows or store floodwater in a similar way to the Urban Floodway Zone, but with a lesser flood risk. The

FO generally addresses a higher flood risk than the LSIO, on land where deeper flood levels and/or greater velocities are anticipated. Therefore, the level of assessment of permit applications under the FO is likely to be higher than under the LSIO, and any measures required to address the flood risk under the FO should, in theory, be adequate to address the (lesser) risk under the LSIO.

That said, although the LSIO is not the perfect tool to address coastal inundation (for the reasons discussed in Chapter 3.3), the LSIO2 makes it very clear that the purpose of the overlay is to address coastal inundation. Nothing in the FO or its schedule indicates that the land might be subject to this particular type of flooding.

Given Dr Provis' evidence about the particular and distinct characteristics of flooding from coastal inundation, the Panel considers that it is prudent to apply the LSIO2 to all properties that are subject to coastal inundation, irrespective of whether another flood tool also applies. This will draw the attention of the responsible and referral authorities to give particular consideration to the nature and characteristics of coastal inundation flooding, and to tailor their responses to permit applications accordingly (in addition to considering other responses that may be required to address the riverine flooding sought to be managed by the FO).

As these properties were not included in the exhibited Amendment, the relevant owners and occupiers should be notified before the LSIO2 is extended to cover those properties. This could be done as part of this Amendment, or as a later LSIO2 amendment (such as that which may be required to apply the LSIO2 to Point Lonsdale – see Chapter 5.3 below). If it is done as part of this Amendment, any further submissions will need to be considered by Council and possibly referred to a panel (possibly this Panel) before the Amendment is approved.

(iv) Conclusion and recommendations

The Panel concludes:

- Those properties within the FO that are identified in the LCHA as being subject to coastal inundation should be included in the LSIO2, subject to the owners and occupiers of the affected properties being notified of the proposed extension of the LSIO2 and being given the opportunity to make submissions.

The Panel recommends:

Apply the Land Subject to Inundation Overlay Schedule 2 to those properties identified in the Local Coastal Hazard Assessment as being subject to coastal inundation, but that were removed from the Amendment prior to exhibition on the basis that they were covered by the Floodway Overlay.

Ensure a process is put in place to notify the owners and occupiers of the affected properties, and provide them with the opportunity to make submissions and (if necessary) have their submissions considered by an independent panel.

5.2 Discrepancies between the modelling and the LSIO mapping

There are minor discrepancies between the flood mapping in the LCHA (based on the modelling), and the LSIO2 mapping. The discrepancies relate to:

- technical issues with polygons, and the 'smoothing' of jagged edges of the mapping
- the exclusion of 6/8 Eastern Beach Road (which is shown in the LCHA as being subject to inundation).

Discrepancies in relation to the areas surrounding the Ozone Road drain in Barwon Heads are dealt with in Chapter 4.

(i) The issue

The issue is whether discrepancies between the flood mapping in the LCHA and LSIO2 mapping are significant enough to affect the Amendment.

(ii) Evidence and submissions

Council explained in its Part A submission that DELWP mapping services had advised prior to exhibition that the LCHA mapping dataset contained too many polygons to be compatible with the DELWP mapping system that is used to map controls in planning schemes. DELWP requested that Council make small changes to simplify the polygons showing the inundation extent for it to be a suitable basis to map the LSIO2.

This process was applied to all the inundation mapping in the LCHA. This simplification of the LCHA dataset involved the removal of some small isolated areas outside of the primary inundation area, and small gaps within the primary inundation area of each compartment.

By way of example, in Compartment 9 (North Corio Bay to Point Wilson), this process reduced the number of polygons from 709 to 46. In general, however, the overall extent of the mapping remained the same.

Dr Provis' evidence was that Geographic Information System (GIS) data can introduce minor discrepancies, but these can be accounted for by applying a conservative approach to the modelling and mapping, which had been done.

In relation to the exclusion of the specific site at 6/8 Eastern Beach Road (which is in an urban area), Council explained that the site was an excavated pre-construction commercial building site when the LiDAR dataset was compiled in 2007. This left an anomaly in the modelling once the site was built upon after 2007.

(iii) Discussion

The Panel relies upon Dr Provis' evidence that the modelling has produced conservative mapping boundaries that accommodate these minor discrepancies in all the compartments covered in the LCHA. The Panel is satisfied that the detail produced by reducing the number of polygons within the mapping does not significantly affect its accuracy. The anomaly at 6/8 Eastern Beach Road has been identified and addressed in the LSIO2 mapping.

(iv) Conclusion

The Panel concludes:

- The minor discrepancies between the modelling and inundation mapping in the LCHA and the LSIO2 mapping are not significant enough to affect the Amendment.

5.3 Point Lonsdale

The modelling in the LCHA indicates that Point Lonsdale (Compartment 5) is subject to inundation from sea level rise plus storm surge in the year 2100. However it is excluded from the LSIO2 mapping.

(i) The issue

The issue is whether it is appropriate to exclude Point Lonsdale from the LSIO2.

(ii) Evidence and submissions

Council submitted that 'The Point' residential and commercial development at Point Lonsdale includes a waterway system that will drain part of Point Lonsdale. The development was subject to an Environmental Effects Statement (EES) inquiry and combined planning scheme amendment (Amendment C150) in 2008. Council granted a planning permit for the development approximately 10 years ago. Drainage modelling was undertaken then as part of this process to demonstrate how the new waterway system would function under a sea level rise and storm surge event scenario. The mapping at that time showed that 'The Point' residential area, and some existing residential areas in Point Lonsdale, would benefit from this waterway system by reducing the flood impact.

When the LCHA mapping was undertaken in 2015, 'The Point' waterway had not been constructed, and was not picked up as a topographical feature or part of the drainage system. The 2015 modelling consequently did not take into account this waterway. Council advised the Panel that the waterway system is now under construction. Council proposed that future mapping be undertaken to include the new waterway, and that a further LSIO2 be applied at a later date to Compartment 5 under a separate planning scheme amendment.

DELWP and CCMA both submitted that the application of a LSIO2 to this area of Point Lonsdale should be delayed until new modelling is compiled after the waterway has been constructed.

Dr Provis' evidence was that the 2015 modelling in the LCHA would be redundant when construction of the waterway was completed. The waterway should generally improve drainage, and reduce the risk of inundation; not make flooding worse.

(iii) Discussion

Both DELWP and the CCMA supported Point Lonsdale being excluded from the Amendment at this stage.

The Point Lonsdale area was mapped as part of the 'Our Coast' project, but flood modelling will need to be revised to take into account the as-built detail of the waterway system.

Point Lonsdale is located on the boundary of the municipalities of Greater Geelong and the Borough of Queenscliffe. Council explained to the Panel that it will continue to liaise with the Borough of Queenscliffe regarding its part of the Point Lonsdale township affected by potential sea level rise, and that the future LSIO would be applied as part of a joint amendment involving both municipalities. The Panel supports this approach.

The Panel sought advice from Council regarding the conditions applied to building permits at 'The Point' development, and was assured that the minimum floor level heights would accord with previous recommendations in the C150 Panel and EES Inquiry report. That Panel and EES Inquiry recommended a minimum floor level of 2.35 metres Australian Height Datum, to allow for a 0.8 metre sea level rise by 2100. These controls were adopted into the Scheme at Schedule 21 of the Development Plan Overlay (DPO21) on 29 April 2010, which also stipulates that a Waterways Master Plan must be generally in accordance with the approved EES for the land. The DPO21 includes reference to, and demonstration of compliance with, any

requirements specified by the CCMA in relation to finished surface levels, flood levels, proposed minimum floor levels and limitations or conditional statements attached to data provided by the CCMA.

The Panel relies on the commitment of Council to progress a future amendment jointly with the Borough of Queenscliffe to apply a LSIO2 to Point Lonsdale once the waterway system is constructed. In the meantime, the Panel is satisfied that the recommendations in the Panel and EES Inquiry report for Amendment C150 have been translated into the DPO21, and provide adequate guidance for assessing building permit minimum floor levels at 'The Point'.

(iv) Conclusions

The Panel concludes:

- Excluding Point Lonsdale from the LSIO2 is appropriate, given the waterway and drainage system at 'The Point' is not yet complete.
- A future LSIO2 amendment should be progressed by the Greater Geelong and Queenscliffe Councils once 'The Point' waterway is constructed, and further modelling is compiled.
- In the meantime, the DPO21 provides appropriate minimum floor level controls for 'The Point' development before a future LSIO2 is considered for Point Lonsdale.

5.4 Portarlington

Map 7 of the Portarlington Structure Plan (September 2016) identifies areas subject to future sea level rise and the flood extent in a 1% AEP event in the year 2100. The area around Turner Court and south of Franzel Avenue is not identified in the Structure Plan as subject to inundation, but is proposed to be included in the LSIO2.

(i) Submissions

Several submissions queried whether it was appropriate to include properties in the LSIO2 that were not identified as subject to inundation or flooding in the Structure Plan. Submissions specifically requested the removal of properties between Franzel Avenue and Turner Court, and the property at 15 Spratt Street.

(ii) Discussion

The Panel acknowledges that the area of land around Turner Court and south of Franzel Avenue is not shown as subject to future inundation in the Structure Plan, and that it has caused some confusion in the local community when the LCHA modelling showed that it is predicted to be subject to inundation.

The Portarlington Structure Plan states (at page 13):

Portarlington's location on the Bellarine Peninsula makes it susceptible to climate change impacts, particularly those low-lying areas in the western and eastern parts of Portarlington. Council's Climate Adaptation Strategy 2011 has led to the preparation of a third pass Local Coastal Hazard Assessment.

This project builds on the State Government's Coastal Inundation Dataset (second pass assessment). The project has a purpose to provide data sets and spatial mapping of Geelong's coastline and potential future inundation as a result of sea level rise, storm surge and estuarine flooding.

The Panel asked Council what the flood mapping in the Structure Plan was based upon. Council was not able to answer this question, but was able to confirm that the modelling in the LCHA represents the best available and most recent information about coastal inundation in Portarlington.

The application of the LSIO2 in Portarlington should be based on the most accurate and up to date information. The Panel accepts that this is the modelling in the LCHA, not the Structure Plan. It is not clear to the Panel where the data underlying Structure Plan comes from, or what its purpose is. No persuasive evidence was presented to suggest that the data underlying the Structure Plan was more recent or more accurate than the LCHA. On that basis, the Panel does not support removing these properties from the Amendment.

(iii) Conclusion

The Panel concludes:

- There is no justification for removing the properties in Portarlington from the LSIO2.

5.5 St Leonards

(i) Submissions

Several submissions specifically requested the removal of the following properties from the LSIO:

- 18 Ord Street
- 22 Ord Street
- 475 The Esplanade
- 11 Manning Street.

These submissions generally relied upon the premise that there had not been any previous flooding, and that a 50 year practical lifespan for buildings would expire before the year 2100 when the 0.8 metre sea level rise is predicted to occur.

Council did not regard these as grounds for excluding these properties from the LSIO2.

(ii) Discussion

As discussed in the previous section for Portarlington, there is no persuasive evidence that would justify removing these properties from the LSIO. The application of a LSIO does not prohibit development. Rather, it addresses the increased risk of inundation based upon a predicted 0.8 metre sea level rise and a 1% AEP storm-tide event, and seeks to ensure that development responds appropriately to the risk.

(iii) Conclusion

The Panel concludes:

- There is no justification for removing the four properties in St Leonards from the LSIO2.

6 Application issues

6.1 Riverine flooding versus coastal inundation

Flooding caused by coastal inundation has different characteristics to riverine or overland flooding.

(i) The issue

The issue is how the LSIO2 (which is essentially designed to manage riverine or overland flooding) should be applied to manage flooding caused by coastal inundation.

(ii) Evidence and submissions

Dr Provis' expert opinion was that there is a need to distinguish between riverine flooding and coastal inundation. He saw a number of significant differences in the physical processes.

One of the most important differences is the issue of 'stationarity'. For planning purposes, riverine flooding is treated as a stationary process, that is, from a statistical point of view, the natural processes are not changing over time. The 1% AEP flood level is considered as constant over time. Coastal inundation, on the other hand, is changing due to sea level rise. A given event (say the 1% AEP level) increases with time (as is evidenced by the 0.2 metre rise by 2040, and 0.8 metre by 2100 referred to in Clause 13.01-2S of the Planning Policy Framework). This means that the 'exposure probability' (the likelihood of a structure experiencing an event) changes over time with coastal inundation, whereas it does not with riverine flooding (all other things being equal).

Dr Provis' evidence was that if, as Council noted, the normal life of a building is about 50 years, imposing the LSIO2 (which predicts sea level rise and storm surges in 2100, 80 years away) is very conservative. The risk of inundation in 50 years is well below the 1% AEP in 2100. He considered that this factor needs to be taken into account in the application of the LSIO2 and the assessment of permit applications under the LSIO2.

Another difference is the duration of flooding or inundation. Riverine flooding may last for many hours, even days or weeks. The water level rises and recedes relatively slowly in most cases. Coastal inundation is caused by the combination of the astronomical tide and storm surge, and the duration will be controlled by the astronomical tide and the timing of high tide. The water level is unlikely to remain within 0.15 metres of its peak level for longer than three hours. The elevated water will often not last long enough for flood waters to flow much further inland. Also, the reduction in water level as the tide falls allows the water to flow back into the sea, opening access routes. This means that the consequences of inundation will be different from that normally occurring in riverine flooding, and the means of protection or mitigation can also differ from those used for riverine flooding.

Dr Provis illustrated the time scales associated with coastal inundation in Figure 3 of his report (at page 14), showing the measured sea level at Lorne during a storm along with the non-tidal sea level or storm surge. He noted that storm surge lasts for about 2 days, but the peak water levels are much shorter, approximately 2 to 3 hours. The time scale of riverine flooding is typically much closer to that of the storm surge.

As noted in Chapter 3.2, the CCMA submitted that it has adopted a planning basis of 0.4 metre sea level rise by 2040, and a life span of 50 years for a single dwelling, in the absence of other guidance. It referred the Panel to the Victorian Climate Science Report 2019 (Document 9) in support of this approach. The CCMA acknowledged Dr Provis' opinion regarding the differences between riverine flooding and coastal inundation, but regarded the LSIO as the appropriate current planning tool.

(iii) Discussion

Responsible and referral authorities will need to be mindful of the specific characteristics of flooding from coastal inundation when assessing permit applications under the LSIO2. As Dr Provis pointed out, the risks from coastal inundation may require a different response to the risks from riverine flooding. For example, Dr Provis' evidence was that flooding from coastal inundation is much shorter in duration than riverine flooding, and the safest thing to do may be to 'wait it out' until the floodwaters naturally recede with the falling tide, rather than to require access and egress routes above the flood level (as would often be required to address the risk of riverine flooding).

The LSIO head clause includes a number of decision guidelines in Clause 44.04-8 that must be taken into account when permit applications are being considered. They include (as relevant):

- Any comments from the relevant floodplain management authority.
- The susceptibility of the development to flooding and flood damage.
- The potential flood risk to life, health and safety associated with the development.
 - Flood risk factors to consider include:
 - The frequency, duration, extent, depth and velocity of flooding of the site and accessway.
 - The flood warning time available.
 - The danger to the occupants of the development, other floodplain residents and emergency personnel if the site or accessway is flooded.

The LSIO2 includes a range of application requirements in Clause 4.0, including:

- An outline of actions or measures required, if any, to the siting and design of the buildings or works, or in association with the use and occupation of all aspects of the proposal in order to reduce the risk to individuals, property, infrastructure and the environment over the predicted life of the buildings or works. These actions may include the consideration of adaptation options such as planned retreat, setbacks, accommodation of changes through floor heights, site and land forming and drainage works.

The Panel asked Dr Provis whether he considered that any changes were required to the application requirements and decision guidelines in the LSIO2 to better tailor them to the specific nature of coastal inundation risks. He did not consider that any changes were necessary.

The Panel is satisfied that the application requirements and decision guidelines in the LSIO head clause and Schedule 2 allow enough flexibility for a tailored response to the particular characteristics of coastal inundation.

The Panel is encouraged by the submission of the CCMA, which clearly recognised the particular characteristics of coastal inundation flooding, and their distinction to overland or riverine flooding. The Panel is confident that the CCMA's response to applications referred to

it will take account of the particular nature of the risks posed by coastal inundation, and will recommend a suitable response.

(iv) Conclusion

The Panel concludes:

- The LSIO2 is the current and most appropriate planning tool available to address the risk of coastal inundation.
- While the LSIO may have been specifically designed to address riverine flooding, the decision guidelines in the LSIO allow sufficient flexibility to respond to the specific characteristics of coastal inundation.
- The Panel is confident that both Council and the CCMA are aware of the differences between coastal inundation and riverine flooding, and will tailor their responses accordingly.

6.2 Permit exemptions

(i) The issues

The issues are:

- the wording of the exemption in the LSIO2 for buildings and works undertaken by a public land manager to repair existing structures such as sea walls, visitor facilities or other works consented to under coastal protection legislation
- whether the LSIO2 should include an additional exemption for buildings and works undertaken by a public authority relating to watercourse management, environmental improvements or infrastructure services.

(ii) Submissions

In submission 15, DELWP sought changes at Clause 3.0 of the proposed LSIO2. DELWP suggested that Council replace the words:

Works carried out under the Marine and Coastal Act 2018 or the Crown Land (Reserves) Act 1978 that have had regard to the Bellarine Peninsula – Corio Bay Local Coastal Hazard Assessment and are conducted by a public land manager or a coastal committee under the Marine and Coastal Act 2018

with:

Works that have been granted consent under the Marine and Coastal Act 2018 and are conducted by a Public Land Manager or Committee of Management appointed under the Crown Land (Reserves) Act 1978.

DELWP stated that this general consent is typically relied upon to enable minor and like for like repair of existing structures in the coastal zone. This includes rapid repair of sea walls or other structures whose purpose is to manage or mitigate coastal erosion or related risk, and visitor facilities (such as stairways) that are designed to enable safe access to the coastal zone. DELWP supported modifications to the exhibited schedule that enabled such work to proceed without a planning permit.

Council accepted DELWP's advice and the changes to the wording of Clause 3.0.

Barwon Water (submission 3) supported the Amendment, and the Council's broader efforts to adapt to sea level rise, but requested the addition of the following permit exclusion:

Buildings and works undertaken by a public authority relating to watercourse management, environmental improvements or infrastructure services.

Council responded that the suggested amendments sought by Barwon Water had been considered, and that no changes were recommended as a result.

(iii) Discussion

The Panel supports the exemption in the LSIO2 relating to coastal protection works and visitor facilities that are consented to under coastal protection legislation. The exemption avoids duplicating regulation in relation to works that are carried out on marine and coastal Crown land. The Panel notes that Council supported the changes proposed by DELWP to the wording of the exemption, and recommends that the wording be changed accordingly.

In relation to the additional permit exemption sought by Barwon Water, the Panel agrees with Council that the exemption is unnecessary. A wide range of exemptions are already available under other clauses in the Scheme, including for:

- flood mitigation works carried out by the responsible authority or a floodplain management authority (exempt under the LSIO head clause, Clause 44.04-2)
- the use or development of a minor utility installation (Clauses 62.01 and 62.02-1)
- maintenance works carried out by a public authority to prevent or alleviate flood damage (Clause 62.02-1)
- emergency works by a public authority (Clause 62.02-1)
- repairs and routine maintenance works to existing buildings and works (which would include those related to infrastructure services) (Clause 62.02-2)
- works to prevent soil erosion or ensure soil conservation or reclamation (Clause 62.02-2).

These exemptions would likely cover a range of works undertaken by a public authority relating to watercourse management, environmental improvements or infrastructure services. In the absence of a detailed submission from Barwon Water explaining why these existing exemptions are not sufficient, the Panel was not persuaded that an additional exemption should be included. In practice, the Panel anticipates that this issue could be dealt with by Barwon Water providing a letter notifying Council of its intention to carry out works and seeking an acknowledgement or confirmation that the works are exempt under another clause of the Scheme.

(iv) Conclusions and recommendations

The Panel concludes:

- The wording of the permit exemption for coastal protection works agreed between DELWP and Council is appropriate.
- It is not necessary to include any of the other permit exemptions sought by Barwon Water.

The Panel recommends:

Amend Clause 3.0 of the Land Subject to Inundation Overlay Schedule 2 to include the following exemption:

Works that have been granted consent under the Marine and Coastal Act 2018 and are conducted by or on behalf of a Public Land Manager or Committee of Management appointed under the Crown Land (Reserves) Act 1978.

6.3 The views of the floodplain management authority

(i) The issues

The issue is whether the decision guidelines in the LSIO2 should refer to the views of the relevant catchment management authority, or the floodplain management authority.

(ii) Submissions

DELWP submitted that the first point in Clause 5.0 of the proposed LSIO2 (decision guidelines) should be amended as follows, as some of the land subject to the Amendment extends into the area of the Port Phillip and Westernport Catchment Management Authority:

The views of the ~~Corangamite~~ relevant Catchment Management Authority.

In discussion at the Hearing, it became clear that DELWP's aim was to ensure that the views of the relevant floodplain management authority were captured. The floodplain management authority in the Corangamite catchment is the CCMA, but in the Port Phillip and Westernport catchment, the floodplain management authority may in fact be Melbourne Water.

The Panel invited DELWP to provide clarification of this following the Hearing, which it did (Document 12). In Document 12, DELWP explained that the floodplain management authority outside the Corangamite catchment is in fact Melbourne Water, and to capture both authorities, the dot point should read:

The views of the relevant floodplain management authority.

(iii) Discussion

The Panel considers it appropriate that the views of the relevant floodplain management authority be sought and considered in relation to permit applications under the LSIO2. However the Scheme already provides for this. Under Clause 66.03, permit applications under the LSIO within the waterway management district of Melbourne Water must be referred to Melbourne Water, and permit applications outside the waterway management district of Melbourne Water must be referred to the relevant floodplain management authority (which in this case is the CCMA). The decision guidelines in the LSIO head clause (Clause 44.04-8) also require any comments of the relevant floodplain management authority to be taken into account. The first dot point in Clause 5.0 of the LSIO2 is therefore not necessary, and should be deleted.

(iv) Conclusion and recommendation

The Panel concludes:

- The first dot point in Clause 5.0 of the LSIO2 is unnecessary and should be deleted. Referral to the relevant floodplain management authority is already dealt with under Clause 66.03.

The Panel recommends:

Delete the first dot point in Clause 5.0 of the Land Subject to Inundation Overlay Schedule 2.

7 Other issues

7.1 Floor levels and building heights

(i) The issue

The issue is whether building height limits within the LSIO2 area should be increased to account for the need for higher floor levels due to inundation, and whether requirements relating to height and scale of buildings more generally should be relaxed for properties within the LSIO2.

(ii) Submissions

Several submissions stated that height restrictions in existing planning controls should be relaxed to accommodate any requirements to construct buildings at a higher floor level to accommodate potential inundation. These submissions inferred that as dwellings may be required to consider an additional floor height of 0.8 metres, the maximum permissible building height (roof) of any building under other overlays should increase by 0.8 metres to circumvent the requirement of a planning permit.

Council responded that the residential zones already allow additional height for land subject to inundation. However various existing overlays with height restrictions (such as the Design and Development Overlay Schedules 14 and 19) would need to be amended to increase the maximum building height for which no permit is required from 7.5 metres above natural ground level to 8.3 metres. This change was not supported by Council, and Council submitted that it is beyond the scope of the Amendment.

(iii) Discussion

As noted by Council, the residential zones already include an exemption to mandatory heights in these circumstances. For instance, the General Residential Zone has the following provision at Clause 32.08-10:

Building height if land is subject to inundation

If the land is in a Special Building Overlay, Land Subject to Inundation Overlay or is land liable to inundation the maximum building height specified in the zone or schedule to the zone is the vertical distance from the minimum floor level determined by the relevant drainage authority or floodplain management authority to the roof or parapet at any point.

The Panel notes that overlays such as Design and Development Overlay Schedule 14 do not allow additional building height to be added to take into account increased floor levels. Specific measures in other overlays may have been specified for design related reasons such as scale, overshadowing or shared views. Changes to maximum building heights in other existing overlays should therefore be considered through a separate process to properly consider potential consequences. Irrespective, the Panel agrees with Council that such a change is beyond the scope of the Amendment.

(iv) Conclusion

The Panel concludes:

- It is not necessary to amend existing planning controls in other parts of the Scheme to allow height limits to be exceeded to accommodate higher floor levels that may be required under the LSIO2.

7.2 Requirements relating to overflow relief gully outlets**(i) The issue**

The issue is whether the LSIO2 should include standard requirements for overflow relief gully outlets.

(ii) Submissions

Barwon Water submitted that overflow relief gully outlets are the main points at which flood water can infiltrate the sewer system and quickly overflow the system, leading to sewer spills and service disruption. It submitted that the LSIO2 should include standard requirements that all overflow relief gully outlets should be located 150 millimetres above the flood level.

Council did not support such a specific requirement in the LSIO2, and questioned whether the head clause of the LSIO would allow such a requirement to be included.

(iii) Discussion

The LSIO head clause (Clause 44.04) does not contain a head of power to allow the schedule to include mandatory permit conditions. There is therefore no capacity to include the requirements relating to overflow relief gullies in the LSIO2. In any event, the Panel does not consider that this level of detail is required in a LSIO. Such requirements can be addressed at either a planning permit stage (should Council or a referral authority consider them necessary), or probably more appropriately at building permit stage. The current plumbing code requires overflow relief gully outlets to be 150 millimetres above ground level (not above flood level).

(iv) Conclusion

The Panel concludes:

- The LSIO should not include requirements relating to overflow relief gully outlets.

7.3 Need for coastal protection works**(i) The issue**

The issue is whether specific coastal protection works projects are within the scope of the Amendment.

(ii) Submissions

Ten submissions raised concerns that the Scheme alone will not reduce the impact of possible inundation, and submitted that more should be done to mitigate the potential impact of sea level rise. They called for new or improved infrastructure such as sea walls to protect property and public infrastructure from the rising threat of climate change.

Other submissions called for finances to be provided to construct defences to protect foreshore properties and public infrastructure from the rising threat of climate change. One submission was that there were more pressing projects (such as surfacing of dirt roads in Portarlington), which should be prioritised over an issue that may happen within the next 80 years.

Council responded that the proposed introduction of the LSIO intends to reduce the impact of possible inundation by requiring planning permission for certain buildings and works on properties that are subject to inundation and reducing the potential risk associated with sea level rise by the year 2100.

Council referred the Panel to the 'Our Coast' project website, which lists descriptions of potential adaptation measures that could protect parts of the Bellarine Peninsula and Corio Bay from sea level rise, with examples including:

- constructing a higher seawall at Ocean Grove
- raising seaside roads at Portarlington
- raising the railway line at Point Lonsdale
- installing back flow valves on stormwater outlets at Barwon Heads.

Council recognised that hard infrastructure (such as seawalls) could significantly change the nature of the coast (including amenity and access), and would not be built without significant community consultation. The aspect of 'Our Coast' that is ready for implementation is the LCHA, and the associated flood modelling and mapping of different sea level rise and storm event scenarios.

Council explained that in some cases the overlay mapping does take into account potential adaptation measures. For example, the LCHA mapping showed isolated pockets of land some distance from the coast at Barwon Heads (around Hitchcock Avenue) as being inundated due to sea water backing up the stormwater outlets under extreme tides and storm surge. Council's submission was that backflow valves on the stormwater outlets can be installed in the future to address this issue (in some cases they already have, as discussed in Chapter 5.2), and as a result the LSIO2 is not being applied to these properties.

(iii) Discussion

The need for infrastructure works in response to sea level rise is beyond the scope of this Amendment. Council explained all the other work going on as part of the 'Our Coast' project, and the Panel is satisfied that the Amendment is only part of the broader endeavour to address coastal inundation and hazard. The four works project examples provided by Council illustrate that the implementation of the 'Our Coast' project is progressing, and Council's commitment to significant prior community consultation is evident (including stormwater drain backflow valves).

(iv) Conclusion

The Panel concludes:

- Consideration of specific coastal protection works projects is beyond the scope of this Amendment.

7.4 Impact on the Moolap Coastal Strategic Framework Plan and Point Henry

Moolap is a large but sparsely populated area used for agriculture, industry and low-density residential development. It spreads from Point Henry and Corio Bay across the Bellarine Highway to Reedy Lake in the south. Reedy Lake is a state game reserve. There is also a wildlife reserve on the eastern flank of Point Henry. The land around Reedy Lake supports an 18-hole golf course.

(i) The issue

The issue is whether the Amendment will impact on the Moolap Strategic Coastal Framework Plan (the Moolap Plan) and future development at Point Henry.

(ii) Submissions

Submission 30 (Winchester Australia Limited) queried the extent of the flood mapping onto 65 Hayes Road, Moolap, with the contour level appearing somewhat arbitrary on the neighbouring properties. The submitter sought information regarding what inundation mitigation measures are planned for the area, and whether this could impact the Amendment. The submitter noted that the Moolap Plan is not mentioned in the Amendment, and that is seemed 'odd' to suddenly implement this Amendment when future land use options in this area are still being considered.

Council responded that the Moolap Plan was informed by the flood modelling used to generate the LSIO extent, and that:

... these areas are significant but also vulnerable and predicted to be further impacted by climate change and sea level rise. Urban development in these sensitive areas is to be avoided and the environment will be prioritised.

Council submitted that there was compatibility between the LSIO mapping and the Moolap Plan. It noted that the LSIO does not prevent development. Rather, it ensures that development responds appropriately to the inundation risk.

(iii) Discussion

The Moolap Plan is the Victorian State Government's vision for northern Moolap, including Point Henry, the former saltworks, industrial and adjacent rural areas. Implementation will be undertaken over time (possibly 100 years), informed by the future actions of Government and land owners. The Moolap Plan itself does not approve development or rezone land. It guides the area's evolution, renewal and land use change to maximise the long-term benefits for the Geelong community, economy, and the environment.

The Panel does not consider that there is any inherent inconsistency between the Moolap Plan and the LSIO, notwithstanding any minor flood mapping contour variations inherent with the 2007 LiDAR data (discussed previously in Chapter 5.2). As Council pointed out, the LSIO does not prevent development. Rather, it ensures that future development addresses sea level rise and coastal inundation risks appropriately. The Panel notes that the Moolap Plan appears to avoid urban development in the area subject to inundation, and seeks to protect its sensitive environment.

(iv) Conclusions

The Panel concludes:

- The LSIO will address the potential coastal inundation risks, and does not prevent the implementation of the Moolap Plan or other development in Moolap and Point Henry.

7.5 Impact on property values, insurance costs and rates

(i) The issue

The issue is whether property value, insurance costs, and rates are relevant planning considerations.

(ii) Submissions

Several submissions raised concerns that the Amendment would effectively reduce property values and impact on the ability to sell property or obtain financing. Others raised concerns about the potential increase in insurance premiums or difficulty in obtaining insurance coverage, because the properties would be identified as subject to potential inundation and flooding risk. They were also concerned about higher construction costs associated with the redevelopment of properties due to the requirements of the LSIO. Other submitters suggested that affected properties should be revalued with rate reductions in line with reduced property values.

(iii) Discussion

There are a number of previous Planning Panels Victoria reports in which the issue of land value has been considered in detail. Examples include Bass Coast Amendment C82, South Gippsland Amendment C81 and Mornington Peninsula Amendment C216. These panels have consistently found that the application of an LSIO does not impede development, and that land values, insurance premiums and rates are not relevant planning considerations. No new evidence was provided to this Panel that persuaded it that this long held position should be re-examined.

(iv) Conclusion

The Panel concludes:

- Property value, insurance costs, and rates are not relevant planning considerations.

Appendix A Submitters to the Amendment

No.	Submitter	No.	Submitter
1	Sonia Arnup	23	Terry Larkins
2	Dianne Backwell	24	Tom Loncaric
3	Barwon Water	25	David Lowry
4	Peter and Marywe Brady	26	Susan Meyer
5	Ruza Bucak	27	Andrew Pearson
6	David Burke	28	Owner of 51 Cliff Street, St Leonards
7	Chris Charamlambous	29	John Powell
8	Anne-Marie Cook	30	Clive Pugh
9	Bruce Cook	31	Philip Rayner
10	Corangamite Catchment Management Authority	32	Douglas Rennie
11	Sarah Crisp	33	Philip Ryrie
12	Liz Davies	34	David Sharp
13	Roger Davies	35	Gary Skinner
14	Anthony Delaveries	36	Hui Sui
15	DELWP	37	Mark Taylor
16	Simon Duane	38	Graeme and Wilma Tribe
17	Mardi Harrison	39	Vanessa White
18	Terry Hoare	40	Janet Williams
19	Frank Hollingsworth	41	Roslyn Wood
20	Ian Hume	42	Nola Wood
21	Colleen Jacker	43	Graeme Wood
22	Phillip Joyce		

Appendix B Document list

No.	Date	Description	Presented by
1	21/2/20	Council Part A submission	Council
2	“	Dr Provis Expert Report	“
3	“	Council Part B submission	“
4	“	Maps of zoning, LSIO and location of submitters	“
5	“	PowerPoint Presentation of Dr Provis	Dr Provis
6	“	Sea level rise data at 3 Port Phillip Bay sites	“
7	“	Water temperature data at Port Phillip Heads	“
8	“	Corangamite Catchment Management Authority submission	CCMA
9	“	Victorian Climate Science Report 2019	“
10	“	DELWP submission	DELWP
11	3/3/20	Council letter of clarification: drainage back flow valves in Barwon Heads	Council
12	“	DELWP letter of clarification: floodplain management authorities	DELWP
13	23/3/20	DELWP letter advising on implications of the Marine and Coastal Policy 2020, approved on 6 March 2020	DELWP