

Managing coastal hazards and the coastal impacts of climate change

Planning Practice Note | 53

AUGUST 2015

This practice note provides guidance on:

- [managing coastal hazards](#)
- [the decision-making process for assessing coastal hazard risk](#)
- [planning for development in coastal areas](#).

Background

Significant development has already occurred in coastal areas. Population growth and the demand for coastal living are ongoing pressures. The potential impacts of climate change on existing coastal hazards are also likely to increase.

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.

Understanding coastal hazards and managing risk exposure are important components of informed decision making.

Coastal hazards

Coastal hazards such as wildfire, various forms of flooding, acid sulfate soils, landslip and landslide need to be considered as part of the planning and building processes. For the purposes of this practice note, coastal hazards means inundation (both coastal and riverine) and erosion.

Coastal inundation

Coastal inundation is the flooding of land by ocean waters or river catchments. The frequency, extent and magnitude of coastal and river inundation is likely to be altered by climate change over time and through the combined interactions with sea level rise, tide ranges, storm surges and other coastal processes.

Coastal erosion

Erosion is a naturally occurring process which is impacted on by a number of climatic factors. Erosion can be either long term or short term.

Long-term erosion refers to a trend of erosion extending over several years and can be caused by a reduction in the annual offshore deposition of sand or in the rate of longshore deposition of sand.

Short-term erosion refers to erosion that can occur over a short period of time as a result of sudden and extreme weather events. Short term erosion caused by sudden and extreme weather can result in significant eroding of the beach profile. During a short-term erosion event the sand is transported offshore. After the storm passes the normal coastal process brings the sand back onshore and restores the beach naturally over many months or years.

Climate change and coastal hazards

Climate change is likely to increase the frequency, intensity and extent of existing coastal hazards.

This means that for some parts of the Victorian coast, climate change impacts are likely to exacerbate coastal erosion processes and inundation, potentially further increasing the impacts of these coastal hazards on existing and future coastal communities and development.

While some impacts such as possible sea level rise are gradual and occur over a long timeframe, extreme weather events can occur at any time and can significantly reshape the coastline.

Possible sea level rise and the benchmark for planning purposes

The *Victorian Coastal Strategy 2008* sets out the policy and strategic direction for responding to coastal hazard risks in the context of climate change. The *Victorian Coastal Strategy 2008* identifies the need to:

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 impacts associated with climate change.

The State Planning Policy Framework of the *Victoria Planning Provisions* and all planning schemes reflects this and in recognition of the long-term impacts of possible sea level rise, the policy applies to non-urban land, greenfield land and development outside of existing settlements in coastal areas.

Ministerial Direction No. 13 *Managing coastal hazards and the coastal impacts of climate change* also applies. As part of the planning scheme amendment process, a council must:

- consider the current and future risks and impacts

associated with projected sea level rise

- evaluate the potential risks and present an outcome to avoid or minimise exposing future development to projected coastal hazards
- consider the views of the relevant floodplain manager and the Department of Environment, Land, Water and Planning (the department).

The State Planning Policy Framework specifies:

In planning for possible sea level rise, 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).

This policy applies to development proposals in existing settlements and urban zoned areas.

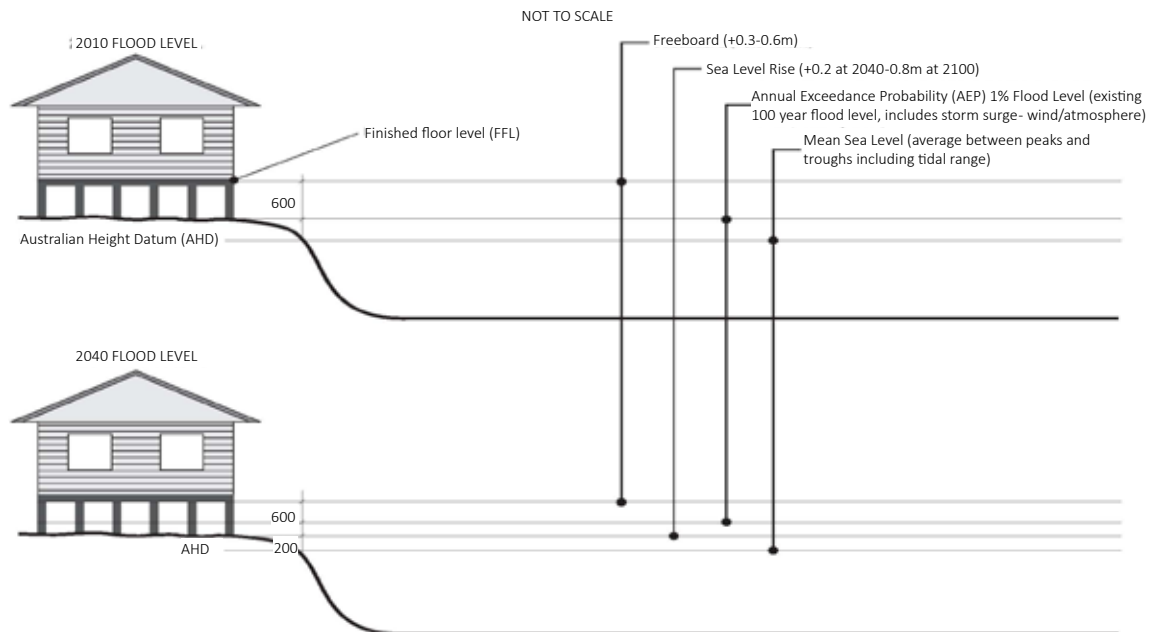
Referring a planning permit application or development proposal to a floodplain manager

The *Water Act 1989* provides that a designated floodplain management authority has a responsibility to control developments that may be proposed for land adjoining waterways, to develop and implement plans to take any action necessary to minimise flooding and flood damage and to provide advice about flooding and controls on development proposals to local councils. The Building Regulations 2006 also include flood-related responsibilities for a council such as the setting of minimum floor levels in consultation with the relevant floodplain management authority and the assessment of the flood risk of a site subject to inundation.

A planning permit application in an existing coastal settlement and urban area is referred to a floodplain manager so that a council can receive expert advice on applications in areas subject to coastal and riverine inundation. Expert input can address issues such as the free passage of floodwaters and protecting buildings from floods and storm surges by establishing appropriate floor levels or mitigation measures that may be required for development.

A statutory referral to the floodplain management authority (relevant Catchment Management Authority (CMA) or Melbourne Water) is currently required where a Land Subject to Inundation Overlay, Floodway Overlay or Special Building Overlay applies. Clause 65 of the planning scheme extends consideration of flood issues to all planning

COASTAL SEA-LEVEL RISE



Source: adapted from *Planning for sea level rise*, Melbourne Water, June 2012

permit applications regardless of whether the site is affected by an inundation zone or overlay. Therefore a responsible authority may also seek informal technical advice from a floodplain management authority on a planning permit application in coastal areas outside of these inundation overlays. A council is encouraged to seek advice where necessary, from the relevant floodplain management authority under section 52 of the *Planning and Environment Act 1987*.

The above diagram (indicative only) outlines the kind of information a floodplain management authority uses to advise on finished floor levels in coastal areas. For further information on how a Catchment Management Authority or Melbourne Water provide advice to responsible authorities on development proposals refer to:

- *Planning for sea level rise – Assessing development in areas prone to tidal inundation from sea level rise in the Port Phillip and Westernport Region*, Melbourne Water, June 2012
- *Guidelines for Coastal Catchment Management Authorities: Assessing Development in relation to Sea Level Rise*, June 2012.

A coastal vulnerability assessment may also assist a council to inform decision making outside an existing settlement or urban zoned area. This is usually undertaken by a suitably qualified coastal engineer

or coastal processes specialist to assist with understanding erosion rates and developing appropriate setbacks or protection works. In some instances, where local geology may be unknown or unstable, or where inundation from rivers and streams may also be an issue, advice can also be sought from a qualified hydrological or geotechnical expert. These matters should not be deferred for secondary consent as they are required to inform decisions about future use and development. Section 173 agreements should not be applied to individual properties to prevent hazards being considered for future use and development. Planning permit decisions should be made using the best available knowledge and information at the time.

Strategic planning for coastal areas and rezoning for urban purposes

Our understanding of the coastal impacts of possible sea level rise is evolving. Further investigation into coastal hazard vulnerability and in turn adaptation options for particular catchments and coastal areas will help inform strategic planning for settlements and decisions on future growth and assist in avoiding increased risk exposure for future coastal development.

Development of coastal areas outside of existing settlements and in non-urban areas should be sited and designed in a way that does not unnecessarily

expose future communities and assets to coastal hazard risk over its intended lifespan.

Given the current body of knowledge and information an important principle is the need to avoid future development in areas that are likely to be impacted by projected coastal hazards under climate change. A proposal to rezone land may be informed by a coastal vulnerability assessment for that part of the coastline. Considerations as part of this process may include:

- the intended use and design lifespan and value of a proposal assessed against the relative risk exposure during that time, the local geographic characteristics of the coastline such as ocean exposure (for example open coast or sheltered exposure) and land type (such as sandy, rocky, engineered)
- the role of natural coastal processes and the need to allow for such processes to continue as a cost effective form of coastal defence against climate change
- the critical need for coastal protection infrastructure and the type, location and cost of providing and maintaining such infrastructure throughout its intended lifespan
- the need to establish appropriate setbacks to avoid a projected permanent hazard event and/or withstand a temporary event
- the ability for a proposal to provide safe, all-weather access during times of emergency
- consideration of appropriate built form responses such as the need for landfill, materials, sub-floor and floor level heights
- the cumulative impact or any flow-on effects of proposed development and any associated protection works to adjacent properties and the coastline
- other identified coastal hazards such as coastal acid sulfate soils, land subsidence, wildfire and other general geotechnical risks
- any other issues relative to the orderly and proper management of use and development within coastal areas such as development within an identified settlement boundary, significant landscapes, native vegetation and cultural heritage.

Strategic investigations should also consider other future management issues that may be relevant to ensure risk minimisation and effective long term management of new use and development.

The general steps in the process for assessing and responding to proposals in coastal areas are outlined in Figure 1.

Figure 1: Decision-making process



The next steps

The department has produced information about the impacts of sea level rise along the Victorian coast. This information known as *The Victorian Coastal Inundation Dataset*, has been released with the *Victorian Coastal Hazard Guide* and is available at www.climatechange.vic.gov.au/climate-science-and-data/future-coasts

The department is progressing work with councils on local coastal hazard assessments in coastal areas of Port Fairy, Corio Bay and the Bellarine Peninsula, Westernport Bay and the Gippsland Lakes/Ninety Mile Beach. The department will use the findings of these pilot projects, working with key stakeholders, to inform the most suitable mechanisms for facilitating adaptation planning. Local and regional adaptation planning will provide an appropriate mechanism to develop tailored local responses to sea level rise. In some areas where adaptation planning is advancing, CMAs and councils may seek to apply local information appropriate for future planning and decision-making.





Further information about coastal adaptation planning and local coastal hazard assessments can be obtained from the department. For more information regarding the *Victorian Coastal Strategy 2008* and the Victorian Government's climate change program please visit the following websites:

www.vcc.vic.gov.au

www.climatechange.vic.gov.au

Further information and advice can also be obtained from the relevant coastal flood plain management authority below or by referring to:

- *Planning for sea level rise – Assessing development in areas prone to tidal inundation from sea level rise in the Port Phillip and Westernport Region*, Melbourne Water, June 2012
- *Guidelines for Coastal Catchment Management Authorities: Assessing Development in relation to Sea Level Rise*, June 2012.

Catchment Management Authority	Phone	Postal Address
 <p>Glenelg-Hopkins Catchment Management Authority</p>	(03) 5571 2526	PO Box 502 Hamilton VIC 3300 79 French Street Hamilton VIC 3300
 <p>Corangamite Catchment Management Authority</p>	(03) 5232 9100	PO Box 159 Colac VIC 3250 64 Dennis Street Colac VIC 3250
 <p>Port Phillip and Westernport Catchment Management Authority Melbourne Water</p> <p>*Melbourne Water is the floodplain management authority for the whole of the Port Phillip and Westernport region.</p>	(03) 8781 7900 131 722	454-472 Nepean Highway, Frankston VIC 3199 PO Box 4342 Melbourne 3001 990 La Trobe Street Docklands 3008
 <p>West Gippsland Catchment Management Authority</p>	1300 094 262	PO Box 1374 Traralgon VIC 3844 16 Hotham Street Traralgon VIC 3844
 <p>East Gippsland Catchment Management Authority</p>	(03) 5152 0600	PO Box 1012 Bairnsdale VIC 3875 574 Main Street Bairnsdale VIC 3875

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